

# **EMPLOYMENT EFFECTS OF CORPORATE TAKEOVERS**

**A Doctoral Thesis**

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## **ABSTRACT**

The influence of corporate governance on labour management is one of the key topics of the contemporary academic debate. In particular, there is a growing interest in better understanding the employment effects of takeovers. We investigate this issue in four empirical chapters.

The first empirical chapter shows that acquired firms' prior performance is the key variable in explaining post-takeover workforce adjustments: acquired firms' poorer performance leads to greater workforce reductions post-merger. Industry relatedness also leads to higher levels of workforce adjustments. However, the results show that hostility does not lead to higher workforce reductions after controlling for other relevant variables. In contrast to prior research conclusions, the results show that high premiums do not induce workforce reductions. These results imply that workforce reductions are undertaken for efficiency improvement purposes.

The second empirical chapter shows that acquiring firms' performance decline may also induce workforce reductions post-merger. At the same time, the results show that workforce reductions are inversely associated with subsequent performance change. This implies that post-merger workforce reductions positively affect firm performance.

The third empirical chapter shows that takeover announcement shareholder gains do not explain job losses and wage cuts, although there is some evidence of rent expropriation after hostile and cash-paid acquisitions. In contrast, there is a strong positive association between acquirers' long-run abnormal returns and post-merger employee wealth concessions. This association suggests that post-takeover jobs and wage growth depends on value created by takeovers: if shareholders gain from takeovers, then employees also benefit from such transactions; if shareholders lose from takeovers, then employees also suffer from them.

Finally, the fourth empirical chapter shows that mergers reduce demand for labour. A contribution of this chapter is that it confirms that decline in labour demand is larger after acquisitions that involve layoffs than after acquisitions that do not. This greater decrease in labour demand in layoff-involving acquisitions may justify workforce reductions post-merger. The general conclusion of the thesis is that mergers do not always negatively affect labour and that post-merger employee layoffs are usually undertaken for efficiency improvement purposes.

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## **DECLARATION**

I declare that this thesis is all my own work and the sources of information and material I have used (including the internet) have been fully identified and properly acknowledged as required in the guidelines.

Chapter 5 and Chapter 7 have been presented British Academy of Management (BAM) 2009 conference and European Academy of Management (EURAM) 2010 conference, where I have received useful comments on the earlier drafts of these chapters.

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## **LIST OF ABBREVIATIONS**

BHARs	Buy-And-Hold Abnormal Returns
CARs	Cumulative Abnormal Returns
CMEs	Coordinated Market Economies
EBITDA	Earnings before Interest, Tax, Depreciation and Amortisation
EU	European Union
GMM	Generalised Method of Moments
LMEs	Liberal Market Economies
MCC	Market for Corporate Control
OCF	Operating Cash Flow
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
ROA	Return on Assets
TA	Total Assets
TMV	Total Market Value
UK	United Kingdom
US	United States
VIF	Variance Inflation Factor
WFG	Workforce Growth
WFR	Workforce Reduction

# 1 INTRODUCTION

## 1.1 Background to the research

World economies have different labour management practices, depending on their finance, ownership and corporate governance systems (Hall and Soskice, 2001; Gospel and Pendleton, 2005). It is suggested that the reason for this variation is that corporate governance systems prioritise differently the interests of various stakeholders (Armour *et al.*, 2003). For example, the shareholder value oriented corporate governance system (hereafter ‘the market model’) observed in liberal market economies (LMEs) places shareholders’ interests over those of employees, pressurising managers to create short-term returns for capital at the expense of labour. In contrast, the stakeholder value oriented corporate governance system (hereafter ‘the stakeholder model’) observed in coordinated market economies (CMEs) balances the interests, and is concerned with the maximisation of the welfare, of all stakeholders. The labour management outcome of the market model is one of the main topics of the contemporary corporate governance debate. In particular, a key research question is whether corporate governance mechanisms in LMEs push managers to act as agents only of shareholders, creating value for them at the expense of labour, or whether managers are still capable of acting in the best interests of their company, balancing the interests of all stakeholders, as required by company law. This is the fundamental issue of this thesis.

In LMEs shareholders are seen as the primary risk takers and therefore entitled to receive residual gains. However, as in these economies corporate ownership is widely dispersed, shareholders are weak vis-à-vis managers, mainly due to the ‘free rider’ problem. In this regard the main concern of corporate governance evolved around the issues of protecting the rights of dispersed shareholders (principals) from entrenched managers (agents) (Shleifer and Vishny, 1997)<sup>1</sup>. The adoption of the ideology of shareholder value maximisation and the rise of institutional investors contributed to the development of an active market for corporate control (MCC). Within the MCC framework, shareholders can use the ‘exit’ disciplining method rather than ‘voice’, threatening managers with replacement if they do not act in the best interests of shareholders (Lazonick and O’Sullivan, 2000). In this context, it is argued that

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<sup>1</sup> Under this principal-agent view, the corporate governance problem is how to protect the interests of dispersed ‘weak’ shareholders from ‘entrenched’ management, and how to make managers work in shareholders’ best interests.

the market model excessively pressurises managers to undertake corporate restructuring to maximise shareholder returns when further growth opportunities are limited. In this process employees may incur some losses, as in many companies labour is the largest and most easily controllable cost component, and its restructuring may contribute to boosting short-run returns for shareholders (Froud *et al.*, 2000). Thus, when other options for delivering higher capital returns are limited, employees may incur additional risk shifted onto them by shareholders and managers.

It is suggested that, in LMEs, widely dispersed shareholders mainly use market mechanisms of management disciplining. As a result, in these economies, the MCC becomes a distinguishing feature of the corporate governance system, which puts pressure on managers to continuously increase shareholder value. From the theoretical point of view the main role of the MCC is to protect shareholders' interests by disciplining under-performing managers and materialising the synergy. Thus takeovers should improve efficiency by re-allocating assets to their most efficient users. However, at the same time, a strong MCC may enable shareholders to gain power vis-à-vis other stakeholders and to press managers to adopt those strategies that create short-term returns for them. In order to meet investors' short-term expectations, managers may need to sacrifice some long-term strategies such as human capital investments that may lead to inefficiencies. In particular, it is argued that the MCC may push managers to favour the interests of capital over labour, and to facilitate wealth transfer from workers to owners (Shleifer and Summers, 1988). If true, this claim would imply that the market model will generate a negative outcome in the long run: it may discourage long-term human capital investments by both managers and employees, and thereby prevent efficiency improvements. Employees, expecting a 'breach of trust', may be discouraged from making firm-specific human capital investments and this may lead to long-term inefficiencies.

At the same time some other commentators argue that employees also bear residual risk by making firm-specific human capital investment (Blair, 1995; Roe, 2003). In this regard, it is argued that corporate governance should be concerned not only with getting returns on the investments of finance suppliers, but also with ensuring appropriate returns on the long-term investments of all stakeholders, including employees.

Therefore it is important to understand the effects of takeovers on labour: whether labour suffers from such transactions and whether labour management decisions are influenced by the

shareholder value creation requirements of the market model of corporate governance. The results could be used to make some inference on the validity of the claim that this model of governance negatively affects labour. In this relation, this thesis contributes to the corporate governance debate by providing new empirical evidence on the effect of corporate takeovers on jobs and wages. In particular, the empirical results of the thesis clarify whether employees are subject to ‘unfair’ layoffs and pay cuts post-merger and whether such layoffs and pay cuts are undertaken to create short-term shareholder returns.

Although the effect of takeovers on shareholders’ wealth is well documented in voluminous research, it is only recently that researchers have started to investigate systematically the effects of takeovers on labour. Therefore systematic empirical research on this issue is limited to a few papers only. However, recent UK based empirical work by Conyon *et al.* (2001, 2002a, 2004) represents a significant addition to the early US based work on the issue. This thesis differs from the previous research in a number of ways. First, it uses a new empirical approach in analysing the role of several factors in explaining post-merger workforce adjustments in one framework. These factors include prior performance of acquired firms, prior performance of acquiring firms, relatedness of the merging firms’ industries, hostility in takeovers, premium paid to target firm shareholders and post-merger operating performance change of acquiring firms. Secondly, the thesis is one of the first studies which empirically analyse the effect of post-merger workforce adjustments on acquiring firms’ operating performance. Thirdly, using a large dataset, the thesis directly tests “the breach of trust” hypothesis (Shleifer and Summers, 1988) by investigating the direct association between merger-related shareholder gains and post-merger employee wealth change, which was somewhat neglected by prior empirical research. Finally, the thesis uses a new hand-collected dataset on merger-related employee layoffs, constructed on the basis of a media search, to investigate whether such layoffs were motivated with the post-merger labour demand decline in merging firms. Then the employment effect of corporate takeovers is assessed based on the combination of these empirical results obtained from the above described four different research perspectives.

There is no generally accepted theory explaining the effects of takeovers on labour. Therefore the inferences on the labour effects of takeovers are made on the basis of general theories explaining the occurrences of such transactions. It is difficult to predict the employment effects of takeovers by reference to a specific theory of takeovers, as different theories predict

different outcomes for jobs and wages. However, on the basis of these theories some inferences as to the employment effect of corporate takeovers could be made. For example, *the value-creation* theory of takeovers states that the primary motive for mergers is to improve efficiency through synergy and management disciplining (Manne, 1965). This implies that takeovers may initially negatively affect labour, with substantial workforce reductions in the short run, although the long-run employment effects are more likely to be positive. On the other hand, *the value-destruction* theory (Baumol, 1959; Marris, 1964; Jensen, 1986) suggests that takeovers initiated by ‘empire-building’ managers may destroy jobs in the long run due to the inefficient use of assets, although these types of takeovers may not negatively affect labour in the short run, as empire-building managers are not interested in cost controls. Takeovers undertaken by ‘over-optimistic’ managers may also eventually lead to job losses, because of the need to cover the high premiums paid to target shareholders. Finally, *the value-redistribution* theory suggests that takeovers facilitate rent transfer from employees to shareholders by causing a breach of implicit contracts between them (Shleifer and Summers, 1988). Thus, takeovers undertaken with the purpose of rent transfer from employees to shareholders may negatively affect jobs and wage growth.

The extant empirical evidence on the employment effects of takeovers is inconclusive, providing only partial support for the theories above discussed. For example, on the basis of the evidence on the labour effects of takeovers it can be concluded that the prior research provides some support for *the value-creation* theory of takeovers. Analysing the relationship between productivity and ownership change, Lichtenberg and Siegel (1992) conclude that “... asset redeployment is an important mechanism for correcting lapses from inefficient producer behaviour”. McGuckin and Nguyen (2001) report that plants that change ownership significantly improve their performance, measured by labour productivity. Analysing the labour demand and productivity effects of mergers in UK financial sector Haynes and Thompson (1999a, 1999b) conclude that merger activity enhance efficiency. Recent work investigating the labour demand effect of mergers in related versus unrelated and hostile versus friendly mergers concludes that job losses are purely due to efficiency improvements in labour utilisation post-merger (Conyon *et al.*, 2001, 2002a, 2004; Gugler and Yurtoglu, 2004).

At the same time, there is some empirical evidence both supporting and rejecting *the value-redistribution* theory of takeovers. In support of this theory, some researchers have shown a negative relationship between shareholder gains around takeover announcements and post-

takeover employee wealth change (Rosett, 1990; Becker, 1995). Rejecting this theory, other researchers show no association between the shareholder gains and employee wealth concessions post-merger (Gokhale *et al.*, 1993; Beckmann and Forbes, 2004).

## **1.2 Research questions**

As previously discussed, comparative corporate governance literature indicates the labour management outcome of LMEs as one of its main weaknesses: the market model may discourage long-term human capital investment on the part of both managers and employees, which may lead to long-term inefficiencies. In this regard, the academic debate is concentrated on the issue of whether takeovers lead to unfair job losses and slower wage growth. To contribute to this debate, the thesis empirically analyses the following four specific research questions:

*Q1. What are the factors associated with post-merger workforce reductions?*

In an analysis of the effects of takeovers on labour, the starting point is to understand the underlying factors that trigger post-takeover workforce adjustments. Various things may prompt such adjustments, as predicted by different takeover theories. First, ownership change in under-performing firms may lead to workforce reductions, as turning around such business may require a higher level of restructuring. Thus, the level of post-merger employee layoffs may be a function of acquired firms' pre-takeover performance. Next, the disciplining of an inefficient incumbent management and/or realisation of synergy created by mergers may lead to post-merger workforce reductions, as these are two primary sources of takeover gains. The incumbent managers may be inefficient, as they may be following the strategy of enjoying a 'quiet life' and, as a result, may be not exerting enough effort into labour management. The replacement of managers who do not manage resources as efficiently as expected may result in cost savings. Similarly, realisation of merger-related synergies may require elimination of duplicative activities, which may involve short-term job losses, although the effect of such efficiency enhancements may be positive for employment in the long run.

Alternatively, staff cost cuts may be undertaken to maximise takeover gains and to cover high premiums paid for targets (Sirower, 2000; Krishnan *et al.*, 2007). Roll (1986) argues that acquirers pay a high premium for their acquisitions as a result of managerial over-confidence.

Workforce reductions may be necessary to create short-term shareholder value and to protect acquiring firm managers' own jobs.

New empirical evidence on the various underlying factors in post-merger employee layoffs clarifies whether mergers negatively affect labour by creating opportunities for 'unfair' job losses. Specifically, this clarifies whether post-merger employee layoffs are undertaken to deter further performance deterioration or to re-distribute wealth from employees to shareholders.

*Q2. What is the association between post-merger performance change and workforce change?*

Another factor that may lead to workforce adjustments could be the performance change following mergers. Most researchers agree that corporate takeovers do not positively affect post-merger performance, as there is growing evidence showing performance deterioration post-merger (Martynova *et al.*, 2007). Furthermore, as previous discussion implies, post-merger employee layoffs could be undertaken in response to performance deterioration and to improve operational efficiency. In this regard, operating performance decline could be considered as one of the reasons for post-merger workforce reductions.

A related issue is the performance consequences of workforce adjustments post-merger. Workforce reductions are expected to affect firm performance positively or at least arrest further performance deterioration by enabling synergy extraction or by disciplining inefficient managers. However, if layoffs are undertaken with the purpose of maximising shareholder returns or to cover high premiums, then such layoffs may negatively affect firm performance, as suggested by recent literature (Sirower, 2000; Krishnan and Park, 2002; Krishnan *et al.*, 2007). This literature suggests that managers overpay for acquired firms as a result of over-optimism and subsequently undertake excessive layoffs to cover such overpayments, which may lead to operating performance decline post-merger. Specifically, the excessive layoffs may destroy acquired firms' human capital by affecting employee morale and leading to poor employee performance.

In sum, understanding the role of post-merger operating performance deterioration in explaining workforce adjustments may further clarify the factors triggering such adjustments. More importantly, this empirical research provides new evidence on the performance consequences of post-merger employee layoffs. With this new evidence this research

contributes to the literature on the question of whether such layoffs positively or negatively affect performance.

Q3. *Do merger-related shareholder gains explain changes in jobs and wages?*

Another factor that may lead to post-merger workforce adjustment is the strong requirement to create shareholder value within the market model of corporate governance. Therefore the labour effect of takeovers could be explored by testing the direct relationship between shareholder gains and employee wealth concessions. Evidence on this relationship clarifies whether shareholder gains come at the expense of employees, as suggested by the *value-redistribution* theory of takeovers (Shleifer and Summers, 1988).

In the finance literature it is well documented that target shareholders capture most of the takeover gains. However, the question of where those gains come from still remains unanswered. One of the suggested sources of these gains is the rent transfer from employees to shareholders, as first theorised within *the value-redistribution* theory of Shleifer and Summers (1988). According to this theory, post-takeover workforce and wage changes should be inversely related to target firm shareholder gains.

In contrast, according to *the value-creation* theory, takeovers should benefit all stakeholders, including both shareholders and employees, through operational synergy or by disciplining inefficient management. There is growing evidence showing that even within the market model of corporate governance managers apply friendly labour management practices and work for the success of their company, as required by company law. In other words, managers consider the interests of both shareholders and employees (Pendleton, 2009). In this case, post-takeover workforce and wage changes should depend on the success of mergers, where success is measured by the long-run abnormal returns of acquiring firm shareholders. Therefore according to this theory, post-takeover employee wealth concessions should be positively related to acquiring firm shareholders' long-run abnormal returns.

Additionally, new evidence on this question clarifies whether the market model urges managers to put shareholder interests over those of labour. Evidence showing a negative association between short-run shareholder gains and employee wealth concessions would imply that managers act to create shareholder value at the expense of labour. Alternatively, a positive association between post-takeover long-run shareholder gains and employee wealth

concessions would imply that the market model of corporate governance still allows managers to work for the success of their companies, balancing the interests of all stakeholders.

Q4. *Does post-merger decline in labour demand cause employee layoffs?*

According to Cappelli (2000) it is possible to reduce demand for labour by changing the input mix within a given production function. Decline in demand for labour could be one of the main factors leading to post-takeover workforce reductions. Takeovers, as a major business strategy, may be used to introduce changes to the input of the production function. For example, takeovers may eliminate duplicative activities or discipline inefficient management (Haynes and Thompson, 1999a), which may move the employment level to another, optimal level. In other words, in both cases, the organisation of labour may change, as suggested by Conyon *et al.* (2002a). This means that takeovers reduce labour demand and managers undertake post-merger workforce reductions on the basis of the level of decline in labour demand. In support of this argument, Conyon *et al.* (2001, 2002a, 2004) show that merging firms use a significantly smaller labour force in comparison to non-merging firms, after controlling for output and wage changes, which can be interpreted as a consequence of rationalisations in the use of labour. To contribute to this literature, first we analyse labour demand changes in both merging and non-merging firms, holding the initial output and employment conditions constant, and using panel data estimation methods.

As a main question of interest in this chapter, we investigate whether post-merger decline in labour demand leads to workforce reduction. Post-merger workforce adjustments may be undertaken to materialise the decline in labour demand, which implies that there is some association between decline in labour demand and post-merger changes in the *absolute* number of employees. There may be different underlying factors leading to rationalisations in labour usage, such as synergy or more efficient use of labour. Whatever is the underlying factor in the efficiency improvement in labour utilisation, employee layoff decisions should be based on the extent of such decline in labour demand. It follows that labour demand decline should be greater in mergers that involve layoffs than in mergers that do not. On the basis of this, we test whether there is any link between decline in labour demand and post-merger reductions in the *absolute* number of employees.

Efficiency improvements through decline in labour demand and cost savings should also benefit employees in the long run, in the form of better jobs and faster wage growth. Therefore we also examine the wage effects of takeovers.

### 1.3 Sample and research methods

As discussed, the UK corporate governance system is a ‘flagship’ market model of governance, where the MCC is very active in the UK (along with the US). Therefore, it is ideal for investigating the employment effect of shareholder value oriented corporate governance using a sample of domestic takeovers from this economy. We select a sample of 235 takeovers of UK publicly listed companies, which took place between 1990 and 2000. Due to data availability restrictions, we had to limit the sample period to this period. However, this period includes some of the most merger-intense years during the last – fifth merger wave in the late 1990s. At the same time, Pagano and Volpin (2005b) report that during this period in the UK (along with the US) the shareholder protection index was the highest, but the employment protection index was the lowest among 21 OECD countries. Therefore this sample would be the most appropriate sample for analysing the employment effects of restructuring for shareholder value.

We compare the performance of this sample to the performance of a sample of 470 non-merging control firms, selected using a matching firm selection methodology, advocated by Loughran and Ritter (1997) and Barber and Lyon (1996). This methodology specifies how to select matching control firms in analysing share price and operating performance changes in an event study framework. The full description of the matching firm selection methodology is given in the section 4.2.7. Using this methodology, we select a matched firm for each acquired and acquiring firm. In addition to this we use also industry median performance to assess the performance of merging firms.

Data has been collected from a number of sources. Transaction-related data on mergers and acquisitions has been hand-collected from the *Acquisitions Monthly* journal<sup>2</sup>. This data has been merged with the accounting and financial data downloaded from *Datastream*. As the thesis is concerned with the performance change in the merged firms, we collect accounting

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<sup>2</sup> Transaction-related data includes the names of acquired and acquiring firms, announcement date and completion date of takeovers, transaction value, size of premium, payment mode and takeover mode.

data (including employment data) for 7 years, three years before and three years after the takeover event year. Data on Board composition and Board ownership has also been hand-collected from *Hemmington-Scott Corporate Registers*.

To analyse the post-merger workforce change we created pre-takeover pro-forma workforce of merging firms by combining pre-takeover workforce of acquired and acquiring firms. Comparing this pre-takeover pro-forma workforce with the acquiring firms' post-takeover workforce we compute the post-merger (percentage) workforce change. Detailed analysis of *Datastream* data shows that 127 acquirers reduced their workforce during t+1, out of which 87 acquirers further reduced their workforce during the second or third years, while 23 acquirers increased their workforce (which means that they temporarily reduced workforce after acquisitions) and 17 acquirers were taken over or liquidated during this period. *Datastream* data also shows that 108 acquirers increased their workforce during t+1, only 10 of them reduced workforce during t+2 or t+3 relative to pre-takeover level, while 13 of them were taken over during this period. In overall, according to *Datastream*, out of 235 sampled acquirers, 115 acquirers had lower workforce during t+2 in comparison to the pre-takeover workforce level and 111 acquirers had lower workforce in comparison to the pre-takeover workforce level during t+3.

Theory suggests that merger-related employee layoffs usually happen in the acquired firms (Shleifer and Summers, 1988). However, when *Datastream* information is used such layoffs may be hidden in the acquired and acquiring firms' combined workforce change, as there may be some workforce growth in other segments of business, while acquired business segments experience employees layoffs. Therefore, in order to gain more accurate information on the actual employment effects of takeovers, we have also collected data on publicly announced merger-related employee layoffs by screening national and regional newspapers, downloaded through the *Nexis*<sup>®</sup> database. We were able to find media reports of employee layoffs in 101 (43%) acquisitions out of 235. Percentage employee layoffs are computed in comparison to the pre-takeover pro-forma workforce of merging firms, computed by combining pre-takeover workforce of acquired and acquiring firms. In these acquisitions on average 7.5% (the median is 5.6%) of the combined workforce were laid off within a period of two years after mergers (in these percentage calculations we use the pre-takeover pro-forma workforce of merging firms, created by combining pre-takeover workforce of acquired and acquiring firms, as above explained). Data on the announced employee layoffs include only straight redundancies, not

workforce reductions related with divestments or other sell-offs. If no press release on merger-related employee layoffs were found, then we assume that no employee layoffs were made during post-merger period.

The analysis reveals that the number of firms which make public announcements on merger-related employee layoffs (101 acquirers) and the number of firms which reduce workforce according to *Datastream* (115 acquirers) are similar. The analysis shows that there is about 36% correlation between announced layoffs and *Datastream* workforce adjustments and this correlation is similar to the correlation (32%) reported by Krishnan *et al.* (2007). *Datastream* workforce adjustments also include changes due to unrecorded divestments, other unrecorded acquisitions and unannounced layoffs. Furthermore, newspaper based employee layoff data does not take into consideration employment growth. Therefore the correlation between these two variables may not be very strong.

However, a weakness of this dataset is that not all employee layoffs may be announced or we may have missed some announced layoffs during the newspaper screening process. In spite of these shortcomings of the employee layoffs data, we believe that this hand-collected dataset represents a fairly accurate picture of the employment effects of corporate takeovers, on the basis of the following arguments. First, during the media search process we noted that several newspapers simultaneously report merger-related employee layoffs and usually the reported number of laid off workers are similar. We have compared the newspaper reports from different sources in order to construct a credible dataset. Secondly, as above analysis of *Datastream* workforce change data indicates, there is a significant correlation between the number of firms who reduce their workforce post-merger according to *Datastream* and the number of firms who make employee layoffs according to the media search. Therefore, we believe that the hand-collected merger-related employee layoff data is reliable.

To investigate the research questions we use both univariate analysis and multiple regression research methods. In analysing the first two research questions, we divide the full sample into two sub-samples: in other words, we compare the performance of ‘the workforce reduction’ sub-sample (hereafter the WFR), where post-merger employment declines, and ‘the workforce growth’ sub-sample (hereafter the WFG), where post-merger employment increases relative to the pre-merger level. The benefit of this comparative analysis is twofold. First, it provides further verification of the full sample results. In other words, we want to see whether the

results of these two sub-samples confirm the full sample results. Secondly, using these sub-samples we should have a clearer picture on the factors that contribute to the workforce reductions (in the WFR sub-sample) and on the factors that contribute to the post-merger workforce growth (in the WFG sub-sample) post-merger.

#### **1.4 Thesis structure and summary of findings**

The remainder of the thesis consists of two literature review chapters, one methodology chapter, four empirical chapters and a concluding chapter. *Chapter 2* reviews the literature on corporate governance and corporate takeovers as well as the literature on the influence of takeovers on labour management practices. This chapter states the general research issue of the thesis and discusses the literature on the employment effects of takeovers. *Chapter 3* discusses the prior literature in order to derive four specific research questions to be investigated in the empirical chapters. *Chapter 4* describes appropriate research methods to be applied in this thesis.

*Chapter 5* investigates the causes of post-merger workforce adjustments (Q1). Specifically, it focuses on the role of four factors – merging firms’ prior performance, management disciplining, synergy created by mergers and high premiums – in explaining post-takeover workforce adjustments. We analyse pre-takeover operating performance of both acquired and acquiring firms, using the full sample as well as the WFR and WFG sub-samples.

Univariate analysis shows that employee layoffs are made in under-performing firms. Regressions show that acquired firms’ prior performance explains both post-takeover workforce reductions and workforce growth. Specifically, post-takeover workforce adjustments are positively associated with the acquired firms’ prior performance. This means that the poorer the acquired firms’ performance, the greater the workforce reductions. In contrast to this, acquirers’ pre-takeover performance only explains post-takeover workforce growth. Although the coefficient of the hostility dummy is negative as expected, it is not significant. However, the results show that related acquisitions lead to slower workforce growth in comparison to unrelated acquisitions. The results also reveal that higher premiums are not associated with greater workforce reductions. In contrast, high premiums are associated with slower workforce growth, possibly due to the scope of synergy in those acquisitions where high premiums have been paid. Thus, high premiums do not necessarily lead to employee layoffs. In sum, the results imply that employee layoffs are undertaken when

there is a need for efficiency improvement, not to create shareholder value at the expense of labour.

*Chapter 6* investigates post-merger performance decline as another important antecedent of workforce adjustments and performance consequences of such adjustments (Q2). The univariate analysis indicates the WFG sub-sample acquirers' performance does not differ from the pre-takeover levels during the first two post-takeover years, but significantly declines during the third post-takeover year. In contrast, the WFR sub-sample acquirers' performance declines during the first two post-takeover years, but does not differ from the pre-takeover levels during the third post-takeover year. The regressions reveal that post-merger performance changes have significant power in explaining workforce changes: both full and sub-sample regressions show a significant positive association between performance change and workforce change. This positive association implies that a negative performance change is more likely to lead to workforce reductions.

Furthermore, the regression results show that workforce adjustments are inversely related to operating performance *change*. Therefore it can be concluded that post-merger workforce reductions positively contribute to operating performance or at least arrest further performance deterioration. This contradicts prior research results suggesting that post-merger employee layoffs destroy acquired firms' human capital and negatively affect firm performance.

One of the limitations of the literature in this area is that the economic role of takeovers is assessed through operating performance (accounting studies) or the shareholder wealth effect (finance studies) of such transactions. Most prior research does not investigate the real factors that may lead to positive or negative performance change. The research that empirically investigates the sources of takeover gains is limited and we do not know much about the real underlying sources of takeover gains (Becht *et al.*, 2003). One economic factor that may explain post-takeover operating performance change is post-merger change in employment. Thus the results of this chapter increase the knowledge on the real sources of value created by mergers. At the same time, the chapter contributes to knowledge on the motivations of corporate takeovers and the economic role of the MCC through a better understanding of the reasons for employment-related decisions.

*Chapter 7* directly investigates the association between shareholder wealth change and employee wealth change in order to clarify whether takeovers involve any rent transfer from employees to shareholders (Q3). For this purpose we measure short-term takeover announcement share price abnormal returns using the Cumulative Abnormal Returns method and post-takeover long-term abnormal returns using the Buy-and-Hold Abnormal Returns methods. In contrast to the predictions of *the value-redistribution* theory, the results show that around takeover announcements the WFR sub-sample shareholders earn lower abnormal returns than the WFG sub-sample shareholders.

After measuring the abnormal gains, we analyse the association between shareholders' gains and employee wealth concessions, using regression techniques. In addition to the wealth transfer from employees to shareholders, takeover announcement share price gains may also indicate merger-related efficiency improvements resulting from synergy realisation or better management, which eventually should lead to operating performance improvement. However, such efficiency improvements should be reflected in the acquiring firms' share prices. In this regard, we only use target firm shareholders' abnormal returns and premiums paid to target firm shareholders as merger-related wealth transfer measures. The regressions show that target firm shareholders' share price abnormal returns are positively associated with post-takeover workforce growth. Similarly, premiums are positively associated with post-takeover wage growth. These results contradict the predictions of *the value-redistribution* theory, but support the predictions of *the value-creation* theory. However, the results also indicate some support for *the value-redistribution* theory: in cash-financed acquisitions, shareholders' higher abnormal returns are associated with lower wage growth; in hostile takeovers higher premiums are associated with lower wage growth.

Similarly, in the long run the WFR sub-sample acquirers earn significant negative abnormal returns, while the WFG sub-sample acquirers' performance does not differ from non-merging firms' performance. Regressions show that there is a significant positive association between acquirers' long-run abnormal returns and post-takeover workforce and wage changes. These results imply that if shareholders gain from takeovers, then employees also benefit from such transactions; if shareholders lose from takeovers, then employees also suffer from them. On the basis of these results, it could be concluded that even under strong pressure from the MCC management decision-making is not influenced by shareholder value creation objectives. In

contrast, corporate decisions are made, balancing the interests of shareholders with the interests of other stakeholders, including employees.

The empirical results of this chapter directly contribute to academic literature on the labour management outcomes of the market model of corporate governance. They also contribute to the debate on the underlying motives of takeovers. As there is no evidence of a direct negative relationship between shareholder gains and employee wealth concessions, we conclude that takeovers do not involve rent transfer, but employee welfare depends on the success of mergers: if shareholders suffer from takeovers, employees also suffer, if shareholders gain, employees also gain. Thus the results of this chapter do not support the market model predictions on the negative labour effect of restructuring for shareholder value.

*Chapter 8* investigates whether employee layoffs are caused by decline in labour demand (Q4). In other words, it investigates whether acquisitions that involve employee layoffs lead to greater decline in labour demand than acquisitions that do not involve employee layoffs. Prior research examines labour demand change in the context of related versus unrelated and hostile versus friendly mergers, and concludes that one of the main reasons for post-takeover employee layoffs is significant rationalisation in the use of labour, leading to labour demand decline during post-merger years (Conyon *et al.*, 2001, 2002a, 2004; Gugler and Yurtoglu, 2004). Applying the same estimation method, we compare labour demand change in acquisitions that involve layoffs to that in acquisitions that do not. In other words, we divide the sample into ‘layoff’ and ‘non-layoff’ sub-samples and estimate the dynamic labour demand estimation model as in Conyon *et al.* (2002a).

Panel data based Generalised Method of Moments (GMM) regressions reveal that decline in labour demand is greater after acquisitions that involve employee layoffs than after acquisitions that do not: acquisitions that involve employee layoffs reduce labour demand by about 18%, while acquisitions that do not involve layoffs reduce labour demand by 6%. Furthermore, the results also indicate that wage growth after acquisitions that involve layoffs is not significantly different from wage growth in non-merging control firms, whereas wage growth after acquisitions that do not involve employee layoffs is significantly higher relative to wage growth in non-merging control firms.

This chapter contributes to the academic debate started by Haynes and Thompson (1999a, 1999b) and Conyon *et al.* (2001, 2002a, 2004), providing new evidence on the employment and wage effects of takeovers. In particular, the results of this chapter show that employee layoffs are undertaken based on the extent of labour demand decline during post-merger years.

*Chapter 9* summarises the major findings of the three empirical chapters and draws a general conclusion on the basis of these findings. It also discusses specific contributions of each chapter as well as the overall contribution of the thesis. Then the chapter discusses the policy implications of the results. In addition, limitations of the study will be discussed and recommendations for future research will be made.

## **1.5 Conclusions**

The aim of the thesis is to assess the influence of takeovers on labour management. The following are the main findings: (1) workforce reductions are undertaken for efficiency improvement purposes; (2) workforce reductions have a favourable impact on firm performance; (3) not all takeovers involve wealth transfer from employees to shareholders, while only some opportunistic takeovers (such as hostile and cash financed) may involve employee layoffs; (4) labour demand decline is one of the main reasons for employee layoffs and wage growth is higher in merging firms than in non-merging firms. On the basis of these results, it can be concluded that mergers do not always lead to a negative employment outcome. Instead employee layoffs are undertaken to achieve success for the company, not to transfer wealth from workers to shareholders. Although there is some short-run negative effect, such rationalisation may benefit labour in the long run. Thus, the results imply that shareholder value primacy is not deeply institutionalised, as is assumed by prior research (Deakin, 2005). Thus it can be concluded that post-merger labour management decisions are made to enhance efficiency in labour utilisation (Conyon *et al.*, 2002a).

## **2 CORPORATE GOVERNANCE, CORPORATE TAKEOVERS AND LABOUR MANAGEMENT**

### **2.1 Introduction**

This chapter first reviews the literature on the relationship between corporate governance systems and labour management practices. It briefly discusses the corporate governance and labour management practices in LMEs and CMEs in order to highlight the role of corporate takeovers in organising employment relations in both systems.

Then the chapter introduces the MCC and discusses different alternative theories that explain the occurrence of takeovers, including the empirical evidence on these theories. These theories can be grouped into three main areas. *The value-creation* theory of takeovers suggests that takeovers create value through management disciplining and synergy (Manne, 1965). *The value-destruction* theory considers takeovers as transactions that lead to decline in acquiring firm shareholders' value by paying high premium as a result of agency problems or managerial overconfidence (Roll, 1986). *The value-redistribution* theory of takeovers argues that takeovers only facilitate wealth redistribution between different business stakeholders, in particular by transferring wealth from employees to shareholders (Shleifer and Summers, 1988). Particular attention will be paid to derive the short-term labour effects of mergers, as predicted by each of these theories. In addition to this the chapter briefly summarises prior empirical research findings on employment and wage effects of takeovers.

Finally, based on the literature review, the chapter states the general research issue of this thesis and identifies four specific research questions to be investigated in the empirical chapters. Empirical answers on these questions contribute to the clarification of the general research issue.

### **2.2 Corporate governance systems and labour management practices**

#### **2.2.1 Theories of the firm and corporate governance**

When ownership and control are separated, there is a potential for conflict of interest between capital providers and entrepreneurs, which creates an agency problem (Berle and Means, 1932; Jensen and Meckling, 1976). This problem arises because managers do not always act in the best interests of shareholders and, at the same time, it is impossible to make contracts that

fully monitor all future activities of managers. Shareholders trust agents to manage their assets, bearing some risk related to the uncertainty of their cash inflows from those assets. Therefore, shareholders are considered primary risk bearing residual claimants, who receive returns on their investments only after other claims have been satisfied and whose rent involves some uncertainty. It is argued that since shareholders incur all risk, power should be in their hands. All other stakeholders interact with the firm on the basis of contracts and receive their rents according to these contracts, assumed to be ‘complete’. Consequently, the firm is viewed as a ‘nexus of contracts’, which exists solely with the purpose of creating wealth for its owners.

In financial economics the currently dominant view of the firm – the ‘nexus of contracts’ view – was developed on the basis of the insights first suggested by Coase (1937). This author argues that while, in the marketplace, price movements coordinate production relations, in the firm, central authority may coordinate resource allocation more efficiently with lower transaction costs. Therefore it is more efficient to undertake certain activities within the boundaries of a firm, coordinating them by an entrepreneur. Using price mechanism for every exchange may be costly for both sides of trading, while the entrepreneur may carry out the resource allocation function at less cost<sup>3</sup>. Coase (1937) defines the firm as ‘the system of relationships which comes into existence when the direction of resources is dependent on an entrepreneur’. Further developing this idea, Jensen and Meckling (1976) stress the importance of contractual relations for the existence of firms. They define the firm as the legal fiction which serves as a nexus for contracting relationships. Under the ‘nexus of contracts’ view of the firm, all parties deal with each other based on implicit or explicit agreements that may create different problems due to incompleteness of the contracts. However, the main agency problem is between shareholders and managers, as when ownership and control is separated, managers may not always act in the best interests of widely dispersed shareholders.

Political economy and industrial relations scholars suggest that the ‘nexus of contracts’ view of the firm is too narrow, disagreeing with the exclusion of labour from the main sets of actors in corporate governance. These authors also argue that this view ignores the potential conflicts as well as possibilities of forming different alliances among shareholders, managers and labour (Aguilera and Jackson, 2003; Gospel and Pendleton, 2003). The literature provides

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<sup>3</sup> Such costs may include discovering relevant prices, negotiating and concluding contracts and paying sales and income tax.

several arguments outlining the need to consider labour as a main actor in firm governance. For example, Blair (1995) argues that the main assumption of the finance view – that dispersed shareholders are residual owners of large corporations – is problematic, as such corporations not only involve physical assets but also intangible assets and, therefore, the various rights and responsibilities of shareholders are ill-defined.

Another core assumption of the principal-agent view is that employment contracts are complete and fully compensate for all investments made by employees. However, as suggested by Blair (1995), firms may not honour wage growth promises or jobs may be lost in the case of ownership change or firm bankruptcy, resulting in loss of firm-specific capital investments made by employees. Promises of higher wages and permanent employment are contingent on the firm's performance. Therefore this strand of literature argues that employees should also be considered as residual risk bearers.

Criticising the 'nexus of contracts' view of the firm, an emerging strand of literature proposes to define a firm as an independent social and institutional entity, which is defined and protected by corporate law (Blair, 1995; Lazonick and O'Sullivan, 2000). Having incomplete contracts, other stakeholders also bear some risk. Therefore, this entity should serve to protect the investments of not only shareholders, but also other stakeholders. In this entity labour is one of the main actors, along with managers and shareholders, who make firm-specific investments and bear residual risk (Blair, 1995; Gospel and Pendleton, 2003).

Blair (1999) argues that the asset-specific character of firm-specific human capital investments creates a contracting problem. In human capital investments, asset specificity arises as employees may not be able to use their skills outside the firm. As discussed in Blair (1999), Becker (1964) argues that 'human capital' investments have higher value in some particular employment relationships than in others<sup>4</sup>. Therefore, when employees make firm-specific investments contracting becomes more difficult, because employees not only have generic skills, whose value can be determined using similar work relations, but also have tacit knowledge, which is only valuable in this firm and brings future cash flow streams only in this in this specific context. In such cases, 'the hold-up' problem may arise. When this problem

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<sup>4</sup> Becker (1964) defines "human capital" investment as the investment made in time and resources to acquire the required skills and knowledge to do a job.

arises, workers may only gain partial returns for their firm-specific investments, which are made privately by them (Chemla, 2005).

Thus, similar to shareholders, employees can also be considered as residual risk bearers as they make human capital investments to develop firm-specific skills that are crucial for the wealth-creating activity of the firm. As discussed above, this human capital investment is also risky, as this investment may not bring the expected benefits as a result of employment relations breakdown. At the same time, employees' sense of ownership can be enhanced by offering ownership stakes to workers, through various schemes such as employee share ownership plans. In such circumstances the main corporate governance problem becomes how to distribute the wealth created by corporations and give the right incentives to all stakeholders who make investments to create this wealth. Appropriate corporate governance mechanisms should encourage such firm-specific investments and develop institutions to protect firm-specific investment made by all parties and create incentives to make such investments<sup>5</sup>.

Consequently, it was suggested that corporate governance is the outcome of the power relations among three main groups of stakeholders: shareholders, managers and employees (Blair, 1995; Gospel and Pendleton, 2005; Gourevitch and Shinn, 2005). For example, according to Gospel and Pendleton (2003) 'corporate governance is concerned with who controls the firm, in whose interests the firm is governed and the various ways thereby control is exercised'. They argue that within-firm conflict of interest is among owners, managers and employees, who may oppose each other and form alliances. Similarly, Gourevitch and Shinn (2005) argue that corporate governance is the result of the interaction of economic preferences of the main stakeholders (owners, managers and employees) and political institutions that promote policies reflecting those economic preferences. All three groups of stakeholders have claims against the firm's cash flows and these conflicts among them are settled outside the firm – by laws and regulations. Each stakeholder group has preferences. Owners want investment protection and higher cash flows, managers want autonomy in decision making and private benefits from controlling shareholders assets, while employees want high wages and job stability. Each group of stakeholders forms interest groups to promote its preferences

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<sup>5</sup> In this regard, Blair (1995, 1999) proposes the "entity" view of firm, according to which firm is set up as a separate legal entity under corporation law and fiduciary responsibilities are assigned to directors (or managers) to protect both shareholders and employees investments. She suggests that the corporate governance mechanisms should be developed based on this view of the firm.

and to fight over rules and regulations to protect their rights. The enforcement of these laws and regulations shapes corporate governance practices. Therefore, the authors argue that corporate governance is the result of political processes, which are shaped by policies and stakeholder preferences. This conflict of interest is settled through the interactions of political forces outside the firm. As a result of such interaction laws and regulations are adopted to protect all stakeholders' rights and define their responsibilities. In sum, Gourevitch and Shinn (2005) conclude that corporate governance is the product of policies, which in turn are the product of preferences of three important groups of stakeholders – owners, managers and employees. In other words, corporate governance is about power relations and responsibilities of the main stakeholder groups.

### **2.2.2 International corporate governance systems and their effect on labour**

Different countries have different ownership and corporate governance systems, which substantially differentiate labour management practices around the world. On the basis of ownership and corporate governance patterns, economies are divided into two major groups: outsider (market based) versus insider (bank based) systems (in the financial economics literature) or 'LMEs' versus 'CMEs' (in the political economy literature) (Franks and Mayer, 1997; Hall and Soskice, 2001)<sup>6</sup>. In outsider systems/LMEs equity ownership is dispersed among many investors, but minority investor protection laws and their enforcement are strong. At the same time, in these economies employment protection laws are weak and labour's role in governance is limited. Given that owners are dispersed, and employees are weak, managers become more powerful (Franks and Mayer, 1997; La Porta *et al.*, 1999). Consequently, in these economies, corporate governance practices include strong laws on protecting minority investors and the enforcement of such laws is considered to be high priority. In contrast, in the insider systems/CMEs governance is negotiated with other stakeholders, such as the state, employees, creditors and others. In these economies, ownership is concentrated in the hands of blockholders, who closely monitor management behaviour. At the same time, employment protection laws are strong and labour has board representatives<sup>7</sup>.

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<sup>6</sup> In the political economy (or *varieties of capitalism*) literature LMEs include the US and UK, while CMEs include Germany and Japan as representative countries.

<sup>7</sup> Some commentators point out that two polar systems do not cover all corporate governance systems worldwide. At the same time recent developments in the LMEs, such as relationship-based investment and decline in capital market liquidity give rise to other forms of corporate governance (Gospel and Pendleton, 2003). Growth of institutional ownership in the LMEs allows such investors to apply relationship-based governance.

What factors lead to cross-country differences in governance systems? There are several views on the origins of corporate governance differences around the world. La Porta *et al.* (1999) propose the legal origin effect (civil law versus common law), arguing that a high degree of minority investor protection in English common law countries created market-based systems, whereas in countries with a low degree of investor protection blockholder-based systems were favoured. For example, La Porta *et al.* (1999) argue that differences in the legal systems create differences in ownership structures, which in turn differentiate corporate governance practices around the world. However, other authors argue that it is difficult to establish causality between legal environments and corporate governance outcomes (Roe, 2003; Franks *et al.*, 2009). For example, Franks *et al.* (2009) argue that mergers and acquisitions based on informal relations between directors and shareholders, not investor protection, influenced ownership dispersion in the UK during the first half of the 20<sup>th</sup> century. As an alternative to the legal origins explanation, Roe (2003) proposes a political environment explanation for the differences in ownership. He argues that two major corporate differences – the degree of separation of ownership from control and the degree of labour influence – play significant roles in differentiating corporate governance practices. Similarly, Gourevitch and Shinn (2005) propose a political intervention explanation for corporate governance development processes. These authors argue that political forces and the interaction of different parties played an important role in changing corporate governance systems around the world.

Gourevitch and Shinn (2005) explain the corporate governance patterns (ownership diffusion versus concentration) by the interaction of economic preferences and political institutions of the main stakeholders. The stakeholders may form coalitions and the ‘winning’ coalition will be able to reflect their preferences in rules and regulations. For example, owners and managers may form a coalition against workers and if they win, this may lead to diffused ownership. Alternatively, if workers win, then this may lead to blockholding ownership. Managers and workers may form a coalition against owners which, whether they win and lose, may lead to blockholding ownership. Another possibility is that owners and workers may form a coalition against managers, where both winning and losing lead to a diffused ownership outcome. Therefore, changes in economic preferences and political institutions, which result from the changes in economic conditions, shape governance rules and regulations (Gourevitch and Shinn, 2005).

In LMEs, when labour is excluded from governance and employment protection is low, under strong market pressure managers may do what shareholders want. In particular, managers place the interests of shareholders above the interests of labour. Acting in the best interests of shareholders, managers may transfer risk onto labour during hard times, by laying off employees. Similarly, being under pressure to create short-term profit for shareholders, managers may avoid long-term human capital investments. In sum, under pressure to maximise shareholder value, managers may favour shareholders' interests over labours'.

In contrast, in CMEs the conflict of interest is triangular – it is among shareholders, employees and managers, although the role of employees differs across economies. In CMEs employees are powerful and can participate in decision-making at board level, being able to protect their rights in corporate restructuring<sup>8</sup>. Thus in LMEs labour may suffer from economic shocks, while in CMEs most of the losses may be incurred by capital.

### **2.2.3 Labour management in liberal market economies**

Recent developments in LMEs are seen as the power shift from labour to shareholders and managers. Lazonick and O'Sullivan (2000) discuss several reasons for this shift. From the 1970s and 80s onwards the ideology of shareholder value maximisation began to become a prominent corporate governance principle. The main governance issue was how to urge managers to serve the best interests of shareholders. Agency theorists argued that it was not in managers' interest to act in the best interests of shareholders and the market was always better to push managers to act for shareholder value maximisation (Jensen and Meckling, 1976). Therefore, agency theorists advocated an active MCC as an effective corporate governance institution that can efficiently allocate resources by replacing under-performing managers. Furthermore, as discussed by Lazonick and O'Sullivan (2000), the rise of institutional investors and deregulation of the financial sector during the 1980s in the US also contributed to the development of the MCC. Due to the 'free rider' problem, widely dispersed shareholders are more inclined to discipline underperforming management through an 'exit' strategy, which could lead to the replacement of an inefficient management team. Under a

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<sup>8</sup> In Germany employees sit on the boards, while in Japan the employees' voice is significant in firm-level decision-making.

strong MCC managers had to adopt a ‘downsize and distribute’ strategy to create value for shareholders at the expense of labour<sup>9</sup>.

One of the main characteristics of LMEs is that they have active capital markets with a large number of publicly listed companies, where ownership is widely dispersed among investors. Liquidity in these capital markets allows shareholders to discipline poorly performing managers through the ‘exit’ mechanism, rather than the ‘voice’. Such capital markets allocate resources efficiently, expanding investment, production and employment. However, efficient re-allocation also means that inefficient firms are closed, resulting in job losses. Pagano and Volpin (2008) also stress the dual effect of finance on labour in LMEs. First, financial markets efficiently reallocate resources, which cause production and employment expansion in efficient companies, but also shutting down and restructuring in inefficient companies. This latter effect may create employment risk.

Gospel and Pendleton (2003) point out that there are three main conditions that facilitate a negative effect of takeovers on labour in LMEs: (1) the relative weakness of statutory employment protection rules, (2) required post-merger rationalisations and (3) the absence of labour from corporate governance. As a result of these three conditions employees may not be able to protect themselves.

Gospel and Pendleton (2003) discuss various ways that finance can influence labour management in different systems. For example, in LMEs the rise of the shareholder value maximisation ideology has increased the pressure on managers to place shareholder interests above those of labour, as weak statutory employee protection rules allow this. Similarly, in LMEs the corporate governance mechanisms (for instance, takeover threat) encourage managers to pursue short-term returns rather than long-term objectives through limited R&D and human capital investments. Accordingly, managers undertake those business strategies that provide short-term financial returns, rather than broader objectives, such as increase in market share. Furthermore, firms are more likely to adopt financial measures to assess the performance of business units, resulting in a disconnection in the decision-making process

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<sup>9</sup> Under the “downsize and distribute” strategy managers cut labour forces to provide a higher return for shareholder equity. Thus the primary role of downsizing is to create shareholder value. However, empirical evidence on the reasons for downsizing and its consequences are limited: whether managers undertake downsizing to stop performance deterioration (which may be essential for firm survival and for the welfare of labour) or to further improve returns, even if it is not required for firm survival.

between senior management and production or service delivery units. Finally, employee commitment is achieved through market-based systems, such as stock options and employee share ownership plans. All these suggest that in LMEs labour management is less favourable and managerial actions will be driven by the dictates of the market.

However, within LMEs the power relations between managers, shareholders and workers are not as simple as predicted by the market model. Gospel and Pendleton (2003) present ‘the managerial discretion model’, which shows that ‘managers can be active participants in governance systems rather than just passive victims or agents of shareholders and other claimants’. Gospel and Pendleton (2003) argue the available evidence is not clearly consistent with the predictions of the market model and in fact labour management is less deterministic than suggested by the prior literature. In particular, due to recent developments governance systems differ from the market model. Such developments include a growing concentration of ownership and the adoption of a relational form of governance by institutional investors. When ownership is widely dispersed, small investors bear the full costs of management disciplining actions, but secure only some of the benefits of such actions. Therefore, in this case ‘exit’ may be their preferred option. However, when institutional investors have more concentrated ownership (but not large blockholdings), they may use more relational forms of governance rather than a market-based form of governance, as the latter may be costly. These give managers a greater degree of ‘strategic choice’ vis-à-vis shareholders and managers use this autonomy to determine their labour management strategies. As a result managers become active participants in the corporate governance, not passive victims of shareholders. Gospel and Pendleton (2005) also conclude that ‘firms may determine their labour strategies and seek investor support for them’. Similarly, Armour *et al.* (2003) argue that although core corporate governance practices (such as takeovers, board structure and directors’ duties) are shareholder value oriented, there are other non-core governance rules (such as insolvency and employment law) that enable other stakeholders to express their voice. In addition to this, the raise of institutional investors has allowed managers to adopt long-term investment strategies rather than opt short-term returns. Therefore, Armour *et al.* (2003) also suggest that ‘the shareholder value model is less deeply rooted than is generally supposed’.

Reviewing prior literature, Pendleton (2009) concludes that although there is some support for the liberal market model predictions (such as shorter job tenure, higher levels of downsizing and more flexible employment) from comparative empirical results, these results are at best

‘suggestive’ due to data problems. At the same time, studies comparing labour management practices of listed and non-listed firms provide no evidence showing that markets pressure managers to institute ‘harsher’ employment relations in public companies. In contrast, this review reveals that labour management is more ‘employee friendly’ in public companies. Pendleton (2009) suggests that benefiting from relational monitoring and a greater autonomy from shareholders, managers exercise more friendly labour management practices. Managers may do so because they may seek a ‘quiet life’. In addition, because public companies are required to be more transparent, managers prefer to take into consideration employees’ interests in making corporate decisions.

#### **2.2.4 Summary and the research issue of the thesis**

On the basis of above discussion, it can be concluded that corporate governance is about power relations between three groups of stakeholders – shareholders, managers and employees. It has been suggested that in LMEs, where shareholder-oriented corporate governance systems prevail, the balance of power has shifted towards shareholders (Lazonick and O’Sullivan, 2000) and towards managers (Gospel and Pendleton, 2003). This power shift makes labour vulnerable to various risks. In particular, the development of the MCC gives some power to shareholders to shift risks onto labour during critical times and redistribute wealth in a way favourable to them. Therefore Pendleton (2009) suggests that understanding the extent of the influence of these occasional, but powerful, events – takeovers – on management decision-making is the key to understanding the effectiveness of the corporate governance systems in LMEs.

In this regard, the employment effects of takeovers have attracted much interest during the last decade. However, the research on the influence of the market model of corporate governance on labour management decision-making has not reached a conclusive point (Armour *et al.*, 2003). To contribute to this literature, this thesis examines the following general question:

*What are the effects of mergers and acquisitions on labour?*

To answer this general question, in the next chapter we develop some specific research questions that can be empirically investigated. For this purpose, first we review the literature on corporate takeovers and their employment effect in the remaining part of this chapter.

## 2.3 Theories of corporate takeovers

### 2.3.1 The Market for Corporate Control

The MCC is defined as competition among different management teams to gain control of shareholders' assets (Manne, 1965; Fama, 1980). In this market one management team, an outside raider, believing that it can manage the assets more efficiently, makes an offer to the shareholders of the target firm, whose assets are not being deployed to their best use. The event of transferring ownership and corporate control to this outside management team is known as a corporate *takeover*. Takeover transactions can be implemented in different ways, including mergers, acquisitions, management buyouts, management buy-ins and divestures<sup>10</sup>.

In practice business combination transactions can take place in a number of forms, but the two most used ones are mergers and acquisitions through tender offers<sup>11</sup>. Mergers are usually negotiated between the two companies' managements and submitted for shareholders' approval. Tender offers are made directly to the shareholders at a specified price and do not require the agreement of the target company's board of directors, sometimes resulting in the replacement of its incumbent management.

Tender offers can be made in two forms: (1) friendly tender offers, which are negotiated and agreed by the management of two merging companies and where the target management recommends acceptance of the offer; and (2) hostile tender offers, in which case there will not be any prior negotiations between the incumbent and outsiders, and the incumbent management will initially advise the target shareholders to reject the bidding firm's offer.

If the management of the target firm does not agree with the acquirer's offer, the acquirer may make a direct tender offer to the shareholders of the target firm, in which case the takeover becomes 'hostile'. As the degree of hostility differs from deal to deal, the definitions of hostile

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<sup>10</sup> Other forms of corporate takeover are proxy fights, internal management buy-outs (MBOs) or external management buy-in (MBIs), leveraged buy-outs (LBOs), private equity takeovers, spin offs, sell-offs, private equity funded acquisitions and divestures.

<sup>11</sup> In mergers two companies combine their businesses to create a new business entity. In an acquisition one firm acquires another, resulting in the disappearance of the latter. However, closer examination of mergers reveals that, as in the case of acquisitions, one firm dominates another and one management team quits the combined business, meaning that one firm takes over another firm. Therefore, the academic literature tends to use the terms "mergers and acquisitions" and "takeovers" interchangeably. This thesis uses the term "takeover" to include both mergers and acquisitions. Similarly, the terms "target" and "bidder" mean "acquired" and "acquiring" firms, respectively.

takeovers differ for different commentators<sup>12</sup>. Generally accepted definitions of hostile and friendly acquisitions are as follows: a hostile (contested or solicited) bid is a bid not recommended by the management of the target firm on first approach by the bidder, whereas a friendly (uncontested, unsolicited) bid is accepted by management on first approach by the bidder.

### **2.3.2 The value-creation theory of takeovers**

It is suggested that takeovers create value through two major sources of gains: (1) performance improvement through economies of scale and economies of scope (*synergy*); (2) performance improvement through replacing under-performing target management and re-allocation of corporate assets to more efficient users (*management disciplining*).

*The synergistic efficiency* motive supporters state that economic gains from takeovers come from rationalisation of production processes as a result of combining the resources and operations of two companies. In particular, efficiency may come from economies of scale and economies of scope or diffusion of know-how. When production can achieve increasing returns to scale, then there are *economies of scale*, which could be achieved by reducing cost per unit, either by increasing production or reducing the input. *Economies of scope* are cost savings that arise when a firm produces two or more outputs using the same set of resources. In addition, it may come from rationalisation in the form of optimal utilization of assets, such as unique production lines or plants. Rationalisation of production occurs when cost savings are achieved through reallocating production across plants within merged firms. Also, when firms with different characteristics merge there may be diffusion of know-how across firms, related to production processes, management systems or R&D. Synergy may come from many different sources, including operational economies, managerial economies, financial or capital-raising economies, bulk buying or marketing economies, tax economies and so on.

Rumelt (1974, 1982) shows that superior performance can be achieved by exploiting economies of scale through acquisition of businesses from related industries: firms that follow

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<sup>12</sup> Schwert (2000) reports that researchers use different measures to define “hostility” in takeovers. For example, the *Wall Street Journal* and *Dow Jones News* describe an offer as hostile when the initial bid is rejected by the target management. The Securities Data Company describes an offer as hostile when the target firm resists an unsolicited offer. The second definition is when the initial or winning bid is unsolicited. The third definition of hostility is based on whether the target is in play (someone has filled in a stock exchange form declaring their intention to acquire control of the firms) or the subject of a takeover rumour reported by the media. The author reports that although there is some positive correlation among these measures, the degree of correlation is not especially high. Based on empirical analysis Schwert (2000) concludes that most hostile deals are not distinguishable from friendly deals.

the strategy of diversifying into related industries achieve the highest levels of profitability, while the firms that follow the strategy of diversifying into unrelated industries achieve the lowest profitability levels. In other cases, merged companies may maximize their tax savings.

*The management disciplining* motive supporters state that takeovers create value by disciplining under-performing management through continuous takeover threat or by replacing it with another management team, who employ the assets more efficiently (Manne, 1965). Fama (1980) argues that even though primary management disciplining comes from the managerial labour market (both within and outside the firm), the MCC provides the last resort of management disciplining. In this regard, it is generally believed that takeovers take place when other internal and external management monitoring devices are not as effective as expected and when there is still an opportunity to improve management efficiency (Scharfstein, 1988).

According to Manne (1965) the MCC provides a valuable asset – improved managerial efficiency – that is separate from economies of scale and market monopoly power. The MCC provides two distinct disciplinary roles: actual replacement of under-performing management and providing continuous threat of replacement. Scharfstein (1988) argues that the MCC plays an important disciplinary role by correctly identifying the reasons for declining shareholder value. This is especially important when ownership and control are separated and shareholders are widely dispersed. The MCC provides dispersed shareholders with the power to protect their investments by enabling them to express their opinion with an ‘exit’ voice. When internal corporate governance mechanisms such as the board of directors, executive compensation or shareholders’ activism are not sufficient to align managers’ interests with shareholders’ interests, the MCC provides an external governance to solve the agency problems. In this context, the literature indicates the MCC as a last resort to discipline badly performing management whose actions diminish shareholders’ wealth.

As there is a high positive correlation between a firm’s market value and its management performance, relative share price decline provides information about the under-performance of the management team, creating a necessary condition for the replacing of this team. In this way, stock markets perform an asset pricing function and re-allocate existing assets to their most profitable users through corporate takeovers (Singh, 1971).

In addition to replacing under-performing management, the MCC provides a takeover threat, which encourages management to concentrate on maximising shareholder value. By providing a continuous takeover threat, the MCC forces managers to focus on efficiency enhancement. Under a strong MCC, under-performing firms become subject to corporate control auctions. Even if a firm's performance is not bad, as long as it is not as efficient as it should be its managers are under threat of losing their jobs (Franks and Mayer, 1996). In this regard, the MCC is seen as a necessary institution of the market economy that provides the required corporate sector restructuring to improve efficiency. As a result of these two important functions of the MCC – actual replacement and continuous takeover threat – shareholders' assets are employed by the most efficient users, thereby enhancing overall economic growth.

Grossman and Hart (1980) state that at the time of contract design both shareholders and managers are symmetrically informed. However, changes in the business environment over time give rise to asymmetric information: managers become better informed than shareholders about the overall business prospects. In this new environment better-informed managers may not employ the required level of managerial effort that satisfies shareholders' interests. In this case a potential acquirer observes the new environment and, using the takeover mechanism, proposes a new contract to the shareholders, thereby improving efficiency in the deployment of the shareholders' assets.

Scharfstein (1988) argues that asymmetric information between shareholders and managers is the main source of contractual inefficiency. To explore the role of asymmetric information in takeover operations, he distinguishes two causes of the target firms' low market value: (a) management inefficiency; and (b) an unfavourable business environment. As uninformed shareholders are unable to make a distinction between these factors, managers are not penalized even though low market value is due to their inefficient performance. This creates incentives for informed managers not to spend the required management effort even if the business environment is favourable and they may derive private benefits using the inability of the shareholders to distinguish the true reasons for the low market value of their assets. This creates a necessary condition for a takeover – a rival management team, being informed about the firm's business environment, may propose to the shareholders a better contract that mitigates the observed inefficiency. In this case takeover occurs, because the informed potential acquirer values the shares at a higher price than uninformed shareholders agree to tender. In contrast, when the state of the world is unfavourable, takeovers do not take place,

because informed potential acquirers do not value the target's shares at a higher price than their contemporaneous market value.

Scharfstein (1988) points out that only under these circumstances:

“the takeover mechanism provides a means of penalizing the manager precisely when he should be penalized – when firm value is low because the manager shirked and not because the environment was unfavourable. Takeovers are beneficial because they make compensation depend not just on managerial performance, but also on the privately observed state of the world”.

Therefore Scharfstein (1988) argues that if shareholders are also able to observe the state of world relative to their investment, then takeovers have no disciplining role, because the shareholders are aware of the true reasons for the low market value. In this case they expect high market value for their shares under the acquiring firm's management. Anticipating share price rises, target firm shareholders do not tender their shares, which leads to a ‘free-rider’ problem.

A fundamental requirement for a firm to be taken over is that its market value should be lower than its true market value. Gort (1969) proposed a neo-classical theory of target asset under-valuation, which suggests that takeovers occur when there are discrepancies in valuation of assets by owners and outsiders. These discrepancies in valuation determine variations in merger rates both among industries and over time. According to Gort (1969) these valuation discrepancies arise due to (1) differences in expectations about future income stream and (2) differences in the risks. Economic disturbances such as rapid changes in technology and movements in security prices generate high variances in valuations by making the future less predictable, because information about the past becomes less useful in estimating the expected income stream and related risk. High variances in valuation raise the likelihood that some outsiders will value assets higher than do the owners who control these assets and in these periods many takeovers occur. The author explains that rapid technological changes contribute to high valuation discrepancies because it is difficult to predict demand volume for new products and production cost (as it depends on the production volume) from past experience. Similarly, rapid changes in share prices also make it difficult to value the shares correctly and, therefore, valuation discrepancies increase. Harford (2005) also supports the view that industry shocks lead to efficient re-allocation of assets through takeovers. But in order to

facilitate economic expansion after industry shocks there should be sufficient capital liquidity and fewer financing constraints to reduce transaction costs.

In sum, supporters of the active MCC conclude that the existence of an informed outside raider leads to greater management efficiency by exerting a continuous takeover threat. Furthermore, within the MCC, acquirers choose precisely those targets where the performance of firms is bad because of under-performing managers, not because of unfavourable business conditions (Manne, 1965; Scharfstein, 1988). When product markets and input markets fail, the MCC corrects the consequences of this failure (Marris, 1964). Therefore takeovers are regarded as efficient and a mutually beneficial exchange of ownership and control.

### **2.3.3 Empirical evidence on the value-creation theory of takeovers**

According to *the value-creation* theory of takeovers, acquirers choose those targets where asset management is inefficient or those companies where synergy will be created by merging two businesses. Therefore, it is expected that firm performance will improve post-merger. In this regard, the related empirical research analyses the pre- and post-takeover operating and stock price performance as well as management turnover to assess the effectiveness of the MCC.

Summarising early empirical work, Jensen and Ruback (1983) argue that takeovers generate value for shareholders, but this value does not come from market power. Therefore, takeovers are considered as positive net present value projects, which justify paying large premiums to target shareholders (Jensen, 1988). Berkovitch and Narayanan (1993) show that in 75% of takeovers there is a positive correlation between target firm gain and total gains, suggesting that in these takeovers synergy was the main motive. Andrade *et al.* (2001) also support the idea that the target gains to shareholders accurately reflect real economic improvements in the form of improved cash flows resulting from effective use of assets after takeovers and conclude that takeovers facilitate an economically beneficial transfer of assets. Similarly, Maksimovic and Phillips (2001) conclude that the MCC facilitates redeployment of assets from low productivity firms to high productivity firms, meaning that well-managed firms acquire badly-managed firms. In sum, a growing number of authors conclude that synergy/efficiency gains motivate takeovers and mergers can be considered as an efficient means of reallocating resources within the economy, creating value for all stakeholders (Andrade and Stafford, 2004; Weston *et al.*, 2004).

However, there is no clear cut evidence on whether synergy or management disciplining is the main source of takeover gains. Bhidé (1989) concludes that in friendly takeovers ‘synergy’ and ‘portfolio management’ were the major motives of acquirers, while in hostile takeovers gains come from selling the businesses of which target companies are constituted.

To prove the *management disciplining* role of corporate takeovers two conditions should be met: targets should be under-performers and their management should be removed during the post-takeover period. Evidence on target firm under-performance is mixed. Industrial economics scholars Ravenscraft and Scherer (1987) and McGuckin and Nguyen (2001) show that acquirers target better performing firms and their performance gets further improved after ownership change, suggesting that there are synergetic gains arising as a result of merging target and acquiring firm businesses<sup>13</sup>. Therefore, these authors cast doubt on the management disciplining role of corporate takeovers.

Similarly, financial economics studies do not provide much evidence on targets’ under-performance. Using both operating and stock return performance measures, Agrawal and Jaffe (2003) find little evidence that targets were under-performing before acquisitions. Franks and Mayer (1996) examine the prior performance of takeover targets using four different measures (share price, dividend changes, cash flow rates and Tobin’s Q). Comparing the long-run pre-takeover performance of successful and unsuccessful hostile takeovers, friendly mergers and two non-merging matched firm samples, this study finds no difference in the performance of these samples for all performance measures. Only Tobin’s Q indicates relative (but not absolute) poor performance for hostile takeover targets. On the basis of these findings the authors conclude that the targets of the hostile takeovers were not poorly performing firms and their performance was not distinguishable from the performance of the friendly takeover targets. In this connection some researchers conclude that the main motive of hostile takeovers is the corporate strategy of acquiring companies to achieve economies of scale, not creating value through correction of managerial failure (Franks and Mayer, 1996). Acquirers may want to expand into new markets or they may expect to gain economies of scale by improving the performance up to optimal level, even though financial failure has not occurred in the past. On the basis of these results Franks and Mayer (1996) conclude that hostile takeovers do not

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<sup>13</sup> In industrial economics performance is usually measured by labour productivity.

perform disciplinary functions. Instead, the authors conclude that hostile takeovers arise as targets reject bids to oppose the redeployment of assets or to negotiate over the terms of bids<sup>14</sup>.

Consistent with this, Schwert (2000) argues that target firm managers reject takeover offers (i.e. make takeover offers hostile) in order to get improved bid premiums (bargaining hypothesis) and to avoid being taken over (management entrenchment hypothesis). Pre- and post-bid share prices and accounting indicators of both bidding and target companies are used to determine the difference between hostile and friendly takeovers. Schwert (2000) finds that a target's prior poor performance, measured by low Market/Book ratio and Return on Equity, do not explain the occurrence of hostile takeovers.

On the other hand, the existing empirical evidence shows high management turnover after takeovers. In particular, CEO resignation after hostile takeovers is significantly higher than the CEO resignation rate after friendly takeovers (Bhide, 1989; Franks and Mayer, 1996; Kini *et al.*, 2004). Lichtenberg and Siegel (1990) find that most post-merger job losses are mainly in central offices, involving senior level managers. Martin and McConnell (1991) report that after takeovers target firm top management turnover is nearly four times higher than the average annual turnover rate during the 5-year period preceding the tender offer. When the full sample is divided into disciplinary (where target management is removed) and non-disciplinary (where target management is not removed) takeovers, the results show significant pre-takeover under-performance for the disciplinary takeover targets in comparison to the targets of non-disciplinary takeovers as well as in comparison to average industry firms. The authors interpret these results to be consistent with the view that the MCC plays an important role in disciplining top corporate managers.

In addition to actual removal of inefficient management, the MCC disciplines managers through continuous takeover threat. Only a few studies investigate the effectiveness of this disciplinary role of the MCC. Bertrand and Mullainathan (1999) report that after adoption of anti-takeover legislation uncontrolled managers raise wages by 1-2%. Bertrand and Mullainathan (2003) provide further evidence showing that when takeover threat declines managers increase wages to workers and the wage increase is higher for white-collar workers.

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<sup>14</sup> Specifically, Franks and Mayer (1996) argue that hostility in takeovers arise due to disagreement over the offered price and restructuring plans of the acquiring company, which better understands the business opportunities for superior future performance.

At the same time, managers do not destroy old plants and do not create new plants, leading to overall productivity and profitability decline. In other words, when takeover threats are reduced managers start enjoying a 'quiet life', forming coalitions with workers against shareholders. Thus, an outside takeover threat helps to restrain managerial self-entrenchment.

Lichtenberg and Siegel (1992) show that under-performing firms become takeover targets. They argue that low productivity indicates a poor match between a plant and its current owner and, therefore, it induces ownership change. Using probit regression analysis, these authors find that low levels of initial productivity are associated with the high probability of subsequent ownership change. In other words, the performance of acquired plants continued in deterioration during the pre-takeover period. In contrast, during the post-takeover period, plants changing ownership achieve 0.5% higher productivity growth relative to plants that do not change ownership. Therefore, Lichtenberg and Siegel (1992) conclude that 'ownership change or asset redeployment is an important mechanism for correcting lapses from efficiency...' and support the argument that the main motive of mergers is to correct managerial failure<sup>15</sup>. In contrast, McGuckin and Nguyen (1995b) argue that 'the motive for ownership change is not simply lapses from efficiency', but that the existence of synergies between combining businesses and related efficiencies triggers takeovers. Their results show that ownership changing plants were plants whose performance was above average (except in the case of the largest firms) and they experience further productivity improvement after acquisitions. This is consistent with the findings of Ravenscraft and Scherer (1987), who conclude that acquired plants were highly profitable before acquisitions and experience no improvement after acquisition. Although these authors support the notion that mergers generate productivity gains, they reject the management disciplining theory. Using a sample of bank mergers Haynes and Thompson (1999b) conclude that within the MCC 'less efficient firms are acquired and reorganised', as firms experience significant productivity gains following acquisitions.

In sum, prior research suggests that takeovers occur to create value for shareholders (Jensen and Ruback, 1983). However, views on the sources of takeover gains diverge: synergy through economies of scale and scope and management disciplining have been suggested as the main

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<sup>15</sup> Using a large sample of UK management buy-outs, Harris et al (2005) also find that ownership changing plants were less productive in comparison to other no-ownership changing plants and experience significant productivity improvement under new management.

sources of takeover gains. Some authors conclude that takeovers are not motivated by disciplinary concerns, arguing that hostile takeover targets are not poorly performing firms but remove the incumbent management regardless of performance level (Franks and Mayer, 1997). Therefore, these authors argue that the disciplinary role of hostile takeovers is weak. Other researchers argue that the MCC enables effective re-deployment of assets. However, in spite of this, the MCC may still provide a disciplinary role, as in this market, assets are transferred to their most efficient users and managers are kept under continuous takeover threat.

#### **2.3.4 The value-destruction theory of takeovers**

Another strand of literature argues that takeovers occur as a result of managerial objectives to achieve private benefits from controlling corporate assets. In particular, takeovers may be undertaken by empire-building managers (Baumol, 1959; Marris, 1964; Mueller, 1969) or over-confident managers (Roll, 1986). It is believed that such takeovers do not create value, but destroy acquiring firm shareholders' wealth. In value-destruction takeovers managers may pay more than the true value of targets because of two main factors. In the first case managers knowingly overpay as a result of *agency* problems between managers and shareholders: managers want to use shareholders' assets to derive private benefits, for example to secure their jobs by enlarging the firm through diversification. In the second case managers unintentionally overpay as a result of *over-optimism*: they systematically overestimate merger-related synergies and their own ability to generate returns. Also cultural clashes between merging firms may cause inefficiencies and preclude the realisation of synergies (Nahavandi and Malekzadeh, 1988; Weber, 1996).

##### *The 'managerial entrenchment' hypothesis*

The literature has long argued that managers pursue firm growth maximisation objectives, rather than shareholder value maximization objectives (Baumol, 1959; Marris, 1964; Mueller, 1969). When control is separated from ownership and owners are widely dispersed, takeovers may be motivated by managerial objectives or agency problems between acquiring firm shareholders and managers, in the manner suggested by Berle and Means (1932). If governance mechanisms are weak, unmonitored managers may use shareholders' assets for their own welfare by accelerating firm growth, even though returns on the investments are low in comparison to opportunity cost of capital. In this way acquiring firm managers may want to

use shareholder assets to derive private benefits, such as to build ‘corporate empires’ and to protect themselves from being taken over by other companies. They may have preferences for accelerated firm growth, power, leisure, prestige and executive compensation.

Jensen (1986) proposes the free cash flow hypothesis of takeovers, suggesting that unmonitored managers use free cash flow for ‘corporate empire’ building rather than returning such extra funds to shareholders. The availability of large unused free cash flow in a company creates the most serious conflict of interest between managers and shareholders when it is used to fund acquisitions. As the payment of cash to shareholders reduces the recourses controlled by the managers (as well as compensation and promotion opportunities), they prefer to invest the free cash flow even in projects with negative net present value. Thus, some value-destroying mergers may occur due to agency problems in the acquiring firms.

Furthermore, managerial self-entrenchment objectives may create takeover gains for target shareholders in the form of overpayment, thereby facilitating wealth transfer from acquirer shareholders to target shareholders. If this is the case, we should observe wealth transfer from bidder shareholders to target shareholders, supported with evidence of significant positive abnormal returns for targets and negative abnormal returns for bidders, assuming that the financial markets are efficient. However, there is no empirical evidence supporting this claim.

#### *The ‘managerial hubris’ hypothesis*

In addition to the above, acquiring firm managers may destroy shareholder value by overpaying to target firms as a result of managerial over-confidence and over-optimism<sup>16</sup>. Roll (1986) proposes the ‘hubris’ hypothesis of takeovers, suggesting that self-confident managers over-estimate the expected synergies and their ability to manage the combined businesses and, therefore, make systematic valuation errors in their decision-making. According to Roll (1986), the market prices of targets should represent their true prices and any offer above this price should be considered as a valuation error. He argues that even though an average market price reflects rational behaviour, in fact markets are populated by instances of irrational individual behaviour. Irrational individuals may make valuation errors that cancel out in the aggregate. Further he suggests that takeovers reflect decisions made by individuals, who

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<sup>16</sup> In contrast to the “managerial entrenchment” hypothesis, the “managerial hubris” hypothesis predicts that acquirers may overpay *unintentionally* as a result of over-optimism: they systematically overestimate their gains from expected synergies and efficient management.

presume that their valuations are correct. Roll (1986) terms such bidders ‘hubris-infected’ bidders, who may make valuation errors, paying too much for their targets<sup>17</sup>. Therefore, the premium is regarded as a mistake made by bidders<sup>18</sup>.

As takeover is an open auction process, where other firms may also bid for the target, the bidder with the most optimistic valuation wins in this process. However, because of the ‘winner’s curse’ problem, the winner of this process turns out to be the loser, as a result of overpayment for the auctioned object. Therefore, Roll (1986) argues that the MCC reflects the ‘winner’s curse’: the bidder with the highest expectations wins the bid, but the payment is on average higher than the true value of the target.

As a result of ‘hubris’ acquiring firm managers make mistakes in evaluating the expected gains from synergies and more efficient management of combined businesses. However, due to information asymmetries it may be difficult to estimate such gains correctly. Furthermore, it may be difficult to predict problems arising as a result of strategic or organizational mis-match and poor post-takeover integration. Therefore acquirers, who believe that they are buying undervalued assets, may be systematically wrong, as efficient markets value assets correctly, incorporating all publicly available information.

Roll (1986) argues that like other markets, labour markets are efficient and therefore managers are employed in their best operational positions, meaning that target firm management replacement should not create value. Similarly, it may be argued that both target and acquiring firms employ an optimal level of workers immediately before takeovers. Therefore, it is reasonable to expect that takeovers undertaken by hubris-infected managers may negatively affect employment, as they need to provide higher returns to cover overpayments. In contrast, takeovers motivated by management entrenchment objectives may not alter employment and wages, as such managers may not need to cut costs to create shareholder value.

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<sup>17</sup> Hayward and Hambrick (1997) cites that hubris is defined as “exaggerated pride or self-confidence, often resulting in retribution”.

<sup>18</sup> Takeover premium is defined as the difference between takeover offer (bid) and market value immediately before the takeover announcement.

### 2.3.5 Empirical evidence on the value-destruction theory of takeovers

As discussed, ‘empire building’ or over-optimistic managers take decisions that may transfer wealth from acquirers to targets and thereby destroy shareholder value. Such managers overpay when internal corporate governance mechanisms are weak. Therefore, prior research analyses the relationship between takeover premium and acquirers’ corporate governance characteristics, such as board size and composition, ownership, Chief Executive Officer (CEO) - Chairman duality and large shareholdings.

Analysing short-run market reaction to different types of acquisitions Morck *et al.*(1990) conclude that managerial objectives drive value-destruction acquisitions. Their results show that unrelated acquisitions, buying growing firms and under-performing targets, produce negative abnormal share price returns for acquirers. Mueller and Sirower (2003) find considerable support for the managerial entrenchment and/or hubris hypotheses, based on short-term market reaction to a takeover announcement.

According to the ‘hubris’ hypothesis overpayment occurs as a result of managerial self-confidence and overestimation, even when there are no takeover gains. Thus, higher managerial hubris should lead to higher overpayment. As there is no direct measure of CEO hubris, different studies use different indirect measures of overconfidence<sup>19</sup>. Hayward and Hambrick (1997) test the direct association between CEO hubris and overpayment, measuring hubris by recent firm performance, recent media praise for CEOs and CEOs’ own perceptions of their self-importance. They find a strong association between CEO hubris and size of premium. Also, the results indicate that the greater the CEO hubris and size of premium, the greater the shareholder losses. Therefore, the authors argue that takeover premiums reflect an overvaluation error.

Seyhun (1990) and Billett and Qian (2005) analyse private stock trading around the time of takeover announcements by acquiring firm managers using their personal accounts. As their evidence does not show that managers knowingly overpay, they reject ‘the managerial entrenchment’ hypothesis. Consistent with the ‘hubris’ hypothesis, Billett and Qian’s (2005)

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<sup>19</sup> Hayward and Hambrick (1997) use recent firm performance, media praise for the CEOs and CEOs’ own opinion of their self-importance, while Malmendier and Tate (2008) also use media characterisation of CEOs as “confident” or “optimistic”. In addition, Malmendier and Tate (2005, 2008) use CEOs’ personal over-investment in their own companies, measured by executive stock options exercise dates: optimistic managers hold their incentive stock options longer, expecting better performance of their companies. Doukas and Petmezas (2007) measure over-confidence with high order acquisition deals and insider trading.

results show that acquiring firm managers become more confident after successful acquisitions and therefore they tend to undertake more new acquisitions. However, over-confident managers will do worse in their subsequent acquisitions. The evidence shows that first deals result in insignificant negative abnormal earnings (-0.10%), but second and further deals provide negative abnormal earnings ranging from -1.21% to -1.96%, which is statistically significant at the 1% level.

Malmendier and Tate (2005) find that over-confident managers overestimate returns to their investment projects and conclude that such behaviour leads to corporate investment distortions. In the mergers and acquisitions context this implies that over-confident managers systematically overestimate their managing capabilities and merger-related synergies. Malmendier and Tate (2008) report that over-confident managers make significantly more acquisitions than non-over-confident CEOs, but the acquisitions made by over-confident CEOs produce significantly more negative market reactions than the acquisitions made by non-over-confident CEOs. The findings of Doukas and Petmezas (2007) also support the 'hubris' hypothesis predictions, showing that multiple acquirers generate lower announcement period abnormal returns in comparison to single acquirers<sup>20</sup>. Multiple bidders perform poorly and generate significantly lower wealth gains than single acquirers in the long run, suggesting that over-confident managers undertake value-destruction mergers.

Girma *et al.* (2006) report that CEO pay is determined based on the increases in firms size, not on the basis of improvements in firm performance. In addition to size effect, merger event itself also increases CEOs remuneration by about 6-7% annually in the years following mergers. CEOs completing hostile takeovers may experience negative pay growth, as such takeovers involve assets divestments (Conyon *et al.*, 2001), which decreases firms size. All these pay raises suggests that managers have important incentives to undertake mergers and acquisitions. However, their results also show that markets distinguish between *the value-creation* and *the value-destruction* takeovers: in the latter case CEOs pay raise is significantly lower than the pay raise in the former case. This suggests that markets punish 'empire building' managers.

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<sup>20</sup> Doukas and Petmezas (2007) define multiple acquirers as those firms acquiring five or more companies within a three-year period.

### 2.3.6 The value-redistribution theory of takeovers

Takeovers could be undertaken to re-distribute wealth among different business stakeholders. This view was first put forward by Shleifer and Summers (1988), who informally introduced ‘the breach of trust’ hypothesis to explain target shareholders’ gains in hostile takeovers. According to this hypothesis a substantial part of the shareholder gains in hostile takeovers could come at the expense of other stakeholders, including employees<sup>21</sup>. As writing a complete long-term contract among all stakeholders of a corporation is costly, usually in practice such contracts are implicit and most of the relationships are based solely on trust. Ex-ante such implicit contracts are valuable for both shareholders and other stakeholders, as they force business participants to make long-term capital investments. However, Shleifer and Summers (1988) argue that even though *ex-ante* these implicit contracts are beneficial to all parties, *ex-post* it may be beneficial for shareholders to breach these contracts by replacing incumbent management through hostile takeovers. Therefore, shareholders agree to sell assets to an outsider management team, capturing substantial gains from such transactions. Outsiders replace the incumbent management, who are responsible for carrying out long-term relationships with other stakeholders. The new management, who are not responsible for implicit long-term contracts made by their predecessors, may re-negotiate these implicit contracts, to cover the high premium paid to target shareholders. This may substantially reduce other stakeholders’ wealth in the form of price negotiations or salary cuts. Thus, takeovers just facilitate redistribution of rents from other stakeholders to shareholders. Consequently, this hypothesis argues that even though the combined total gain for target and bidding firms increases as a result of successful takeovers, at least a part of this gain comes at the expense of other stakeholders. Thus, this hypothesis argues that the main source of takeover gains is wealth redistribution, not wealth creation<sup>22</sup>.

Chemla (2005) predicts that even friendly mergers may involve a breach of trust between shareholders and other stakeholders, and therefore, the author suggests, the existence of a takeover threat reduces the *ex-ante* investments of other stakeholders. In particular, such

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<sup>21</sup> In the literature this hypothesis is known as the “breach of trust”, “wealth transfer” or “rent transfer” hypothesis. Therefore this thesis uses these terms interchangeably.

<sup>22</sup> A recently proposed new theory of takeovers – stock market mis-valuation theory (Shleifer and Vishny, 2003) – suggests that relatively over-valued firms acquire relatively under-valued firms. This theory is the opposite of the “hubris” theory (Roll, 1986) in the sense that the market could be mis-valuing companies and managers rationally use this opportunity. Under this theory wealth is transferred from target firm shareholders to acquiring firm shareholders. Appendix 1 provides a brief discussion of this theory and related empirical evidence.

transactions may affect long-term labour relations. Later Hellwig (2000) and Pagano and Volpin (2005a) further reinforce the idea that managers and workers are natural allies against non-controlling shareholders and therefore they have incentives to make implicit contracts. When incumbent managers have a small stake, they prefer to pay high wages to workers and do not monitor their activities. The reason is that the cost of high wages is borne by non-controlling shareholders, whereas the cost of monitoring is borne by managers: they have to forgo the private benefits of a ‘quiet life’. In contrast, the outside raider or new management, who has a controlling stake, has incentives to cut wages as much as possible and step up monitoring to improve efficiency. It may be beneficial for the raiders to breach such implicit contracts with labour. Pagano and Volpin’s (2005a) model predicts that takeovers that protect shareholders negatively affect employee welfare: after mergers wages decline. Therefore, employees may enter into an agreement with incumbent managers in order to restrict takeover activity and to balance shareholder protection and employee protection.

In sum, the above theoretical models suggest takeovers cause *ex-post* redistribution of wealth by allowing owners to breach the implicit contracts with other stakeholders and thereby enabling them to capture the net present value of future expected extra-marginal wages. This may lead to the waste of workers’ firm-specific human capital investments, as they may not be able to use them in other work relations. This is considered as *ex-post* inefficiency caused by takeovers. In addition to this, takeovers may also cause *ex-ante* inefficiencies: expecting breach of trust employees may not invest in the development of firm-specific capabilities.

### **2.3.7 Empirical evidence on the value-redistribution theory of takeovers**

Most studies in the area of *the value-redistribution* theory of takeovers investigate the rent transfer from employees to shareholders<sup>23</sup>. Summarizing prior literature on rent transfer to shareholders from other stakeholders, such as tax authorities, bondholders and labour, Jarrell *et al.* (1988) state that after takeovers these stakeholders do not incur enormous losses that offset shareholder gains. Therefore, these authors reject the value-redistribution theory of takeovers and conclude that takeovers reflect economic restructuring of productive assets.

Using accounting analysis Froud *et al.* (2000) argue that labour is the first causality in restructuring for shareholder value. As labour is the largest and easily controllable cost

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<sup>23</sup> Section 3.4.1 discusses in more detail the empirical literature on the “breach of trust” hypothesis.

component, its restructuring may contribute to achieving performance targets, when other growth opportunities are limited. These authors argue that especially horizontal mergers provide labour cost cutting opportunities, through the removal of duplicated functions and overlapping activities. However, they conclude that it is difficult to predict the outcome of such restructurings: the expected benefits for shareholders may not materialise and even if some workers suffer from such events, in the long run, such restructurings may benefit other workers. In sum, on the basis of accounting evidence on the labour effect of restructuring for shareholder value, Froud *et al.* (2000) argue that corporate restructuring that works for shareholders may work against labour, although the outcome depends on the macro context, as in many companies labour is the largest cost component that can be easily controlled.

If takeovers facilitate wealth transfer from employees by reducing their number and wages, then there should be a positive relationship between the changes in employee losses and takeover gains. To measure this relation, Rosett (1990) uses a simple ratio of union wealth change to shareholder wealth change. Union wealth change in target companies was measured as ‘the divergence of real wages from the level that would have prevailed without takeover’, by comparing union contracts in the companies for the periods before and after takeover. The results of this study show that only 1-2% of shareholder gains are explained by the union wealth change during the 6 years after takeovers. In the hostile takeover sample, unions’ wealth change increases to 3% of shareholders gain in the 6-year period (10% in an 18-year period). Rosett (1990) concludes that only a small fraction of shareholder premiums can be explained by union wage concessions and post-takeover wage concessions are not a source of shareholder gains. Similarly, Gokhale *et al.* (1995) report little evidence that takeovers are motivated by the expropriation of extra-marginal wages.

Gugler and Yurtoglu (2004) argue that their empirical evidence may be consistent with the ‘breach of trust’ argument, as takeovers completed through tender offers (hostile in nature) reduce labour demand more than mergers do. Amess and Wright (2007) show that in leveraged buyout transactions undertaken through management buying (where new management teams take over control) employment and wage growth is lower than in management buyouts (where the incumbent management retains control). Such differential employment effects of control changes may be interpreted as an evidence consistent with the ‘breach of trust’ argument.

However, in spite of significant decline in employment post-mergers, empirical researchers are inclined to conclude that the results are inconsistent with the ‘breach of trust’ argument, as both profitability and wages rise following acquisitions (Conyon *et al.*, 2001, 2002a, 2004; Margolis, 2006; Amess *et al.*, 2008).

In sum, although there is a large discursive literature suggesting that losses to labour (through layoffs, wage and other benefit cuts) generate all or most efficiency gains, the direct empirical evidence on *the value-redistribution* theory of takeovers is limited (Girma and Thompson, 2007). However, the issue of wealth distribution from workers to shareholders is a key issue in understanding the effectiveness of the corporate governance system in LMEs. Therefore in the next section we discuss some predictions of the takeover theories on labour market outcome and summarise empirical evidence on the job and wage effects of takeovers.

## **2.4 Labour market outcome predictions of the takeover theories and related empirical evidence**

### **2.4.1 Theoretical predictions on the employment effects of takeovers**

The previous discussion indicates that opinions on takeover motives are diverse. Consequently, it is difficult to predict takeovers’ effect on firm performance in general and on jobs and wages in particular. Different takeover theories predict different labour market outcomes. However, none of these theories are generally accepted and consequently the impact of takeovers on jobs and wages is unpredictable.

In general the MCC may provide two distinct effects on labour management. First, *ex-ante* takeover threats may reduce labour efficiency by discouraging workers from making long-term firm-specific human capital investments. Being under takeover threat pressure managers may pursue short-term profits and limit long-term investments (such as staff training) that may be vital for the firm’s competitiveness. Secondly, *ex-post* takeovers may actually lead to job losses or create uncertainties for workers regarding their job prospects. However, in the long run if takeovers lead to efficient use of assets, employees may share improved profits as a result of business expansion.

The above literature suggests *the value-creation* takeovers are undertaken by profit maximising managers through synergies and management disciplining. Then the labour market outcome of such takeovers depends on complementarities of the merging businesses.

Synergetic takeovers should lead to workforce reductions, as merged firms need to adjust their labour input. Disciplinary takeovers should be followed by corporate turnaround, which may result in post-merger employee layoffs that are required to improve firm performance. In fact, hostility may have been aroused as a result of the incumbent's opposition to such restructurings, which may include corporate downsizing. However, in the long run such workforce adjustments should lead to long-term efficiency improvements, resulting in higher profitability and accelerated firm growth, which may create new jobs (Holmstrom, 1988). Consistent with this, Conyon *et al.* (2002a) suggest that short-run workforce reductions may, in the long run, prevent bigger job losses resulting from bankruptcy.

The employment effect of *value-destruction* takeovers depends on managerial objectives. If managers undertake takeovers for 'empire building' purposes, such takeovers may destroy jobs in the long run due to inefficient use of assets, although this type of takeover may not have a negative effect in the short run, as these managers are not interested in cost controls. Managers may overpay knowingly to pursue their own private benefits at the expense of non-controlling shareholders' wealth (managerial self-entrenchment) and in this process they may make employees their allies (Hellwig, 2000; Pagano and Volpin, 2005a). Although empire-building takeovers do not have a negative effect in the short run, they may destroy jobs in the long run. As empire-building managers are not interested in maximising shareholder value the company may eventually become bankrupt or may be taken over by another firm. Similarly, takeovers occurring due to agency problems as described by Jensen (1986) do not need to lead to workforce reductions in the short-run either. (Conyon *et al.*, 2002a) suggest that such acquisitions may be undertaken in unrelated industries to diversify the firm and consequently may not involve any workforce reductions. However, the long-term employment effects of such takeovers are uncertain.

Alternatively, takeovers undertaken by 'over-optimistic' managers, who may overpay unintentionally as a result of over-estimation of expected synergies or their own managerial abilities, may lead to immediate job losses and slower wage growth, as they need to cover the high premiums paid to target shareholders (Sirower, 2000; Krishnan *et al.*, 2007). After such takeovers managers are required to provide high returns to cover the high premium paid to target firm shareholders. One of the frequently cited sources of takeover gains is the cost savings to be achieved by merging two businesses. There are many options of cost savings, such as eliminating duplications, tax optimisation and so on. However, one of the easily

controllable cost variables is the employment cost – managers may at any time change the number of employees and their wages depending on labour demand (Froud *et al.*, 2000).

Finally, *value-redistribution* takeovers may negatively affect employment by leading to dismissal of employees and slowing down wage growth. Firms pay lower wages for younger employees, promising to pay higher wages when they are older. Employees agree to work harder during the early stages of their career, expecting higher wages than their marginal productivity during later stages of their career. They also expect pensions. It is desirable for the outsider to re-negotiate such implicit contracts by replacing the incumbent management in hostile takeovers.

#### **2.4.2 Theoretical predictions on the wage effects of takeovers**

*The value-creation* theory predicts that takeovers positively affect wage growth. If takeovers improve efficiency through synergy realisation or management disciplining, then this also should accelerate wage growth. Mergers may cause improvements in efficiency as a result of post-takeover operating performance rationalisation, elimination of duplicative activities and cost savings, which should increase firm profitability. Both decline in labour demand and increase in labour productivity may lead to a higher level of profitability per employee. For example, Conyon *et al.* (2004) suggest that post-merger labour usage efficiency causes change in firm profitability. In the long run employees may have a share in the higher profitability through faster wage growth and improved work conditions (Holmstrom, 1988).

*The value-destruction* theory predicts that takeovers undertaken by ‘empire building’ managers do not necessarily negatively affect wages in the short run, although in the long run employees may also suffer from inefficiencies brought about such takeovers. Even such takeovers may increase wages, as managers may want to create coalitions with employees against shareholders. In contrast to the above, takeovers undertaken by over-optimistic managers may lead to slower wage growth, in which case managers may want to cover high premiums as soon as possible.

However, *the value-redistribution* theory predicts that takeovers lead to slower wage growth (Shleifer and Summers, 1988). One of the main arguments of this theory is that takeovers create value by reneging on implicit contracts promising to pay higher wages to workers at later stages of their career and encouraging them to invest in firm-specific human capital.

Ownership change may facilitate the firing of older workers, whose wages exceed their marginal product, and hire young workers who are underpaid.

Table 2.1 briefly describes the short term employment and wage effects of takeovers, as predicted by takeover theories. In addition to this, similar predictions could be made on their long-run effects. However, such predictions would be purely hypothetical, as we could not test them due to data availability. Concentrating on the short-run labour effects of takeovers, it could be concluded on theoretical grounds that such effects are indeterminate. Therefore it is necessary to empirically analyse the effect of takeovers on jobs, wages and labour efficiency.

**Table 2.1 Theoretical predictions on the employment and wage effects of takeovers**

Takeover theories	Sources of takeover gains	Employment effect	Wage effect
<i>The value-creation</i> theory of takeovers	Synergy	Negative in short term	Positive in short term
	Management disciplining	Negative in short term	Positive in short term
<i>The value-destruction</i> theory of takeovers	'Empire-building' objectives	Positive in short term	Positive in short term
	Over-optimism in acquisitions	Negative in short term	Negative in short term
<i>The value-redistribution</i> theory of takeovers	'Breach of trust'	Negative in short term	Negative in short term

*Notes:* Prepared based on the inferences from the literature review.

### 2.4.3 Prior empirical evidence on the employment effects of takeovers

Brown and Medoff (1988) use a regression method to analyse post-ownership change in wage and employment growth. This method asks whether ownership change leads to significantly different employment (wage) growth, using employment (wage) as a dependent variable and the ownership-change dummy as a main independent variable, controlling for the changes in wages and employment before the ownership change. The ownership-change dummy indicates the difference between actual employment (wage) growth and estimated growth that would be observed in the case of no ownership change. They estimate that mergers lead to 2% higher employment than the estimated employment in the absence of mergers. However, this is statistically insignificant and therefore seen as a very small change.

Lichtenberg and Siegel (1990) estimate that employment growth in ownership-changing auxiliary establishments is 17% lower than employment growth in those not changing ownership, while employment growth in production establishments which change ownership is 4.5% lower than in those not changing ownership. Lichtenberg and Siegel (1990) report that

ownership change leads to greater employment reduction in auxiliary establishments than in production establishments. McGuckin and Nguyen (1995b, 2001) conclude that takeovers positively affect wages, employment and labour productivity, when plant level data is used. However, these authors show no significant post-merger employment change, when firm level data is used.

Haynes and Thompson (1999a) results show that mergers in the UK mutual sector initially positively affect acquirers' labour demand with subsequent negative effect during three years following mergers. This negative labour demand effect suggests that mergers enhance efficiency in the long run. Furthermore, recent research shows that mergers reduce employment as a result of rationalisations in the use of labour. In particular, the results of Conyon *et al.* (2002a, 2004) and Gugler and Yurtoglu (2004) indicate that during the first two years mergers reduce labour demand by about 12-20%, holding wages and output constant. The authors conclude that this is a result of efficiency improvements. These authors interpret this as being a result of significant rationalisations in labour use and efficiency improvement. At the same time, the employment consequences of mergers depend on the relatedness of businesses. The results of Conyon *et al.* (2002a, 2004) and Gugler and Yurtoglu (2004) show that related acquisitions lead to higher levels of workforce reduction due to higher levels of scope for rationalisation. In contrast, the results of Amess *et al.* (2008) show that related and unrelated acquisitions have a similar magnitude of employment reduction: both types of acquisitions reduce employment by about 16% during the first post-takeover year. Using a French sample, Margolis (2006) reports that the long-run effect (three years after mergers) is positive, although in the short term there may be some job losses. Using a sample from Finland, Lehto and Böckerman (2008) show that both cross-border and domestic mergers lead to employment losses.

In sum, prior research shows that in the US mergers and acquisitions do not negatively affect employment, whereas in Europe they significantly reduce employment. Consistent with this, Gugler and Yurtoglu (2004) do not find any significant adverse effect of mergers on labour in the USA, but in Europe they reduce employment by about 10%. The authors relate this differential effect of takeovers to the rigidity of the labour markets in European economies.

The employment effects of hostile takeovers are much debated. In the UK Conyon *et al.* (2001) find no difference between labour demand effects of friendly and hostile takeovers,

although hostile takeovers steeply reduce employment levels by about 15% immediately after takeovers. These authors suggest that this reduction in *absolute* number of employees is due to the fall in output levels resulting from post-takeover divestments. Controlling for output and wages, Conyon *et al.* (2001) find that both hostile and friendly takeovers reduce the labour demand similarly at the same level by about 7.5%. Thus, hostile takeovers are not associated with significant job destruction and job losses are related to the lower labour demand due to output fall.

#### **2.4.4 Prior empirical evidence on the wage effects of takeovers**

Brown and Medoff (1988) show mergers were associated with 4% slower wage growth in comparison to non-merging firms' wage growth. Lichtenberg and Siegel (1990) find that wage growth in the ownership-changing auxiliary establishments is 9.2% lower than the wage growth in the auxiliary establishments not changing ownership. Similarly, in production establishments ownership change leads to 2.9% lower wage growth, meaning that the negative effect of ownership change on wages is about 3 times higher in auxiliary establishments than in production establishments. In contrast, McGuckin and Nguyen (1995b) report that the US firms which change ownership experience accelerated wage growth. In a later study McGuckin and Nguyen (2001) report that in a 'typical' (average) plant which experiences ownership change wages increase 3% faster than in non-ownership-changing plants. However, wage growth in the ownership-changing large plants (top 10<sup>th</sup> percentile size distribution) is slower than the wage growth in non-ownership-changing large plants. As these large plants employ a substantial portion of the workforce, in their sample 76% of employees had lower wage growth and therefore they conclude that a 'typical' worker experiences wage reduction after takeovers.

In the UK Conyon *et al.* (2004) report that mergers increase wages by 11% within a two-year period, while increase is higher in related acquisitions (14%) than increase in unrelated acquisitions (5%). Amess *et al.* (2008) find that only acquisitions in the same industry cause 20% wage increases, whereas unrelated acquisitions do not change wages.

Overall, prior research concludes that takeovers do not negatively affect wage growth. In particular, prior studies conclude that there is no evidence of wealth transfer from employees to shareholders, supported by wage deterioration after takeovers. In contrast, takeovers cause faster growth in wages, especially in smaller acquiring firms.

## 2.5 Conclusions

This chapter has reviewed the literature on general corporate governance issues. It has been noted that in LMEs the shareholder-value-oriented model of corporate governance may negatively affect labour. In this respect, the chapter has also discussed the related literature on corporate governance in general and corporate takeovers in particular.

The literature points out that the MCC is an effective corporate governance institution that enables efficient reallocation of existing assets. Takeovers are described as an efficient and mutually beneficial exchange of ownership and control, which can bring efficiency improvements through economies of scale and/or replacement of under-performing management. Furthermore, the MCC contributes to efficiency improvement by exercising continuous takeover threats as an external governance mechanism. As shareholders are unable to distinguish the true reasons for the low market value of their assets as a result of information asymmetries, the takeover mechanism facilitates punishment of failing managers, thereby providing timely protection for shareholders.

However, it has been noted that the MCC may excessively pressurise managers to prioritise shareholders' interests over those of labour (Lazonick and O'Sullivan, 2000). Therefore the issue of the interaction between shareholders, managers and employee in shaping corporate governance practices has attracted significant interest. In this regard, recent research has concentrated on the question of how capital providers may pursue management to maximise their returns at the expense of other stakeholders.

There are several ways that governance may influence labour management. For example, governance may influence the balance of interest promoted by managers, pressurising them to prioritise shareholders' interests over those of labour (Gospel and Pendleton, 2003). In particular, the threat of 'exit' and the possibility of subsequent replacement of the managers become a powerful disciplinary mechanism to keep them under continuous pressure to create shareholder value even if it is at the expense of other stakeholders.

However, reviewing the extant evidence on labour management practices, an emerging strand of literature concludes that in practice labour management in publicly listed companies is not as simplistic, as the above discussion implies (Armour *et al.*, 2003; Gospel and Pendleton, 2003, 2005; Pendleton, 2009). These authors' main argument is that the recent developments

in the corporate world are modifying the market model of corporate governance. Such developments include increase in ownership concentration, growth in insider ownership and the strengthening of company directors' duties in the company laws. At the same time, some institutional investors make long-term investments, which are governed by the relationship forms of governance. Overall, this literature suggests that corporate governance is exerted by a relationship form of governance in addition to market-based mechanisms. This mix of governance gives managers some autonomy from shareholders in decision-making and managers may use this autonomy to exercise enlightened labour management. Labour management decisions are made to provide success for companies, not to transfer wealth. In sum, in practice corporate governance may operate differently and its influence in labour management may be different from that described by the market model. In this respect the key question concerns the extent to which takeovers cast a shadow over managerial behaviour in the longer term (Pendleton, 2009).

In terms of employment effect, prior research reports a steep decline in the *absolute* number of workers immediately after takeovers (Canyon *et al.*, 2002a). However, most researchers consider this as an essential step to improve efficiency and conclude that this short-run pain may also benefit labour in the long run by creating the necessary conditions for 'better' jobs and higher wages. Otherwise, their firm may go bankrupt, leading to long-term negative effects for labour. Therefore it is important to understand whether job losses occur due to labour efficiency improvement purposes or whether they occur due to other factors.

## 3 LABOUR EFFECTS OF CORPORATE TAKEOVERS

### 3.1 Introduction

Based on the literature reviewed in the previous chapter, this chapter identifies the following four major areas of contemporary research where the employment effects of takeovers could be empirically investigated. This chapter critiques specific literature in these four areas in order to identify limitations of the prior research and to formulate clear research questions.

One of the main objectives of the thesis is to understand the reasons for post-merger layoffs. In this regard this chapter first identifies several factors that might prompt post-takeover workforce adjustments. We concentrate on four factors, including pre-takeover poor performance of acquired and acquiring firms, the disciplinary role of takeovers, synergy created by mergers and the high premium paid to targets. In this area the main research issue is to examine *why do layoffs often happen post-takeover*.

Another factor that may lead to workforce reductions could be the post-merger performance decline. Furthermore, it is necessary to understand the consequences of workforce adjustments for operating performance: do such adjustments negatively or positively affect performance? We discuss a small, but growing, body of literature on the performance consequences of post-merger layoffs. As post-merger layoffs are a part of wider corporate downsizing activity, we also discuss the literature on performance consequences of downsizing in the wider context. In this area the main research issue is to assess *whether there is any cause and effect relationship between post-merger performance change and workforce change*.

Thirdly, one of the main reasons for layoffs could be the wealth transfer from employees to shareholders. In this regard we discuss the literature on the short- and long-run shareholder wealth effects of takeovers. We also review the literature which investigates the association between shareholder gains and employee wealth concessions post-merger. In this area the main research issue is to test *whether shareholder gains come at the expense of labour*.

Finally, post-merger workforce reductions could be undertaken to materialise synergies arising as a result of decline in labour demand. Therefore we review the relevant literature on the labour demand effects of takeovers. The main issue to be investigated in this area is *whether labour demand decline causes employee layoffs*.

### 3.2 Causes of post-merger workforce adjustments

Prior research shows that mergers involve job losses. For example, Black *et al.* (2007) show that higher levels of mergers and acquisitions activity leads to shorter job tenure, which means that such transactions may result in employee layoffs. Deakin and Slinger (1997) and Lehto and Böckerman (2008) conclude that almost all changes in ownership lead to job losses. Conyon *et al.* (2001, 2002a, 2002b) show that mergers significantly reduce the *absolute* number of workers. However, the factors that may lead to post-takeover employee layoffs are not well understood. On the basis of the literature reviewed in the previous chapter, we identify several factors that might explain post-merger employee layoffs.

Before discussing these factors we need to define workforce downsizing. According to Cornfield (1983) downsizing is “a temporary or permanent termination of an employee from the payroll of an organisation, which results from a decline in labour demand”. Thus, an employee layoff incidence differs from other types of employee dismissal and usually results from a decline in labour demand. In the layoff case a job is eliminated from the payroll as a result of change in the external and internal business environment, while in other cases a job is still available on the payroll, but an employee is replaced. Thus, employee layoffs involving mergers may lead to permanent job losses. Freeman and Cameron (1993) define downsizing as a reduction in organisation size, undertaken by the management of an organisation, to improve efficiency, productivity and competitiveness. Cappelli (2000) distinguishes *downsizing* from more traditional *employee layoffs* undertaken to respond to *external* factors, such as shortfalls in product demand and defines downsizing as “reductions in jobs driven by the desire for operating efficiencies”. Therefore, according to Cappelli (2000), downsizing undertaken to improve operating efficiency is driven by *internal* factors, developed inside the firm, such as changes in production function or employment and management practices.

Haynes and Thompson (1999a) discuss four possible ways that may enhance efficiency in bank mergers, namely: the exploitation of economies of scale, the elimination of duplicated capacity, the transfer of control over assets to better management and the opportunity to renegotiating explicit and implicit contracts post-merger. Each of these possible methods of efficiency enhancement may involve employee layoffs. Following this, we argue that post-merger employee layoffs may be undertaken in under-performing acquired firms in order to arrest further performance deterioration, to discipline inefficient management and to

materialise synergy created by mergers. Furthermore, layoffs could be undertaken to cover high premiums, which may be paid as a result of managerial over-optimism or to transfer wealth from employees to shareholders. Below we discuss prior literature on the role of these factors in explaining post-merger employee layoffs<sup>24</sup>.

### **3.2.1 The need for performance improvement**

When firms perform poorly shareholders expect managers to undertake employee layoffs (Morck *et al.*, 1989). In fact, researchers agree that prior poor firm performance is an important factor in downsizing decisions. The extant evidence shows that layoffs are often undertaken when performance declines (Hillier *et al.*, 2007). Elayan *et al.* (1998), Espahbodi *et al.* (2000), Chen *et al.* (2001) report significant improvement in firm performance after downsizing. Therefore Chen *et al.* (2001) argue that when firms can be viewed as a ‘nexus of contracts’, layoffs can serve to optimise such contracts, which otherwise become sub-optimal as a result of changes in the external and internal business environment.

In the mergers and acquisitions context, Froud *et al.* (2000) argue that labour cost cuts provide relatively easy and unproblematic gains to increase shareholder value, when other growth opportunities are limited. O’Shaughnessy and Flanagan (1998) investigate the role of several factors in explaining post-merger layoffs, including relatedness, target revenue per employee, target financial performance and use of borrowed funds in financing mergers. Their results show that among these factors only relatedness and target employee profitability explain layoffs post-merger. Therefore, they conclude that layoffs are undertaken in labour-intense target firms in order to deal with labour inefficiency.

Another piece of evidence on the positive performance effect of mergers comes from industrial economics literature investigating the labour productivity effect of takeovers. Lichtenberg and Siegel (1992) show that the Total Factor Productivity (TFP) of acquired plants improves post-acquisition. McGuckin and Nguyen (1995b) show that ownership change causes further improvement in productivity: acquired plants had 3 to 10% points higher labour productivity in comparison to non-acquired plants. McGuckin *et al.* (1998) report 16% points

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<sup>24</sup> Post-merger asset divestments and cash payments for targets may be other factors that may explain workforce reductions. However, we do not consider the asset divestment factor, as we do not have enough data to investigate its role empirically. Another possible factor that might lead to a higher level of workforce reduction – cash payments – has not attracted much attention in the literature.

higher productivity increase in ownership-changing plants relative to the non-ownership-changing plants for the US food industry.

### **3.2.2 Hostility in takeovers**

Prior research shows that hostile takeovers lead to a higher level of job losses. There are several reasons for higher job losses after hostile takeovers.

First, the main objective of hostile takeovers is to discipline underperforming managers. Target firms' prior performance could be poor due to inefficient incumbent management, who enjoy a 'quiet life' without making enough effort to monitor employees. In target firms inefficient managers may have employed sub-optimally high levels of staff due to 'empire-building' or preferences of a 'quiet life'. At the same time, unmonitored managers may have paid high wages to workers and not put enough effort into improving overall productivity and profitability (Bertrand and Mullainathan, 1999, 2003). Efficiency improvement may require optimisation of employment levels among other restructurings, the achievement of which may involve some employee layoffs.

However, as discussed above, hostility may occur even if targets are not necessarily underperforming firms. Hostility may arise to secure high premiums or due to the incumbent's disagreement with the proposed restructuring measures, such as employee layoffs. In support of this argument, Franks and Mayer's (1996) results show that directors may be replaced regardless of targets' prior performance. This implies that hostility may arise not to correct managerial failure, but to materialise other synergetic gains.

Additionally, managers may make employee layoffs to protect their own jobs, as suggested by Hillier *et al.* (2007). Under the strong MCC, takeover threats may push managers to cut labour costs: managers may undertake layoffs to secure control over their firms and their own jobs. If they do not undertake layoffs, their firms may become a takeover target and an external management team may use this opportunity to cut costs. In such cases hostility may arise as incumbents expect staff cost cuts and therefore they oppose such takeovers to protect workers (Franks and Mayer, 1996).

At the same time, hostile takeovers are more likely to facilitate wealth transfer from employees to shareholders and therefore, they are more likely to reduce employment levels (Shleifer and Summers, 1988; Pagano and Volpin, 2005a). These commentators argue that

long-term contracts between shareholders and employees could be implicit. Although *ex-ante* such implicit contracts are valuable for both shareholders and employees, *ex-post* shareholders may derive some benefit from reneging on such contracts by firing more senior workers, whose wage exceeds their marginal product, although they were underpaid when they were young. As these implicit contract holders are mainly incumbent managers, shareholders can replace them with new management who are not responsible for adhering to implicit contracts and who may layoff older workers.

Finally, hostile takeovers may involve higher levels of asset divestments post-merger, which may lead to higher levels of workforce reductions. Conyon *et al.* (2001) provide evidence showing that hostile acquisitions lead to higher levels of workforce reductions. However, they conclude that this could be due to high levels of post-merger asset divestments. Conyon *et al.* (2002a) suggest that mergers undertaken by profit maximising managers are more likely to be followed by employee dismissals, suggesting that workforce reductions should be higher after hostile acquisitions than after friendly acquisitions.

Supporting the efficiency enhancement role of hostile takeovers, Conyon *et al.* (2002a) show that hostile takeovers cause greater reductions in labour demand: hostile takeovers reduce labour demand by 17%, while the decline is 9% after friendly mergers. Similarly, Gugler and Yurtoglu (2004) report that tender offers (hostile in nature) produce significantly different labour demand effects from other mergers. However, the findings of Conyon *et al.* (2001) indicate that both hostile and friendly takeovers are associated with a similar decrease in labour demand, averaging 7.5%, after controlling for output and wage changes. Although hostile takeovers cause a steep decline in the *absolute* number of workers, these authors suggest that such a steep employment reduction is the consequence of a high level of divestments after hostile takeovers.

### **3.2.3 Synergy realisation**

It is widely accepted that synergy is one of the primary sources of takeover gains. Mergers may create synergy in many ways, including rationalisations in labour use, economies of scale and scope, diffusion of know-how, reductions in production, marketing and other costs. In addition to this synergy could be created through the elimination of duplicative activities and through consolidation of business operations. The realisation of such synergies requires wide-scale corporate restructuring, which may involve employee layoffs during the post-merger

business integration process. Thus, managers may undertake employee layoffs to achieve synergy. Supporting this view, empirical research shows that a substantial portion of takeover gains comes from labour cost savings-related synergies (McGuckin and Nguyen, 2001) and that mergers lead to rationalisations in labour use (Conyon *et al.*, 2002a).

The higher the similarity of the merging businesses, the higher the synergy. Rumelt (1974, 1982) shows that related acquisitions have a higher level of synergy. Therefore, it is expected that related acquisitions lead to higher workforce reductions than unrelated acquisitions. O'Shaughnessy and Flanagan's (1998) results confirm this prediction: the probability of layoff announcements is higher after related acquisitions than after unrelated acquisitions. This is further confirmed by other studies, which conclude that in related acquisitions workforce reductions are necessary to realise synergy (Conyon *et al.*, 2002a; Gugler and Yurtoglu, 2004).

#### **3.2.4 Managerial hubris**

As previously discussed, Roll (1986) argues that most mergers occur as a result of managerial hubris, where acquirers may overpay for targets, while Hayward and Hambrick (1997) show that there is a positive association between managerial hubris and the premium paid to targets. This overpayment necessitates higher returns during the post-takeover period. Sirower (2000) suggests that high premiums require "performance improvements that are virtually impossible to realize, even by the best executives in the best industry conditions". During the post-takeover period workforce reductions could be undertaken to justify the large premiums, as reducing labour cost is the only available option for managers needing to cut costs immediately (Froud *et al.*, 2000). The results of Krishnan and Park (2002) and Krishnan *et al.* (2007) show that managers pay a high premium and consequently undertake excessive employee layoffs in order to cover such high premiums.

#### **3.2.5 The breach of trust**

Another explanation for post-merger employee layoffs is that they may be undertaken to transfer wealth from employees to shareholders by breaching long-term implicit contracts between stakeholders (Shleifer and Summers, 1988). The literature provides evidence showing that firms pay lower wages during the earlier years of employment, promising to pay higher wages to those workers who invest in firm-specific human capital in later years of employment. Thus, workers are underpaid relative to their marginal productivity during the earlier years of employment and overpaid relative to their marginal productivity during their

later years of employment. Existing empirical evidence shows that extra-marginal wage payments exist (Lazear, 1979). Ownership change and a possible change of the management team creates conditions for breaching such implicit contracts: new managers may lay off older workers who are paid extra-marginal wage payments or they may reduce wage growth. Thus, the breach of trust may be a reason for post-merger employee layoffs.

Gugler and Yurtoglu's (2004) results show that (although mergers do not reduce employment in the USA) tender offers lead to around 8% job losses in LMEs. The authors interpret this to be consistent with the 'breach of trust' hypothesis. In contrast, Beckmann and Forbes' (2004) results show no significant association between shareholder gains and job losses post-merger.

### **3.2.6 Limitations of prior research and further research issues**

The literature suggests several reasons for post-merger employee layoffs. However, prior research is inconclusive on the role of these factors in explaining post-takeover workforce adjustments. In its turn, academic research on the labour effect of the market model of corporate governance is indecisive.

As there are only a very few studies investigating the prior performance of merging firms in post-takeover workforce adjustments (O'Shaughnessy and Flanagan, 1998), we do not know whether post-merger employee layoffs are undertaken in under-performing firms. Similarly, evidence on the role of other determinants of post-merger employee layoffs is scarce: there are only a few studies that investigate the role of industry relatedness, hostility and target firm revenue per employee in explaining post-merger employee layoffs.

It is suggested that hostile takeovers re-allocate assets to efficient users. However, hostile takeovers are also seen as the main restructuring exercise that redistributes wealth from workers to shareholders. Although it is well documented that hostile takeovers lead to steeper job losses, the underlying causes of such workforce reductions are unknown. Conyon *et al.* (2001) suggest that one reason is that post-takeover workforce reductions occur as a result of high levels of divestments.

Prior research shows that acquirers pay high premiums due to managerial over-confidence (Roll, 1986; Malmendier and Tate, 2005). However, evidence on the association between high premiums and post-merger workforce reductions is limited. The extant evidence suggests only that high premiums may lead to excessive layoffs in related mergers (Krishnan *et al.*, 2007).

On the other hand, managers may pay high premiums for high synergy bearing acquisitions that may lead to a higher level of decline in labour demand, arising as a result of the wider scope for the elimination of duplicative activities. This means that such higher premiums lead to higher workforce reductions or slower workforce growth post-acquisition. Therefore, the role of premiums in explaining post-merger workforce adjustments should be further investigated.

Understanding the factors that may lead to post-merger employee layoffs is important as it clarifies the efficiency enhancement implications of takeovers and related layoffs. If takeovers negatively affect employment, two different types of inefficiencies may arise: *Ex-ante* such transactions may reduce the incentives for employees to invest time and effort in improving their company-specific skills, thereby reducing efficiency (Blair, 1995; Lazonick and O'Sullivan, 2000). Thus, employees may not have the required skills to properly undertake their responsibilities. They also may not enter into long-term trust-based implicit contracts. *Ex-post* takeover may increase employee anxiety, stress and uncertainty related to their working future. This may lead to inefficiencies.

This thesis investigates the role of all four of the above discussed determinants of layoffs in one system. This enables a better understanding of the role of each factor, while controlling for other relevant factors. This thesis empirically investigates the following research question:

Q1. *What are the factors associated with post-takeover workforce adjustments?*

Evidence on this question would provide the answer to whether post-merger labour management decisions are influenced by market based mechanisms of corporate governance or whether managerial discretion plays a role in making efficiency-enhancing decisions. Furthermore, new evidence on the causes of post-merger layoffs contributes to the knowledge on the motivations behind corporate takeovers and consequently the effectiveness of the corporate governance mechanisms.

### **3.3 Association between post-merger performance change and workforce adjustments**

It is mostly agreed that acquirers' performance declines during post-merger years (Martynova *et al.*, 2007). However, it is not known whether this performance decline may lead to workforce reductions. A related issue is the operating performance consequences of post-

merger employee layoffs. Empirical evidence on this issue would clarify the effect of workforce adjustments on performance change, in addition to the wider effect of takeovers on firm performance. This evidence would also provide some implications on the causes of post-merger layoffs. Therefore, the thesis also investigates *whether there is any association between post-merger firm performance change and workforce adjustments*.

If post-merger employee layoffs positively affect performance, then it could be concluded that layoffs are undertaken with the purpose of improving performance. If post-merger employee layoffs negatively affect performance, then it could be concluded that layoffs are undertaken with the purpose of covering the high premium paid to shareholders. Therefore we investigate prior literature on the performance effect of post-merger employee layoffs. We concentrate on three areas of literature: literature on the operating performance effect of takeovers, literature on corporate downsizing and literature on performance consequences of post-merger employee layoffs.

### **3.3.1 Evidence on post-takeover operating performance change**

As we need to relate post-takeover operating performance change to workforce adjustments, we briefly discuss prior research findings on the long-run performance consequences of takeovers. Accounting studies provide mixed evidence on this issue: there is no consensus agreement on the positive impact of takeovers on operating performance. In fact, some studies report modest performance improvement, other studies report performance decline, while other studies report no performance change in comparison to non-merging benchmark firms, over a two-to-five year period following acquisitions. For example, Martynova *et al.* (2007) summarize that 14 out of 25 studies report significant performance decline, 6 studies report insignificant change in performance, while 5 studies report significant improvement in performance after takeovers.

In the US, Ravenscraft and Scherer (1987) find no performance improvement after takeovers, while other researchers conclude that performance improves significantly post-takeover (Cornett and Tehranian, 1992; Healy *et al.*, 1992; Switzer, 1996). For example, using a sample of 50 mergers, Healy *et al.* (1992) find significant improvement in asset productivity and cash flow performance. Using a larger sample of 324 mergers, Switzer (1996) confirms the Healy *et al.* (1992) results, arguing that mergers are motivated by synergies. These authors claim that these results are robust for sample size, sample period and other factors, such as payment

mode and industry relatedness. In contrast, using more robust research methods, Ghosh (2001) finds insignificant performance improvement post-merger.

In the UK, Manson *et al.* (2000) report performance gains, using a sample of 44 takeovers, as their regressions of post-takeover operating performance on pre-takeover operating performance provide positive and significant constant terms. Manson *et al.* (2000) also report that estimates of post-takeover performance changes have significant ability to explain the takeover-announcement shareholder gains. Similarly, Powell and Stark (2005) report significant performance improvement, when cash flow return on market value of assets is used as a performance measure. However, their results show no performance improvement, when cash flow return on book value of assets is used as a performance measure. Martynova *et al.* (2007) report that industry-adjusted profitability declines significantly, while matched firm adjusted performance does not show underperformance.

On the basis of this review of the literature, it can be concluded that the research in this area has not reached a clear conclusion on the long-run operating performance effect of takeovers.

### **3.3.2 Operating performance effects of corporate downsizing**

A related issue is the effect of employee layoffs on firm operating performance in general. It is suggested that the primary objective of corporate downsizing is to improve operating performance (Cappelli, 2000). However, downsizing may also negatively affect firm performance. In fact, empirical evidence in this area is also inconclusive. Palmon *et al.* (1997) show that downsizing negatively affects firm performance and Denis and Kruse (2000) find no significant change in industry-adjusted operating performance for layoff firms. Other authors report that downsizing does not alter firm performance (Cascio *et al.*, 1997; Love and Nohria, 2005). In contrast, Elayan *et al.* (1998), Espahbodi *et al.* (2000), Chen *et al.* (2001) report significant improvement in firm performance after downsizing. For example, Elayan *et al.* (1998) show that after layoffs firms start to earn significantly higher return on equity, while net income per employee and sales per employee also significantly increase. Therefore these authors conclude that layoffs increase the efficiency of labour.

In the UK Hillier *et al.* (2007) report that, although layoffs are undertaken following significant performance decline, layoffs do not improve performance: the results suggest that layoffs only halt the decline in operating performance by improving efficiency in

performance, measured as sales per employee and operating profit per employee. In spite of this, Hillier *et al.* (2007) conclude that the impact of layoffs on operating performance is marginal and the sample firms under-perform their industry benchmarks three years after the layoff announcement.

In short, previous research agrees that workforce downsizing benefits firms by arresting further performance decline (Chen *et al.*, 2001; Hillier *et al.*, 2007). However, downsizing is more likely to lead to better performance when firms have higher levels of employment than the optimal, because in this case workforce reductions are less likely to cause organisational disruption (Cappelli, 2000). But it is more likely that downsizing will lead to performance decline when excessive workforce reductions are undertaken, leading to substantial organisational disruptions. Therefore it can be concluded that the effect of downsizing is curve line and contingent on the underlying factors, and firms only improve performance when they move towards the optimal level of employment (Love and Nohria, 2005).

### **3.3.3 Operating performance effects of post-merger employee layoffs**

Similarly, in the mergers and acquisitions context, the performance effect of workforce reductions depends on the actual employment levels relative to the optimal employment levels. Prior research suggests that managers pay a high premium and consequently lay off employees (Shleifer and Summers, 1988; Krishnan *et al.*, 2007). In this process managers may make excessive employee layoffs, as it is difficult to estimate correctly the optimal level of workforce reductions due to information asymmetries and also due to managerial hubris. In addition, in this process talented workers with firm-specific human capital may leave the firm. All these may lead to decline in firm performance.

Krishnan *et al.* (2007) results confirm these predictions: (1) layoffs are positively associated with the size of premium; (2) the size of premium is inversely related to post-takeover performance, meaning that the higher the premium, the lower the performance, which is consistent with Hayward and Hambrick (1997). Therefore, Krishnan *et al.* (2007) conclude that workforce reductions play a mediating role in the association between premium and performance. Consequently, they argue that excessive workforce reductions following large premiums may lead to performance decline.

There are several reasons to believe that post-merger employee layoffs may negatively affect firm performance. First, in this process the target's key staff – 'white collar' managers – usually leave. Franks and Mayer (1996) show that management turnover is significantly higher during a post-merger period than during normal periods. Walsh and Ellwood (1991) show that target managers are not poor performers or 'entrenched managers'. Their analysis reveals that the pre-acquisition performances of these top executives do not determine their post-acquisition prospects. Instead, the best performing incumbents leave during the first year after acquisition, because they could easily find better employment opportunities elsewhere and sometimes they do not want to be associated with poorly performing acquirers. The results of this study also indicate a significant correlation between poor performance and low management turnover in the second and later years, which suggests that acquirers only retain 'deadwood managers', who may not be able to find other employment opportunities.

Secondly, the merger event itself and related layoff incidents may negatively affect the employees' work attitudes. Cultural clashes between merging firms may also cause inefficiencies. Weber (1996) and Nahavandi and Malekzadeh (1988) argue that acquired firm employees feel reduced fit in the combined organisations as a result of cultural conflicts between two merging firms and changing business goals. In addition acquired firm employees may perceive a violation of their psychological contract (Rousseau, 1995). In sum, scholars have also argued that increased job insecurity and uncertainty may negatively affect employee profitability. Post-merger anxiety, uncertainty and job insecurity causes employee stress levels to increase, which in turn negatively affects employee performance and accelerates employee turnover (Buono and Bowditch, 1989; Cartwright and Cooper, 1992; Houghton *et al.*, 2003). Similarly, cynicism arising because of layoffs may cause employees to act unethically (Andersson and Bateman, 1997). Overall, even though downsizing is undertaken to improve operating performance, in the mergers and acquisitions context its real effect may be negative, as shown by Krishnan *et al.* (2007).

### **3.3.4 Stock price performance effects of employee layoffs**

In addition to operating performance, employee layoffs may affect stock price performance<sup>25</sup>. Prior research has shown that layoff announcements may have two different effects on firm

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<sup>25</sup> Layoff making acquirers' long-run abnormal returns may differ from the long-run abnormal returns of acquirers who do not make employee layoffs due to market reaction to the layoff announcements. In other words, there may be share price changes due to layoff announcements made during post-merger period.

value, depending on the context of the announcement. Most studies find that, overall, layoff announcements negatively influence firm value (Worrell *et al.*, 1991; Lin and Rozeff, 1993; Lee, 1997; Elayan *et al.*, 1998). For example, Lee (1997) reports that layoffs reduce firm value by 1.78% in the US and 0.56% in Japan. In the UK Hillier *et al.* (2007) show that firms making redundancy announcements under-perform the market by 0.81% during a three-day event window around the announcement date. Only a minority of layoffs, which are motivated by restructuring-related efficiency improvements, provide positive abnormal returns (Worrell *et al.*, 1991; Palmon *et al.*, 1997). The short-run market reaction also depends on the magnitude (small or large) and duration (temporary or permanent) of the job losses. For example, Worrell *et al.* (1991) report that large and permanent layoffs cause stronger negative returns than other layoffs.

Lin and Rozeff (1993) and Elayan *et al.* (1998) use the declining investment opportunities and efficiency hypotheses to explain downsizing. According to the declining investments hypothesis, redundancy announcements reveal that the company's growth opportunities are reaching their limit and, therefore, the market reaction to such announcements should be negative. According to the efficiency hypothesis, cost cuts through employee layoffs improve future expected profits and, therefore, such cost cuts should increase shareholder value.

However, the market may not react at all to layoff announcements, if the announcements provide no new information. Worrell *et al.* (1991) suggest that, in addition to the negative or positive market reaction to layoff announcements, the market could be neutral if 'the financial problems of a company were well known prior to an announcement and both the company's employees and security analysts expect layoffs'. Furthermore, Worrell *et al.* (1991) report that although, overall, investors' response to job losses is negative, further classification of layoff reasons clarifies the actual market reaction to different types of layoffs. These authors find that the market reaction to layoffs motivated by financial reasons is much more negative than the market reaction to layoffs motivated by other factors. At the same time, the market reaction is positive if job losses are associated with consolidation and restructuring that are not caused by financial distress. Overall, these authors conclude that stock market reaction to layoff announcements is consistent with the efficient market hypothesis.

Similarly, Palmon *et al.* (1997) suggest that investors use managers' explanations cited in the layoff announcements to form their opinion regarding the impact of these events on firm

value. These authors empirically demonstrate that investors consider managements' reasons cited in the layoff announcements as reliable signals of future performance. If managers cite adverse market conditions, such as demand decline or input price increase, as the main reason for job losses, then the market reaction to such job losses should be abnormally negative, as these adverse market conditions should eventually lead to decline in operating performance. If managers cite cost reduction as the main reason in layoff announcements, then the market reaction to such announcements should be abnormally positive, as investors consider such actions as efficiency-enhancing actions. Consistent with this hypothesis, Palmon *et al.* (1997) find negative abnormal returns for firms which eliminate jobs as a result of adverse market effects and positive abnormal returns for firms which eliminate jobs to achieve efficiency improvements.

The prior research also shows that the markets may identify the companies with expected redundancy announcements well before the announcement date. Collett (2002) reports that the abnormal returns gained by layoff-making firms during a 30 day pre-announcement period are significantly negative (-3.4%). Hillier *et al.* (2007) report that during a window of (-750, -2) firms making layoffs earn 15 % (11%) mean (median) negative abnormal returns. However, post-layoff long-run stock price performance is not significantly different from the average market return (Chen *et al.*, 2001; Hillier *et al.*, 2007).

Collett (2002) argues that the market reaction to a redundancy announcement depends on the level of innovation in the announcement. If the announcement reveals no information about declining trading opportunities, then the market may consider the announcement as new information which reveals the expected poor performance. In this case the market receives this as the first confirmation of future expected under-performance and revises its expectations based on this announcement. In contrast, if the company has already informed the market about declining trading opportunities by issuing profit warning(s), then the announcement may be viewed by the market as a necessary action to improve the company's performance.

In sum, layoff announcements may affect firm value, as they provide new information to the market about the changes in future expected cash flows. However, the direction of the market reaction to layoff announcements may vary, depending on whether layoffs are permanent or temporary, small or large, a single announcement or a part of series of announcements, proactive or reactive. Thus, downsizing may have two different effects on firm value,

depending on the underlying reasons for the employment layoff. On one hand, the market may negatively react to the layoff announcements if the reason for this event is the decline in product demand or adverse market effect. On the other hand, employee layoffs caused by the need to cut costs positively affect share price. Therefore, it is difficult to predict the differences in abnormal returns of layoff-making acquirers from the abnormal returns of the acquirer that does not make layoffs.

### **3.3.5 Limitations of prior research and further research issues**

One limitation of the prior research in this area is that it does not consider post-merger performance decline to explain workforce reductions following mergers. Furthermore, although the effect of downsizing on firm performance is well researched, the evidence on the performance consequences of post-merger employee layoffs is limited. Such limitations preclude researchers from making some decisive conclusions on the motivations behind post-merger employee layoffs. One of the main reasons for this inconclusiveness is that there are simply very few studies investigating the performance consequences of post-merger layoffs.

Investigating performance consequences of post-merger layoffs using a regression analysis, Krishnan *et al.* (2007) conclude that in related acquisitions workforce reductions negatively affect firm performance. However, a limitation of this study is that it uses performance levels as the dependent variable in the regression and investigates the association between performance levels and workforce reductions. There may be an association between performance levels and workforce reductions. However, this association does not prove the direction of the causality between the performance levels and workforce reductions: firms may reduce employment after poor performance or, alternatively, workforce reductions may lead to poor performance. In both cases, the firms which experience higher levels of workforce reductions may have lower levels of performance than the firms which experience lower workforce reductions. Therefore, it may be more informative to investigate the association between operating performance change and workforce changes post-merger.

Another limitation of the prior research in this area is that accounting-based studies only measure the post-takeover performance change relative to the pre-takeover performance. Although methodologies for measuring the performance change are comprehensive, these studies do not investigate the possible determinants of the acquiring firm's underperformance, which is well documented in the literature (Martynova *et al.*, 2007). Specifically, research

mainly focuses on deal-specific characteristics, such as payment method (cash versus stock), deal method (tender versus merger) or takeover mode (hostile versus friendly), as the possible determinants of post-merger performance differences. Although these characteristics are important factors, they are not capable of fully explaining the question of why some mergers fail, while others succeed. Empirical research that investigates the real economic factors that may lead to merger success or failure is limited. Therefore, as Becht *et al.* (2003) point out, we do not know much about the underlying real sources of takeover gains. In other words, the factors that lead to superior or poorer post-takeover performance are not known.

Post-takeover workforce adjustments can be considered as one of the factors that may alter operating performance change through efficiency enhancement and synergy realisation. However, there has been no study that examines the association between performance changes and workforce adjustments within the mergers and acquisitions context. We empirically investigate the following question:

*Q2. What is the association between post-merger performance change and workforce adjustments?*

Although post-takeover operating performance change is well researched, the evidence on the relationship between post-merger performance change and workforce adjustments is limited. Therefore new evidence on this question would clarify whether workforce reductions positively or negatively affect performance. Furthermore, this evidence could be used to make some inference about the underlying factors that may lead to workforce reductions. In other words, some conclusions could be made on the issue of whether post-merger workforce reductions contribute to synergy realisation or destroy human capital of acquired firms.

### **3.4 Shareholder gains and employee wealth concessions**

Rent transfer from employees to shareholders has been suggested as one of the main sources of takeover gains in the literature. In this connection, this thesis investigates *whether there is any association between shareholder gains and employee wealth concessions post-merger.*

Shleifer and Summers (1988), who propose the ‘breach of trust’ hypothesis, base their arguments on the idea that corporations represent a ‘nexus of contracts’ among different stakeholders, where some of the contracts could be implicit. In particular, long-term contracts

between shareholders and employees could be implicit. Although *ex-ante* such contracts are valuable for both shareholders and employees, *ex-post* shareholders may derive some benefit from reneging on such contracts by firing older workers, whose wage exceeds their marginal product, although they were underpaid when they were young. As these implicit contract holders are mainly incumbent managers, shareholders can breach these contracts by replacing the incumbent management through ownership change.

#### **3.4.1 Evidence on the association between shareholder gains and employee wealth concessions**

A number of studies have empirically tested the ‘breach of trust’ hypothesis, with early studies considering the relationship between changes in union wealth and shareholder gains. The basic assumption of these studies is that unionism facilitates high rent capture for employees through higher wages, higher staffing levels and greater influence for management than in other non-unionised firms. Ownership change may enable new management to strike a bargain with unions on rent-sharing agreements, re-distributing some of the gains from employees to shareholders.

Some of these studies support the ‘breach of trust’ hypothesis. Becker’s (1995) results show significant additional gains to target firm shareholders when the target firm is unionised, meaning that those gains come at the expense of unionised labour<sup>26</sup>. Rosett (1990) investigates the role of union wealth concessions in explaining a rise in share prices, using a sample of unionised targets. Union wealth concessions are estimated on the basis of the changes in real wage growth from a point in time two contracts before takeover to two contracts after takeover. The regression analysis indicates that hostile takeovers do not cause lower real wage growth than friendly takeovers, while coefficients on both takeover and hostility dummies are insignificant. However, Rosett (1990) concludes that rent transfer from employees could be a significant source of shareholder gains: in friendly takeovers unions lose 5% of what shareholders gain within 18 years, while in hostile takeovers unions’ losses account for 10% of shareholders gain. The findings of Peoples *et al.* (1993) show that mergers do not affect to wage levels of non-union members, as there is no difference in wages of non-union workers in

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<sup>26</sup> Becker (1995) uses a regression analysis to study the relationship between unionism in target firms and target shareholder gains. The dependent variable is the target shareholder gains and the main independent variable is either a dummy variable indicating whether any of the firm’s employees were represented by a union or a continuous variable indicating the percentage of the total workforce enrolled in a union sponsored pension plan. Both variables indicate statistically significant additional gains to target shareholders.

merger-intense and merger non-intense industries. In contrast, the union members' wages in merger intense industries is 18% lower than wages in other industries.

However, some other studies reject the 'breach of trust' hypothesis. Gokhale *et al.* (1995) argue that in testing for the wealth transfer hypothesis extra-marginal rent earned by employees is more relevant than the simple changes in employment or wages. The study particularly looks at two types of extra-marginal rents, defined as employer-specific wage differentials and steeper-than-average wages growth for older workers, constructed on the basis of data from an employer salary survey. Several empirical studies (for example, Krueger and Summers (1988)) report that unexplained wage differences exist among the firms even within the same industries with similar financial indicators. The second type of extra-marginal wage – higher than average wage for long-tenured workers – is based on Lazear's (1979) long-term incentive contract. (Lazear, 1979) suggests that it is preferable for both firms and workers to agree to a long-term wage stream that pays workers less than the value of their marginal product when they are young and higher than the value of their marginal product when they are old. Such an extra-marginal wage provides a long-term incentive contract that encourages workers to make firm-specific human capital investment.

Based on these two types of extra-marginal wage, Gokhale *et al.* (1995) investigate whether firms with high extra-marginal wage payments are more likely to be targets of hostile takeovers (*ex-ante* analysis). Further, the study analyses whether extra-marginal wage payments decline after hostile takeovers (*ex-post* analysis). *Ex-ante* tests show no evidence of the relationship between extra-marginal wage payments and the probability of takeovers' being hostile. However, *ex-post* tests show that only hostile takeovers reduce one form of extra-marginal wage payments: they lead to less employment and flatter wage payments to more senior workers, while other types of mergers do not negatively affect more senior workers. Although these results are consistent with the 'breach of trust' hypothesis, employer-specific higher than average wages continue to rise after hostile takeovers, which contradicts this hypothesis. Therefore these authors suggest that in the long run an active corporate control market may diminish the effectiveness of the Lazear-type solution to the problem of monitoring workers' effort.

Neumark and Sharpe (1996) examine the relation between the probability of being the target of a hostile takeover and the existence of extra-marginal wage payments, in the form of a high

wage premium and a steeper-than-average wage profile. However, this study is limited to *ex-ante* analysis alone: i.e. it attempts to predict hostile takeover targets on the basis of extra-marginal wage payment variables. As the results do not show that these variables are unrelated, the authors do not support the wealth transfer hypothesis. Similarly, Fallick and Hassett (1996) report that unionisation does not have a direct impact on the probability of being a takeover target; instead, firms merge with a firm with the same union status, which does not support the wealth transfer hypothesis.

In the UK only one study – Beckmann and Forbes (2004) – has investigated the direct link between shareholder gains and employment losses, using a sample of 62 takeovers. Although the study uses a small sample, the advantage of this study is that the employment and wage effects of takeovers are estimated taking into consideration the relevant divestments. This study reports that employment declines 11% during a five-year period post-takeover, after correcting for the divestments. In addition the cost-per-employee growth is larger than the expected benchmark wage growths (pre-takeover observations-based estimated wage growth and industry average wage growth). The regression of target shareholder gains on job cuts and changes in cost-per-employee indicates no significant explanatory power for these variables.

In addition to union wealth change, some studies have looked at employee layoffs, pension fund terminations and other sources of target shareholder gains to test the wealth transfer hypothesis. Bhagat *et al.* (1990) and Bhide (1990) undertake case studies of small hostile takeovers, and conclude that although takeovers cause layoffs, the cost savings from these layoffs cover only 10-20% of the premium and therefore they are not the driving forces of takeovers. In addition to this Pontiff *et al.* (1990) report that 15% of hostile acquirers and 8% of friendly acquirers reverse pension assets and this can account for about 11% of the premium in the cases where they actually occur. Although pension plan terminations are higher after hostile takeovers than after friendly takeovers, the authors conclude that the size of the terminated contracts is not significant enough to explain the shareholders' gain.

### **3.4.2 Takeover announcement gains of target firm shareholders**

It is now a stylised fact that target shareholders capture the majority of gains from takeover activities. In the US target shareholders gain 16-30% (Jensen and Ruback, 1983; Bradley *et al.*, 1988; Andrade *et al.*, 2001). Franks and Harris (1989) conclude that after controlling for the takeover type (tender offer or other), UK and US target shareholders' takeover

announcement returns are ‘strikingly similar’. For example, UK target shareholders gain 25-30% abnormal returns (Franks and Harris, 1989; Kennedy and Limmack, 1996). European target shareholders earn a short-term takeover announcement abnormal return of about 10% and a cumulative abnormal return of 23%, including the pre-announcement price run-up over two months (Goergen and Renneboog, 2004). Similarly, Campa and Hernando (2004) report 9% abnormal returns for target shareholders in Europe.

### **3.4.3 Takeover announcement gains of acquiring firm shareholders**

Evidence on short-run bidder returns is mixed. In the US, Jensen and Ruback (1983) report positive returns to bidders in successful tender offers (4%) and zero returns in successful mergers, and negative returns in unsuccessful tender offers and mergers. However, in contrast to this Dodd (1980) reports significant negative abnormal returns in both successful mergers (-7.25%) and cancelled mergers (-5.5%). Similarly, Malatesta (1983) provides evidence of a negative effect of takeovers on bidder shareholders’ wealth by two measures: abnormal dollar return and abnormal rate of return. Andrade *et al.* (2001) report that the three-day abnormal return for an acquirer is -0.7% (-3.8% in a longer window of time), which is not statistically significant.

In the UK, Firth (1980) finds that bidder shareholders lose significantly around takeover announcements (-6.7%), while Franks and Harris (1989) report that bidder gains are close to zero or modest. Similarly, Limmack (1991) reports that bidders’ announcement-period abnormal returns are insignificant (-0.2%). More recent studies show that upon takeover announcement acquirers’ wealth reduces significantly: 1.4% for the overall sample (Sudarsanam and Mahate, 2003), 1.5% for friendly and 1.9% for hostile takeovers (Sudarsanam and Mahate, 2006). Similarly, Conn *et al.* (2005) report that UK domestic public acquirers earn significant negative abnormal returns (-0.99%), while cross-border public acquirers earn zero abnormal returns. This study shows that share prices of public companies which acquire private companies appreciate significantly (0.86%) upon the announcement of takeovers.

Earlier event studies report that acquirers earn a zero mean abnormal rate of return around a takeover announcement. However, there is some evidence that acquirers’ takeover announcement gains become worse over time. Recent studies find small, but statistically significant, negative abnormal announcement-period returns for acquiring firm shareholders

(Sudarsanam and Mahate, 2003; Conn *et al.*, 2005; Cosh *et al.*, 2006) . In Europe bidders gain a statistically significant abnormal return of 0.7% upon the bid announcement, but Campa and Hernando (2004) report zero abnormal returns.

#### **3.4.4 Long-run abnormal returns of acquiring firm shareholders**

Early US event studies reveal negative long-run post-takeover abnormal returns for acquiring firm shareholders (Travlos, 1987). However, Franks *et al.* (1991) conclude that previously-reported post-takeover abnormal returns may be due to deficiencies of the applied benchmark models, as their improved methodology does not provide any abnormal returns. As in other studies, acquirers earn abnormal returns when conventional benchmarks are used, however, these abnormal returns disappear when abnormal returns are regressed on benchmark portfolios, matched on firm size, past returns and dividend yield. This study measures abnormal returns as the intercept of the regression of the acquiring firm's abnormal returns on the excess returns of *ex-ante* mean-variance efficient portfolios, constructed taking into consideration different factors, including firm size, dividend yield and past returns. However, adjusting for the size effect and dividend yield effect, the results of the Agrawal *et al.* (1992) study show that acquirers' wealth is reduced by a significant 10% over the period of five years following takeovers. Moeller *et al.* (2005) report that during the latest takeover wave in 1998-2001 US acquiring firm shareholders lost 12% of their investment.

In the UK, Franks and Harris (1989) report that for a large sample of takeovers market model produce significant negative abnormal returns (-12.6%), while the Capital Asset Pricing Model (CAPM) produces significant positive abnormal returns (+4.5%) for bidding companies. Using different asset pricing models, Limmack (1991) and Gregory (1997) conclude that in the long run shareholder wealth effect of takeovers is unambiguously negative. Comparing domestic and cross-border public and private acquisitions, Conn *et al.* (2005) report that acquisitions of domestic public companies result in significant negative returns of 19.78%, while cross-border public acquisitions result in significantly negative returns of 32.33%. In contrast, Higson and Elliott (1998) show that for the sample of 776 companies which made acquisitions during 1975 – 1990, the abnormal returns in the three years following takeover are zero.

Furthermore, the research provides evidence that the magnitude of bidder returns is related to the bidders' characteristics (size and valuation), payment mode and takeover mode. Loughran

and Vijh (1997) report that in cash-paid acquisitions shareholders gain 19%, whereas in stock-exchange acquisitions shareholders lose 25% during a five-year post-takeover period. Sudarsanam and Mahate (2003) report that on average shareholders lose 15% of their wealth in the long run and the magnitude of the loss differs according to the type of acquirer. For example, glamour (high Price/Earnings ratio) acquirers' abnormal returns range from -47% to -17%, while value (low Price/Earnings ratio) acquirers' abnormal returns range from -9% to -2%. Takeover mode also affects acquirers' post-acquisition performance: Sudarsanam and Mahate (2006) report that friendly acquirers lose 10%, multiple hostile acquirers lose 5% and single hostile acquirers' wealth does not change in the long run.

Consistent with the free cash flow hypothesis (Jensen, 1986), Lang *et al.* (1991) argue that cash flow explains US acquirers' returns. In the UK, Sudarsanam and Mahate (2006) provide evidence which supports the view that high cash flow is associated with value decreasing acquisitions. In contrast to this, conducting similar empirical research to that of Lang *et al.* (1991), Gregory (2005) fails to find support for the free cash flow hypothesis: in the long run the acquirers with high cash flow perform better than the acquirers with low cash flow.

Briefly, these studies report significant long-term negative abnormal returns to the acquiring firm shares, which result in a negative wealth effect in combination with the target shareholders' gain around the bid announcement period (Andrade *et al.*, 2001).

Slusky and Caves (1991) point out that zero mean combined abnormal rates of return for target and bidder need not indicate positive overall gains to shareholders, as such a typical bidder is much larger than a typical target, meaning that abnormal dollar returns may be negative. The Moeller *et al.* (2005) study results confirm this proposition; they report that acquiring firms on average gain 1.1%, but in dollar terms they lose \$25.2 million per acquisition. They argue that this contradictory result is due to combining small and large firms in one sample. Their analysis shows that shareholders of small firms earn \$9 billion from acquisition during the period of 1980-2001, whereas the shareholders from large firms lose \$312 billion. Their results show that the managerial hubris hypothesis is more applicable to large firms than to small firms. They conclude that the size effect is robust and persistent over time.

If bidder returns are not positive why do firms make acquisitions? Schipper and Thompson (1983) argue that acquiring firms gain abnormal returns well before the announcement of takeovers due to the leakage of information on the corporate expansion programmes. Weston *et al.* (2004) argue that zero mean returns are consistent with the competitive market: in this market shareholders should only earn the cost of their capital. An alternative explanation is that if a firm does not merge with another firm, then a third firm may take this opportunity and in this case the profitability of the first firm will be even worse than in the case of merger. Fridolfsson and Stennek (2005) develop a model where they show that even if a merger reduces profit when compared to the initial situation, it may increase profits when compared to the relevant alternative – in this case, another merger between rival firms.

### **3.4.5 Alternative explanations for the distribution of takeover gains**

There are several explanations for the capture of most takeover gains by targets. First, markets expect that takeovers facilitate more efficient redeployment of target firm assets. Therefore, in a competitive market, a high premium is a fair price, not an abnormal one, to be paid to shareholders (Weston *et al.*, 2004). Thus, target shareholders may only be receiving the ‘fair value’ of their shares, compensating for the past poor performance of managers. In a competitive auction this gain can be viewed as the price that the next best efficient management team is going to pay to target shareholders, because acquirers believe that they can improve the target’s performance. Thus, this increase in share prices reflects the market’s anticipation of the target’s future improved performance, i.e. the belief that in the future their assets will be used as efficiently as other assets.

In addition to this, the literature points out three conditions that enable target shareholders to capture most of the takeover related gains: ‘free-riding’ by target firm shareholders (Grossman and Hart, 1980), pre-emptive bidding, that is the possibility of a competitive bidder appearing (Fishman, 1988, 1989) and takeover defences<sup>27</sup>.

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<sup>27</sup> There are other views on this. For example, Bradley *et al.* (1983) argue that to achieve synergy assets should be re-allocated and combined with acquiring firm assets. In this process the target shareholders have decision-making power and therefore they are capable of capturing most of the takeover gains. When new information is released about the re-allocation of assets, the market takes into consideration the revealed opportunities and revises the asset valuation on the basis of the expectation of future changes in these variables. In this situation other informed companies may also bid for control over the target, thereby enabling the target shareholders to capture most of the gains.

### *The 'free-rider' problem*

The 'free-rider' problem arises in the case of widely dispersed ownership, where every small shareholder thinks that his decision to tender his share will not affect the takeover results and, therefore, may not tender his shares, expecting higher benefit from the improved firm performance after the takeover. As a result a raider may not be able to gain the majority of shares that enables him to exert corporate control over the firm. Thus, to secure control over target firm assets bidders have to pay a high premium.

### *Pre-emptive bidding*

The arrival of a competitor creates an auction-style contest among bidders and enables targets to capture the majority of takeover gains. Fishman (1988, 1989) develops models which show that for bidders it is more appropriate to put in a high bid from the start of the takeover battle, rather than raising it gradually after the arrival of competing bids. According to this model, the initial offer made by the first bidder conveys useful information, which can be analysed by other possible bidders and constitutes the basis for their decision-making. Acquiring further information about the target is costly. The second bidder analyses the first bidder's offer and compares it with his valuation. Based on this analysis the second bidder decides whether to acquire further information, necessary for making a higher offer. In this 'strategic interaction between bidders', the initial high bid of the first bidder signals a high valuation and thereby deters possible competition. Therefore the first bidder takes the consequences of this interaction into consideration when formulating his initial offer and this leads to a high-bid premium.

### *Size effect*

One of the reasons why bidder shareholders do not gain significant positive abnormal returns is that they are very large in comparison to the acquired firms, so when the value created by takeover is divided between large bidder and small target, the effect of the divided gain may be insignificant to the large bidder and significant to the small target, depending on the size of synergy. Moeller *et al.* (2005) find a significant size effect on takeover announcement returns on shareholders. Small acquirers earn 2% higher abnormal returns than large acquirers. Additionally large firms often undertake several acquisitions over time and the market expects

new takeover announcements well before the actual announcement. This expectation results in a smaller price effect when a particular type of takeover is announced.

### *Takeover defences*

Takeovers affect the wealth distribution among different stakeholders. For example, managers and employees may lose their jobs or may have slower wage growth. Therefore, an active MCC may discourage managers from making investments to develop firm-specific human resources or may push them to sacrifice long-term strategic projects for the benefit of short-term profitable projects. In short, takeover threat may cause the divergence of interests between managers and shareholders. Therefore, in order to align managers' incentives with the shareholders' incentives and to prevent the undervalued transfer of assets, it is desirable to grant managers some kind of anti-takeover defensive measures. Berglof and Burkart (2003) define defensive measures as 'changes in the firm's assets or liabilities, meant to make takeovers unprofitable, to be implemented when control is threatened by an outside bid'<sup>28</sup>. Strong defensive measures reduce the number of takeovers with their disciplinary role, and therefore they should be subject to shareholders' approval. At the same time there are a number of defensive measures that are not subject to shareholders' approval. One example of such defence measures is the employee commitment to the business.

Employment policy can be used as an anti-takeover device. Pagano and Volpin (2005a) formally show that it is preferable for the incumbent management enter into implicit contracts with the employees, which can serve as takeover defences. When the private benefit of control is high and managerial ownership is low, managers may offer high wages to workers, turning employees into a 'white squire'<sup>29</sup>. In addition to this, they may offer long-term contracts, which are not subject to re-negotiations in future, thereby transforming employees into a 'shark repellent'. At the same time managers do not exert enough effort to monitor employees too strictly. Employees fight hostile takeovers to protect their high salaries and long-term

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<sup>28</sup> The literature distinguishes two types of corporate anti-takeover measures: (1) *measures that require shareholders' approval* – poison pills, staggered boards, blank check preferred stock, and others; (2) *measures that do not require shareholders' ratification* – increase in profits, dividends or asset revaluation, corporate restructuring. Jarrell *et al.* (1988) conclude that defence devices that require shareholder approval are less likely to be harmful to shareholders' wealth than those that can be implemented without shareholders' approval.

<sup>29</sup> As discussed in Pagano and Volpin (2005a), 'a white squire' is a friendly investor who purchases a stake in the target of hostile takeover to fend off a raider, without taking control of the company. It differs from a 'white knight', who is a friendly investor that takes over a company instead of the raider. 'A shark repellent' is an amendment to a company charter to make it unattractive to the raiders.

contracts. The MCC is expected to correct such managerial behaviour; however, managers use such employment policies to defend themselves against being disciplined by takeovers.

Pagano and Volpin (2005a) suggest that such employment policy-based takeover defences are most efficient in those countries with strong employment protection laws. Such laws should limit raiders' ability to renegotiate labour contracts and as a result hostile takeovers should occur less frequently in these countries. In LMEs a strong conflict between managers and shareholders may urge managers to make alliances with employees. However, weak employment protection laws in these economies may make long-term employment contracts an ineffective takeover deterrent. In this case managers may offer employee share ownership plans as a means of defence (Pagano and Volpin, 2005a).

Managers threatened by hostile takeovers are discouraged from undertaking long-term projects, such as R&D or employee training. In this case managers may only undertake those projects that superficially boost short-term performance or sell off valuable assets to sustain periodic financial indicators. Therefore, adoption of anti-takeover measures encourages managers and employees to pursue long-term business strategies and investments. At the same time, anti-takeover measures lead to substantial bid increases and benefit target shareholders by enabling them to get a higher premium. In fact, some research, such as that of Jensen (1988), argues that strong defence strategies may result in higher bid offers and protect shareholders from selling their shares for unfairly low prices<sup>30</sup>.

### **3.4.6 Limitations of prior research and further research issues**

There is a widely accepted consensus in the literature that acquired firm shareholders earn economically large and statistically significant share price appreciation on takeover bid announcements. Although the effect of corporate takeovers on shareholders is well

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<sup>30</sup> However, over-adoption of anti-takeover defences may reduce the disciplinary role of takeovers and may negatively affect shareholder value. Therefore, it is important to find a balanced trade-off between the benefits of takeovers' disciplinary role and the benefits of protecting business from being taken over. In this process both shareholders and managers' interests should be considered. Jenkinson and Mayer (1992) suggest that regulations play an important role in explaining the differences in this area. They point out that UK companies are the most vulnerable to hostile takeovers, while in other EU countries and in the US the successful completion of a hostile takeover is more difficult. In the US companies are allowed to use plenty of defence strategies, including poison pills, greenmails, standstill agreements, golden parachutes or going private. In the US the fiduciary duty rule obliges boards of companies to act in the best interests of their investors. On the basis of this rule management of the target companies can stop takeovers simply by saying that they are acting in the best interests of their shareholders. In the EU concentrated ownership and the presence of large share ownership is a big obstacle in takeovers. Moreover, a close bank-firm relationship, dual class shares, pyramiding and cross-holdings prevent takeover activity. In contrast, in the UK the anti-takeover defence strategies are limited to financial responses, corporate restructuring, white knights, legal or political responses. These differences raise important policy-related research questions.

documented, the empirical association between shareholders' gains and merger-related changes in employee wealth concessions is inconclusive. Understanding this association would clarify the reasons for post-merger employee layoffs and would contribute to an assessment of the efficacy of the market model of corporate governance.

As regards the literature on shareholder gains, although the effect of takeovers on target shareholders' wealth is well documented, the evidence on the effect of takeovers on acquirer shareholders' wealth is still debateable: early evidence shows insignificant wealth change, while more recent studies show negative abnormal returns for acquirers both in the short run and the long run. At the same time, it is still unclear whether reported negative long-run abnormal returns are the real effect of takeovers or whether they are a result of some type of mis-specification of abnormal generating models or testing procedures<sup>31</sup>. Furthermore, prior research draws conclusions on the efficacy of the MCC based on the magnitude of abnormal stock price returns, assuming capital market efficiency. However, short-run abnormal returns are not enough to prove the positive role of takeovers, especially when long-run negative abnormal returns exceed these short-run gains.

Views on the sources of the shareholder gains are also controversial. In spite of the growing empirical evidence on the negative wealth effect for acquirers, in practice the volume of takeovers is growing by number and value of deals over time. One of the reasons for this contradiction between research and practice may be the fact that research has not been able to fully explain the sources of takeover gains, and, in particular, it has not been able to explain the reasons for the 'post-takeover performance puzzle' (acquirers' performance decline), although shareholders' wealth change is well documented. In short, there is no consensus answer to the question of *why* the market reacts to takeover announcement in the fashion described above. Secondly, the question of *how* do takeovers *create* or *destroy* shareholder value is still unanswered and the research has not yet determined the real economic sources of takeover gains.

Another limitation of the literature in this area is that the economic role of takeovers is assessed on the basis of accounting or stock price performance, without analysing the underlying factors that may lead to success or failure of such transactions. However, assessing

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<sup>31</sup> The methodology chapter discusses some of the conclusions of the empirical research on this issue.

takeovers' economic effect on the basis of the abnormal stock price returns requires the validity of market efficiency hypothesis, which itself is still being debated among researchers.

*The value-redistribution* theory of takeovers suggests that employee wealth concessions through job cuts and slower wage growth are a main source of takeover gains. However, most empirical work investigating wealth transfer from employees to shareholders can be considered as an indirect test of this theory. Only a few studies have investigated the direct association between shareholder gains and employee wealth concessions post-merger. The majority of these studies reject the idea of wealth transfer from workers to shareholders, but do not propose an alternative hypothesis to explain shareholder gains. Therefore it can be argued that the extant evidence on this issue is inconclusive.

On the basis of the predictions of *the value-creation* theory of takeovers it can be argued that takeovers should benefit all stakeholders<sup>32</sup>. However, no study has investigated the association between acquiring firm shareholders' long-run gains and employee wealth concessions.

To provide further evidence on this issue we directly investigate the association between shareholder gains and employment. This thesis examines the following question:

*Q3. Do merger-related shareholder gains explain post-merger changes in jobs and wages?*

Evidence on this issue would contribute to a better understanding of whether capital influences labour-related decision-making through ownership change. Such evidence would also help us to better understand the efficacy of the corporate governance mechanisms in LMEs.

### **3.5 Labour demand effects of takeovers**

According to Cappelli (2000) changes in the input mix within a given production function can be used to reduce demand for labour. In its turn, decline in labour demand could be one of the main causes of post-takeover workforce reductions. Takeovers, as a main business strategy, may be used to bring about changes in the production function input. For example, takeovers may eliminate duplicative activities or discipline inefficient management, which may adjust the employment level to a more optimal level. Post-merger synergy could be achieved by using lower labour input to produce the combined output of merging firms. Similarly,

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<sup>32</sup> This idea will be further elaborated in the empirical chapters.

disciplining inefficient managers or those enjoying a ‘quiet life’ may also lead to using a lower level of labour input than would be used independently by companies in the case of no merger. In other words, in both cases, the organisation of labour may change, as suggested by Conyon *et al.* (2002a). This means that takeovers reduce labour demand and managers should undertake post-merger workforce reductions based on the level of labour demand decline. In this regard, this thesis investigates *whether there is any association between post-merger decline in labour demand and workforce reductions*.

Recently there has been significant research which shows that takeovers in fact reduce labour demand (Conyon *et al.*, 2001, 2002a, 2004; Gugler and Yurtoglu, 2004). This research empirically shows that the labour demand decline is higher in related mergers (due to synergy) and hostile acquisitions (due to management disciplining and re-allocation of resources to their most efficient users), than in unrelated and hostile mergers. Labour demand decline has been suggested as one of the main reasons for post-merger workforce reductions.

Industrial economics research investigates the effect of ownership change on production and its components: output and input. Output is measured by sales and input is measured by capital and labour. As labour is one of the main inputs of the production function, researchers mainly focus on the labour demand effects of ownership change. In this connection we briefly discuss below the productivity concept and the Cobb-Douglas production function (Cobb and Douglas, 1928), which is used in determining the implications of mergers and acquisitions for labour demand.

### **3.5.1 Productivity and production function**

Early research in this area analyses the effect of ownership change on productivity that could be quantified using different measures. One measure is Total Factor Productivity (TFP), which is the ratio of output to all inputs, including labour, capital, raw material and other miscellaneous goods and service inputs (Lichtenberg and Siegel, 1992). In the literature output is usually measured by valued-added in the production process or value of shipments (sales value), the latter being the most commonly used measure, as the former is not always available. However, it is difficult to measure accurately all relevant inputs at the firm level and therefore TFP has been used for plant level studies only. Alternatively productivity could be measured for each individual input. For examples, researchers have extensively used the labour productivity measure, which is defined as the ratio of total output to labour input.

Bartelsman and Doms (2000) suggest that the choice between TFP and the labour productivity measurement is fundamental, because increases in labour productivity can result from increases in capital-labour ratio, without changing the underlying technology.

Thus, productivity is measured as the ratio of output to all inputs. After some re-arrangement, output can be expressed as a function of labour and capital. Cobb and Douglas (1928) first formalised this relationship, showing production as a function of two main inputs – labour and capital:

$$Q = AL^a C^b \tag{1}$$

where  $Q$  is production output,  $L$  is labour,  $C$  is capital goods (or fixed assets), which are themselves produced goods, and  $A$  is a constant term, which indicates how much output we would get if we used one unit of each input (labour and capital). Parameters  $a$  and  $b$  indicate how the amount of output changes if we change labour and capital, respectively. If  $a+b=1$  there are *constant returns to scale*, in which case output increases proportionately with an increase in inputs. That is to say, if we multiply both labour and capital by a factor of  $A$  then  $P$  will be increased by  $A$  times. If  $a+b>1$  there are *increasing returns to scale*, in which case output increases more than proportionately to the increase in inputs. In other words, if we scale up both labour and capital by  $A$ , we can increase the output by more than  $A$ . When a merger results in increasing returns to scale, then there are *economies of scale*, which could be achieved by reducing cost per unit through either increasing production or reducing one of the inputs. If  $a+b<1$  there are *decreasing returns to scale*, in which case output increases less than proportionately to the increase in inputs: increasing labour and capital by  $A$  only increases the output by the amount of less than  $A$ . In this case there are *diseconomies of scale*<sup>33</sup>.

### 3.5.2 Dynamic labour demand adjustment

Taking logs of both sides of the Cobb and Douglas (1928) production function produces the following linear equation:

$$\ln Q_i = \alpha + \beta_1 \ln L_i + \beta_2 \ln C_i + u_i \tag{2}$$

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<sup>33</sup> Other related concepts from microeconomics are *economies of scope* and *the minimum efficient scale*. Economies of scope are cost savings that arise when a firm produces two or more outputs using the same set of resources. The minimum efficient scale is defined as the output level beyond which the firm can make no further savings in long-run average cost through further expansion. In other words, the minimum efficient set is achieved when all economies of scale are exhausted.

where variables are as explained under equation (1). As suggested by Conyon *et al.* (2002a), mergers may change employment levels from one optimal level to another, thereby allowing firms to optimise profit maximisation. In other words, if two merging businesses exhibit economies of scale in the use of labour, then the combined firm should be able to produce the combined output with the smaller number of employees, as profit maximising firms produce the required amount of output with minimum inputs. This means that profit maximising firms should adjust their labour to this new optimal level. If the combined production technology exhibits constant returns to scale, the combined firm should maintain the level of output and employment equal to the sum of those of the merging firms. Alternatively, if the technology exhibits increasing returns to scale then the combined firm should adjust employment level by decreasing the total number of employees to maintain the combined output level. The main theoretical argument of these studies is that if takeovers result in an optimum employment level different from the total employment level, then a profit maximizing firm will adjust its labour force to this optimum level.

However, the movement from one optimal employment level to another may be a dynamic process, not an instantaneous one, as there are some costs associated with workforce adjustment (Hamermesh, 1993). Therefore acquirers may not change the number of employees instantaneously. Hamermesh (1993) suggests that ‘true dynamic responses to production-related shocks take time, because it pays employers to adjust slowly to whatever shocks have altered equilibrium. This author defines the dynamics of labour demand as the time and the paths that the workforce adjustment process takes in moving towards a new steady state.

Using the equation (2), Conyon *et al.* (2002a) develop a dynamic labour demand model, which estimates a derived demand for labour, controlling for the changes in production and labour to capital cost ratio. These authors argue that as labour adjustment is a costly process, employment levels adjust to optimal level with a delay. In other words, changes in employment levels follow changes in output or labour productivity with a delay. Optimal employment levels should be determined on the basis of the production technology characteristics. However, it may take several years to achieve the optimal level due to cost.

As labour demand adjustment is a dynamic process and it may take several years to achieve an optimal level of labour demand, prior research suggests to analyse the workforce adjustments using a panel dataset (Conyon *et al.*, 2002a). Furthermore, in the dynamic process the current

realisation of the dependent variable depends on its own past realisations. In this particular case, the current levels of labour may depend on the previous employment levels. Therefore, lagged levels of observable variables are included in the model to account for the dynamics in the labour demand adjustment to control for the possible exogeneity. Additionally, as it is difficult to measure inter-firm variations in the user cost of capital, prior research normalises the user cost of capital to unity (Haynes and Thompson, 1999a; Conyon *et al.*, 2001; Amess and Wright, 2007).

After taking into consideration these changes, Conyon *et al.* (2002a) propose to estimate post-merger labour demand change using the following panel data based regression model:

$$l_{i,t} = \alpha l_{i,t-1} + \beta_0 w_{i,t} + \beta_1 w_{i,t-1} + \delta_0 q_{i,t} + \delta_1 q_{i,t-1} + \gamma_0 M + f_i + v_{i,t}, \quad (3)$$

where  $l_{i,t}$  is the logarithm of employment,  $w_{i,t}$  is the logarithm of real wages,  $q_{i,t}$  is the logarithm of real output of firm  $i$  in period  $t$ ,  $M$  is a merger dummy regressor, which takes 1 for merged firms and 0 for control firms,  $f_i$  indicates time constant firm-specific unobservable variables, that will be removed after first differentiation using panel data<sup>34</sup>;  $v_{it}$  is the usual error term. This dummy regressor indicates the difference between the labour demand of the merging and non-merging firms, after controlling for changes in output and wages. In order to measure the effect of mergers on employment (and wages) this model uses panel data

Below we discuss some of the prior empirical studies which investigate the labour demand change and post-merger workforce adjustments using the similar regression methodology, as described in equation (3). Most of these studies use panel datasets, although they use different regression estimators.

### 3.5.3 Evidence on the labour demand decline and workforce reductions post-merger

Early studies concentrate on the labour productivity effect of ownership change. Lichtenberg and Siegel (1992) find that low levels of initial productivity are associated with the high probability of subsequent ownership change and ownership-changing plants achieve higher productivity growth than non-ownership-changing plants during post-takeover years.

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<sup>34</sup> In econometrics the above model is called an autoregressive distributed lag model, the estimation methods of which are discussed in the methodology chapter of this thesis.

McGuckin and Nguyen (1995b) and McGuckin *et al.* (1998) also show that ownership change causes further improvement in labour productivity.

More recent research concentrates on estimating the changes in labour demand after mergers, using the equation (3). Conyon *et al.* (2002a) find that mergers cause substantial and statistically significant reductions in labour demand: related mergers reduce labour demand by 19%, while this decline is 8% after unrelated mergers; hostile takeovers reduce labour demand by 17%, while the decline is 9% after friendly mergers. Therefore these authors conclude that takeovers cause ‘significant rationalisation in the use of labour as firms reduce joint output and increase efficiency post-merger’. These results indicate that related and hostile takeovers lead to efficiency improvement, as confirmed by steep labour demand decline after such takeovers. Using a similar estimation method, Gugler and Yurtoglu (2004) report that European mergers reduce labour demand by about 10% compared to pre-merger levels.

However, Conyon *et al.* (2001) show that hostile and friendly takeovers cause equally high levels of labour demand decline, although workforce reductions are greater after hostile takeovers than after friendly mergers. Once the above dynamic labour demand estimation model is adopted to control for the changes in output and wages, the results show no significant difference in the employment effect of hostile versus friendly takeovers. The authors explain this as being caused by the higher level of divestments after hostile acquisitions.

As previously discussed, workforce adjustment is a dynamic process and it may take some time to achieve the optimal employment level. Therefore prior research also investigates the long-run effect of mergers and acquisitions on employment, in addition to their short-run effect. Conyon *et al.* (2002a) show that related acquisitions still reduce labour for two years post-acquisitions, while hostile takeovers still reduce labour demand four years after mergers, due to dynamic adjustment.

Using a smaller sample, Conyon *et al.* (2004) find that employment does not change, but profit per employee increases significantly post-merger. Therefore the authors argue that the increase in profitability results from increased labour productivity. As profit per employee is higher in related acquisitions than in unrelated ones, the authors conclude that the efficiency enhancement effect of takeovers is greater in related acquisitions. Furthermore, the mean

operating profit per employee increases by about £400 in acquiring firms three years after takeovers. The increase is higher for related acquisitions (£944) than in unrelated acquisitions. Thus, Conyon *et al.* (2004) find that both profitability and wages rise post-merger.

The overall inference from these studies is that mergers improve efficiency in labour usage and workforce reductions are justified by post-merger labour decline and improved employee profitability (Conyon *et al.*, 2002a, 2004; Gugler and Yurtoglu, 2004) or by asset divestments (Conyon *et al.*, 2001). This is further supported by recent evidence coming from the other side of the research, exploring the efficiency effects of takeovers when the MCC activity is limited: what happens if anti-takeover regulations are strengthened and the MCC activity is restricted? Bertrand and Mullainathan (2003) show that adoption of anti-takeover laws negatively affects firm performance: after the adoption of anti-takeover laws total factor productivity and profitability decline. Bertrand and Mullainathan (2003) conclude that takeovers do not involve rent transfer from other stakeholders to shareholders, but do improve economic performance.

At the same time the literature reports that takeovers may alter demand for labour differently in different economies. The authors relate these varying effects of takeovers on employment to the differences in labour regulations: in the US labour markets are less regulated than in Europe. The labour market outcome of takeovers depends on employment protection rules and the rigidity of the market. Gugler and Yurtoglu (2004) argue that high labour adjustment costs in Europe force firms to carry excess labour. Only mergers and acquisitions enable firms to achieve the desired employment level, as the new management team is less likely to be committed to upholding existing contracts with employees. In contrast, in the US low labour adjustment costs allow firms to continuously adjust employment levels to optimal levels. Therefore firms in the US do not need to change ownership to shed excess labour. Empirical results provided by Gugler and Yurtoglu (2004) confirm this differential effect of mergers on labour: mergers and acquisitions reduce labour demand by more in Europe than in the US.

#### **3.5.4 Limitations of prior research and further research issues**

*The value creation* theory of takeovers suggests that labour demand decline should be higher in related acquisitions (due to the synergy effect) and in hostile takeovers (due to the disciplining effect of such takeovers), than in unrelated or friendly acquisitions, respectively. In related acquisitions the labour demand decline may occur as a result of elimination of duplicative activities. Labour demand decline could be higher in a hostile takeover because of

the management disciplining effect of such takeovers. Gugler and Yurtoglu (2004) show that labour demand decline is higher in the tender offer (hostile in nature) acquisitions. Therefore they conclude that this is consistent with the breach of trust hypothesis. However, it does not need to be about rent transfer; it could still be about the disciplining of inefficient managers (for example, those wishing to preserve ‘quiet life’).

However, no prior research has tested whether there is an association between labour demand decline and actual employee layoffs. Although previous research compares the employment effect of related versus unrelated and hostile versus friendly acquisitions, these studies do not investigate the differences in labour demand decline for acquisitions that involve employee layoffs and acquisitions that do not involve layoffs. If takeovers are undertaken with value enhancing objectives then labour demand decline should be higher in the acquisitions that involve layoffs than in the acquisitions that do not involve layoffs. Therefore research in this area could be further improved by analysing the association between the reduction in the *absolute* number of employees and labour demand decline post-merger. We investigate the following research question:

*Q4. Does labour demand decline cause post-merger employee layoffs?*

This research provides new evidence on the causes of post-merger workforce reductions, in particular on whether such reductions are undertaken to realise the synergy gains created by mergers. If post-merger workforce reductions are caused by labour demand decline, then the labour demand decline should be higher in mergers that involve employee layoffs than in mergers that do not. Understanding this issue is important, as previously discussed, because managers may undertake post-merger employee layoffs, not only on the basis of labour demand decline, but also for many other reasons, such as to cover high premiums or to create shareholder value at the expense of labour.

### **3.6 Conclusions**

This chapter has reviewed the literature related to each of the four research questions to be empirically investigated in this thesis. Limitations of prior research in each of these four areas have been identified and further research questions have been formulated. On the basis of the literature review several possible factors have been identified that might prompt post-takeover workforce adjustments. These are poor pre-takeover performance of both acquired and

acquiring firms, management disciplining, synergy created by mergers, breach of trust and managerial hubris (measured by high premiums paid for targets).

It has been revealed that post-merger performance decline may also lead to workforce reductions. Prior theoretical literature suggests that post-merger workforce reductions may negatively or positively affect firm performance. Although the effect of downsizing on firm performance is well established, evidence on the performance effect of the merger-related workforce reductions is limited. The extant evidence suggests that such workforce reductions lead to deterioration in firm performance (Krishnan *et al.*, 2007).

It has also been discovered that prior theoretical literature suggests that shareholder gains and post-merger employee wealth concessions may be negatively or positively related. In particular, *the value-redistribution theory* suggests negative association between these variables, meaning that takeovers facilitate rent transfer from employees to shareholders. In contrast, *the value-creation theory* suggests a positive association between these variables, meaning that takeovers lead to rent-sharing among different groups of stakeholders. However, empirical evidence on the direct association on this issue is limited.

Finally, it has been revealed that recent empirical research shows that mergers reduce labour demand. This decline in labour demand may trigger workforce reductions post-merger. The research in the area can be further extended with the new evidence on the association between the derived labour demand decline and changes in the absolute number of employees.

In overall, it has been noted that prior research provides substantial knowledge on the labour effects of takeovers. The empirical chapters of this thesis contribute to this research by providing new evidence on the issue from different perspectives and attempt to make some inference about the effectiveness of corporate governance on the basis of this evidence. Before this, the next chapter discusses the research methods to be applied in the empirical chapters.

## 4 RESEARCH METHODOLOGY

### 4.1 Introduction

This chapter first describes the sample selection process and presents the characteristics of the sample. Next the chapter provides an overview of research strategy and overall research methodology. As the main objective of this thesis is to investigate the employment effects of takeovers, the chapter synthesizes previously applied research methods on measuring workforce and wage changes following mergers.

The main part of the chapter identifies specific research methods to be applied to investigate the research questions outlined in the previous chapter. The first and second research questions are concerned with investigating the reasons for merger-related employee layoffs and their impact on post-takeover operating performance. In this regard, this chapter discusses previously applied research methods of measuring operating performance change following mergers. Specifically, we discuss *the change* method and *regression-based* method of measuring takeovers' impact on operating performance.

The third research question is concerned with investigating the link between shareholder gains and changes in both jobs and wages post-merger. For this purpose the chapter introduces event study methodology and then discusses the methods for calculation of short- and long-run stock price abnormal returns. Specifically, this chapter discusses two models for calculating short-run cumulative abnormal returns: the market model and the market-adjusted model<sup>35</sup>. Similarly, two methods of estimating long-run abnormal returns will be discussed: Buy-and-hold Abnormal Returns and Calendar Time Abnormal Returns.

The fourth research question is aimed at examining the post-merger decline in labour demand for different types of mergers. Labour demand adjustment may be dynamic. Therefore we use a model that includes a lagged employment variable as the dependent variable. Together with the existence of the unobservable variable this creates an endogeneity problem and therefore we use panel data estimation methods to deal with this problem. This chapter provides an overview of panel data estimation methods.

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<sup>35</sup> In this context the market model is a model used to calculate the short-run CAR, which should not be confused with the market model of corporate governance.

## **4.2 Data and sample selection**

### **4.2.1 Data requirements of the research**

To investigate the labour effect of ownership change we collect data on a sample of UK public takeovers. The UK corporate governance system, where the MCC is very active, is a ‘flagship’ example of the market model of corporate governance. At the same time, as Pagano and Volpin (2005b) report, during the 1990s the UK shareholder protection index was the highest, but the employment protection index was the lowest, out of 21 OECD countries. Therefore a sample of UK public takeovers would be an ideal sample to use to investigate the employment effect of takeovers.

We need to have data on takeover deals, including data on merging firms’ names, takeover announcement dates, takeover completion dates, premiums, takeover mode and payment mode. These data have been hand collected from the *Acquisitions Monthly* journal.

We need to measure workforce and wage changes as well as changes in both operating and stock price performance post-merger. Operational and financial data, including the number of workers, average wages, operating performance and share price performance data has been collected from *Datastream*. This data has been collected over a seven-year period (three years before and three years after the takeover completion year) for each observation. If data is missing from *Datastream*, then we have obtained the missing data from annual reports of the companies, downloaded from *Nexis*<sup>®</sup>. The board composition and ownership-related data has been collected from *Hemmington-Scott Corporate Registers*.

### **4.2.2 Bias arising from unit of observation and firm size effect**

It is obvious that using data on acquired plants produces more accurate results than using the firm level data, which aggregates the data from acquired and acquiring plants during a post-merger period. Such aggregation of data at firm level may distort the effects of mergers on operating and financial performance measures, including labour data (Lichtenberg and Siegel, 1990; McGuckin and Nguyen, 1995a; Harris *et al.*, 2005). Therefore some researchers suggest using plant level data in order to accurately measure the effect of mergers on employment.

However, there may be several sources of potential bias when combined firm level data obtained from annual accounts (which is the primary source of *Datastream* data) is used, instead of acquired firm or plant level data, in analysing merger-related workforce change.

First, as theory suggests, merger-related employee layoffs may usually happen in the acquired firms (Shleifer and Summers, 1988). As post-merger annual accounts are combined for the acquired and acquiring firms, this merger-related employee layoff data may not be detected. Furthermore, after acquisitions some acquirers may make divestments, which may lead to workforce reductions, without involving employee layoffs. Thus, the aggregation of acquired and acquiring firms' workforce may hide true reasons of workforce reductions during post-merger period.

As the takeover transaction related data (such as bid value and type of acquisitions) is collected from the *Acquisitions Monthly* journal, which provides data on firm level acquisitions (but not on plant level acquisitions), we also collect firm level performance and employment data from *Datastream*. Furthermore, it is difficult to collect separate data on only acquired firms, as *Datastream* also provides firm level data combining performance and employment measures of acquired and acquiring firms. Therefore we use data on publicly listed companies' takeovers, not on acquisitions of individual plants or divisions.

Secondly, another source of bias may arise due to the size effect of acquiring firms. Prior research shows that acquired firms are smaller than their industry average firms, whereas acquiring firms are larger than their industry average firm in terms of employment (McGuckin et al., 1995, Conyon et al., 2001, Conyon et al., 2002). Furthermore, prior literature shows that smaller acquirers make proportionately larger reductions in their labour demand in comparison than the labour demand in larger acquirers. In contrast, when large firms buy small firms labour demand reduction is not significant (McGuckin et al., 1995, Conyon et al., 2001). However, when data is collected from the *Acquisitions Monthly* journal, there may be some size bias in the sample selection process, as this journal provides data on ownership change in the large publicly listed firms. In other words, the sample may include large proportion of large acquirers, where labour demand reductions may be lower, as above mentioned. Therefore, the empirical results based on this sample may not be representative in making statistical inferences on the effect of ownership change on employment for all firms.

It seems that the difference between the acquired firm size and acquiring firm size is the main reason of the firm size differences in labour demand decline post-merger. When acquiring firm size is small (or when acquired firm is larger, i.e. when the difference between acquired and acquiring firm size is small) then there is higher level of scope for synergy that could be

achieved through workforce reductions. Post-merger workforce reduction becomes proportionately larger in comparison to the combined workforce of the acquired and acquiring firm. In contrast, when acquiring firms size is large (or when acquired firm is small, i.e. when the difference between acquiring firm size and acquired firm size is large), even large workforce reductions in the acquired firms may be small in terms of percentage of the combined workforce of acquired and acquiring firms. To deal with this potential sources of bias, in the multivariate analysis context we control for the size effect by including the ratio of transaction value (as a measure of acquired firms' size) to the market value of the acquiring firms (relative size variable, log transformed), as a control variable. Furthermore, in analysing the labour demand effect of takeovers, we also consider dividing the full sample into large and small acquiring firm sub-samples.

### 4.2.3 Overview of UK public takeovers occurring from 1990 to 2000

We have collected data on all acquisitions of UK public companies from the *Acquisitions Monthly* for the period 1990 – 2000, representing the whole populations of UK public takeovers for this period. Table 4.1 shows the number of transactions, their total values, domestic/foreign and hostile/friendly distributions, by year.

**Table 4.1 UK public takeovers occurring during the period 1990 – 2000**

Year	Total number of UK public takeovers		Takeovers by UK public companies		Takeovers by foreign companies		Hostile takeovers of UK public companies	
	Number	Transaction value (£m)	Number	Transaction value (£m)	Number	Transaction value (£m)	Number	in %
1990	125	14,636	72	6,330	53	8,306	14	11.20
1991	89	8,018	60	6,216	29	1,802	13	14.61
1992	60	12,946	43	7,915	17	5,031	7	11.67
1993	58	3,711	42	2,694	16	1,017	5	8.62
1994	64	5,158	40	3,392	24	1,766	8	12.50
1995	87	41,996	58	29,955	29	12,041	10	11.49
1996	87	25,422	59	16,938	28	8,484	11	12.64
1997	123	34,502	69	18,909	54	15,593	4	3.25
1998	162	44,065	104	22,175	58	21,890	10	6.17
1999	197	74,317	156	27,722	41	46,595	10	5.08
2000	113	85,724	74	55,021	39	30,703	8	7.08
<b>Total</b>	<b>1165</b>	<b>350,495</b>	<b>777</b>	<b>197,267</b>	<b>388</b>	<b>153,228</b>	<b>100</b>	<b>8.58</b>

*Source: Acquisitions Monthly, 1990 - 2000. Notes: The transaction values are in constant prices using 2003 as the base year (as this is the last year of performance observation), adjusted by the Composite Price Index (CPI), following the methodology described in O'Donoghue et al. (2004).*

#### **4.2.4 Sample selection criteria**

From the previously described population we select a sample of domestic takeovers, excluding the following transactions: (1) takeovers by foreign companies; (2) acquisitions of less than 50% of target shares; (3) takeovers with private or newly established companies, including management buy-outs or acquisitions by private equity or venture capital firms; (4) takeovers involving property and financial companies, including banks, insurance companies, investment companies and investment trusts<sup>36</sup>; (5) takeovers involving utility companies (including water companies), as these transactions are subject to different takeover regulations, since they are in a highly regulated industry.

For each selected transaction we check the data availability with *Datastream*. If data is not available for either acquired or acquiring company, then this transaction also has been excluded from the sample.

#### **4.2.5 Overlapping events effect**

One of the methodological problems in event studies is the problem of overlapping events. In our research the inclusion of multiple acquisitions made by one acquirer in the sample may create an overlapping events problem. When an acquirer makes several acquisitions within an observation period (within 3 post-merger years) a dependent observations problem arises, because this acquirer's data (accounting variables or stock price abnormal returns) will be the same for those several observations. This may violate OLS regression technique assumptions that require each observation to be independent.

Furthermore, MacKinlay (1997) argues that when event windows overlap, then the assumption of zero covariance across stock returns is violated. Lyon *et al.* (1999) show that when post-event returns overlap, the long-run abnormal returns calculations method over-rejects the null hypothesis of no abnormal returns. Mitchell and Stafford (2000) also argue that overlapping of long-run post-takeover stock price returns and operational performance indicators causes biased results. Therefore these researchers recommend limiting the sample to those firms which do not have observations with overlapping returns. For this reason, only one acquisition per acquirer within any three consecutive years has been included in the sample.

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<sup>36</sup> Financial and property companies were excluded from the sample because different requirements for financial statements of these companies make it difficult to compare their performance variables with the performance variables of other companies.

## 4.2.6 The sample

The exclusion described above reduces the number of takeovers included in the sample to 235 deals, which is about 30% of the total population during 1990-2000<sup>37</sup>. Table 4.2 shows the distribution of selected sample companies by year and by takeover mode. Takeovers are classified as hostile versus friendly, related versus unrelated and cash-paid versus non-cash funded acquisitions<sup>38</sup>.

**Table 4.2 Distribution of the selected sample takeovers**

Year	Total sample size		Related takeovers		Hostile takeovers		Cash-funded takeovers	
	In numbers	TV (£m)	In numbers	in %	In numbers	in %	In numbers	in %
1990	17	2,389	8	47	7	41	6	35
1991	22	4,884	10	45	5	23	6	27
1992	14	2,122	5	36	2	14	2	14
1993	16	1,482	11	69	4	25	4	25
1994	12	1,368	6	50	2	17	0	0
1995	26	18,216	16	62	5	19	4	15
1996	15	1,856	7	47	3	20	6	40
1997	23	5,445	11	48	3	13	5	22
1998	29	8,882	20	69	6	21	15	52
1999	34	11,510	27	79	7	21	11	32
2000	27	12,768	15	56	8	30	9	33
<b>Total</b>	<b>235</b>	<b>70,922</b>	<b>136</b>	<b>58</b>	<b>52</b>	<b>22</b>	<b>68</b>	<b>29</b>

Source: *Acquisitions Monthly*, 1990 – 2000. Notes: TV indicates the transaction values, which are in constant prices using 2000 as the basis year (as this is the last year of performance observation), adjusted by the Composite Price Index (CPI), following the methodology described in O'Donoghue *et al.* (2004). Definitions of other variables are given in the Appendix 2.

*Hostility* is defined on the basis of whether an initial bid or winning bid was rejected by the target firm management (Franks and Mayer, 1996). Thus, hostile takeovers include all deals described as 'contested' and 'later agreed', by the *Acquisitions Monthly*<sup>39</sup>. In the sample 22% of transactions were hostile in nature. *Industry relatedness* is defined as those acquisitions where both acquired and acquirer firms are in the same Datastream Industrial Classification

<sup>37</sup> In years t+2 and t+3 the number of observations decreases, depending on availability of data on operating performance, stock price and labour.

<sup>38</sup> Another classification is merger versus tender offers. However, on the basis of *Acquisitions Monthly* information it was impossible to distinguish between merger and tender transactions, as the classification of takeovers in this journal is not very distinctive. Most deals in *Acquisitions Monthly* are defined as 'agreed bids' or 'recommended tender offers' and only few transactions are classified as mergers. Therefore it was impossible to distinguish between tender offers and mergers on the basis of this data source. As mentioned by Sudarsanam and Mahate (2006), in the UK most offers are made directly to shareholders, even if the target management approves the deal during the pre-announcement merger talks.

<sup>39</sup> To distinguish friendly and hostile takeovers we use *Acquisitions Monthly* information. In addition to this, we undertake some content analysis using online resources of the *Financial Times* and *Times* to check the mode of takeovers. Following Sudarsanam and Mahate (2006), white knight takeovers were classified as friendly takeovers.

Level four (INDM4), as in Cosh *et al.* (2006). In the sample 58% of takeovers were in related industries. *Cash-paid* acquisitions include 100% cash paid deals. The remaining deals are classified as non-cash-funded acquisitions (equity swaps and mixed payments). In the sample 29% of deals were cash-paid.

#### **4.2.7 Selection of a control group of matched firms**

In addition to the sample of merging firms, we select a sample of 470 non-merging control firms, which includes a matched firm for each acquired and acquiring firm. In selecting the matched firms we follow the procedure outlined by Loughran and Ritter (1997) and Barber and Lyon (1996). The selected matched firm should be in the same industry as the matching sample firm, within a 25% to 200% size range of the matching sample firm and should have the closest pre-takeover (at the end of  $t-1$ ) operating performance to the matching sample firm. For this purpose we calculate ROA of all *Datastream* firms at the end of year  $t-1$  as explained above. Next, the pool of the potential matched firms is filtered by industry to select all firms in the same industry, for which a matched firm is being selected (*industry filter*). Then among these same industry firms those firms with the market value of between 25% and 200% of the market value of the firm, for which a matched firm is being selected, have been determined (*size filter*). Next, among those potential matching firms, which come through industry filter and size filter, the firm with closest operating cash flow return has been selected.

One of the main logic behind using ‘control firm’ approach is that to compare the performance of acquiring firms with the performance of non-acquiring firms to isolate takeovers’ effect on operating performance. Thus, in this process, the first important criterion is that the matched firm should not have been involved in major acquisition activity two years before and three years after the sample takeover year. Therefore we analyse the acquisition activity of each matched firm during the observation period to make sure that they are non-acquiring firms. In other words, in the selection process those firms that have not undertaken any acquisitions should be selected as matching firms. Therefore, in the final step of the matching firm selection procedure, the selected firm has been checked if it had not undertaken any significant acquisition during the period 5 years before and 3 years after the sample takeover completion date<sup>40</sup>.

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<sup>40</sup> Full discussion of industry-, size- and performance-matched firm selection is given as Appendix 4.

#### 4.2.8 Data on post-merger workforce change collected from Datastream

In this thesis data on post-takeover employee change in the acquiring firms have been collected from two sources. First, year-to-year change in the employment variables (numbers of workers and their salaries) in the acquiring firms were obtained from *Datastream* and *Annual Company* accounts<sup>41</sup>. Merger related year-to-year change in the combined workforce has been calculated by comparing the pre-takeover pro-forma combined workforce of the acquiring and acquired firms at the end of year  $t-1$  to the number of employees of the acquiring firms during post-takeover years.

Detailed analysis of *Datastream* data shows that 127 acquirers reduced their workforce during  $t+1$ , out of which 87 acquirers further reduced their workforce during the second or third years, while 23 acquirers increased their workforce (which means that they temporarily reduced workforce after acquisitions) and 17 acquirers were taken over or liquidated during this period. *Datastream* data also shows that 108 acquirers increased their workforce during  $t+1$ , only 10 of them reduced workforce during  $t+2$  or  $t+3$  relative to pre-takeover level, while 13 of them were taken over during this period. In overall, according to *Datastream*, out of 235 sampled acquirers, 115 acquirers had lower workforce during  $t+2$  in comparison to the pre-takeover workforce level and 111 acquirers had lower workforce in comparison to the pre-takeover workforce level during  $t+3$ .

However, as discussed in the section 4.2.2., there may be several sources of potential bias when firm level data obtained from annual accounts (which is the primary source of *Datastream* data) is used in analysing merger-related workforce change. First, as theory suggests, merger-related employee layoffs may usually happen in the acquired firms (Shleifer and Summers, 1988). However, as post-merger annual accounts are combined for the acquired and acquiring firms, this merger-related employee layoff data may not be detected. Also, when large firms buy small firms and layoff substantial number of employee in the small acquired firms, the size of such layoff may be hidden in the annual reports, where acquired and acquiring firms workforce numbers are combined. Furthermore, after acquisitions some acquirers may make divestments, which may lead to workforce reductions, without involving employee layoffs. This may hide workforce reductions in acquired firms.

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<sup>41</sup> As *Datastream* provides employment information starting from 1993, missing data on these variables for the years 1990-1993 has been collected from company annual reports, obtained from *Nexis*<sup>®</sup> database.

#### 4.2.9 Data on post-merger employee layoffs collected from media search

As discussed above, when *Datastream* information is used merger-related employee layoffs may be hidden in the combined workforce change of acquired and acquiring firms, as there may be some workforce growth in other segments of business, while acquired plant employees get layoffs. Therefore, in order to gain more accurate information on the merger-related employee layoffs, we have also collected data on publicly announced merger-related employee layoffs by screening national and regional newspapers, downloaded through the *Nexis*<sup>®</sup> database. In this media-search data collection process, following the methodology adopted by prior research (Hillier *et al.*, 2007; Krishnan *et al.*, 2007), we search a number of national and regional newspapers for the period of 2 years after the sample merger event month for merger-related employee layoffs in the acquired firms. The screened newspapers include *The Financial Times*, *Times & Sunday Times*, *Guardian*, *Daily Mail*, *Independent*, *Lloyd's List*, *Observer*, *Evening Standard* and other sources. In the screening process we use the following search term through *Nexis*<sup>®</sup>:

“acquired or bid or buy or merger or takeover and layoff or redundancy or job loss or job cut or dismissal or axe or chop or sack or shed or and (target company name) and/or (acquiring company name)”

As several newspapers concurrently report major post-merger layoffs, it can be confirmed that the collected information consistent across newspapers and, therefore, it is possible to determine the exact number of job losses. However, there are uncertainties in this process: sometimes newspapers report redundancies as part of post-merger annual or semi-annual performance analysis, without giving the exact dates of the layoffs or sometimes newspapers report that acquirers incur ‘redundancy costs’ after mergers, without giving the exact number of workers laid off. At the same time, large companies undertake layoffs step by step.

As several newspapers concurrently report major post-merger layoffs, the data on employee layoffs gathered from the newspapers can be considered as reliable data for this research purposes. However, in some cases it is difficult to determine the exact date of the layoffs, as sometimes newspapers report redundancies as part of the post-merger annual or semi-annual performance analysis, without giving the exact dates of the layoffs. In addition to the newspapers, occasionally some companies provide employee layoff announcements through Regulatory News Services (RNS) of the London Stock Exchange. However, through searching RNS reports, we were able to find only a few announcements given by the sample firms.

To be classified as an acquirer with significant post-takeover employee layoffs, the acquirer should have laid-off at least 1 % of the combined workforce within 2 years period after takeover completion month. In the literature different papers choose different cut-off points to determine significance of employee layoffs. For example, Hillier *et al.* (2007) state that to be classified as a laying off firm, “the size of the layoff must account for at least 0.1% of the firm’s total employees at the end of the financial year preceding the layoff announcement”. In contrast, Ofek (1993) uses 10% cut-off point to classify firms as firms making significant layoffs.

As a result of screening national and regional newspapers, it was possible to find information about layoffs occurred in 101 acquiring firms, which consists 43% of sample firms. If no layoffs are reported in the press, then we assume that none has occurred. Using this data we classify acquiring firms into ‘layoff’ and ‘non-layoff’ sub-samples, as in Krishnan *et al.* (2007) and Hillier *et al.* (2007). Percentage employee layoffs are computed in comparison to the pre-takeover pro-forma workforce of merging firms, computed by combining pre-takeover workforce of acquired and acquiring firms. In these acquisitions on average 7.5% (median is 5.6%) of the combined workforce were laid off within a period of two years after mergers (in these percentage calculations we use the pre-takeover pro-forma workforce of merging firms, created by combining pre-takeover workforce of acquired and acquiring firms, as above explained). Data on the announced employee layoffs include only straight redundancies, not workforce reductions related with divestments or other sell-offs. However, a weakness of this dataset is that not all employee layoffs may be announced or we may have missed some announced layoffs during the newspaper screening process.

If no press release on merger-related employee layoffs were found, then we assume that no employee layoffs were made during post-merger period. Merger-related employee layoff data collected from national newspapers should be more accurate and precise measure the employment effect of mergers.

However, there may be several sources of bias in this dataset as well. First, acquirers might choose not to voluntarily disclose information about their layoffs in order to reduce the impact of market reaction. Job losses may occur in the form voluntary job changes or due to not filling open vacancies. Secondly, our search strategy may not capture all announced layoffs. However, as discussed elsewhere, we search a wide range of sources and we found several

simultaneous reports in several newspapers for each particular layoff announcement. Therefore, our search strategy reveals 101 post-merger employee layoffs. In comparison to this, Collett (2002) finds 106 layoff announcements in the UK for the period of 1990-1999, while Hillier et al. (2007) report 322 layoff announcements for the period of 1990-2000. Both Collett (2002) and Hillier (2007) consider search for types of employee layoffs, whereas we search for only merger-related employee layoffs made only by our sample acquirers.

Another source of bias may be due to the fact that announced job losses may not materialize during post-merger period, as the media might provide exaggerated information about true job losses, giving upward bias in the collected data. Therefore, it was important to collect data on layoff announcements from official data sources such as Regulatory News Service (RNS) of the London Stock Exchange, where companies may voluntarily publish their layoff announcements and other corporate disclosure. Data obtained from unofficial data sources, such as media rumors and analysts forecasts, may give some bias in data, as they may not officially confirmed by the company. Therefore, we have also searched RNS for official layoff announcements. However, we have found that during 1990s only few firms made employee layoff announcements through this official source.

Finally, there may be a potential source of bias due to the size differences of acquiring and acquired firms. First, small firms may not be covered by the media, therefore, any merger-related employee layoffs may not be reported in the media as they are not followed by journalist or analysts. To deal with this bias, we also included regional and local newspapers in our search. Secondly, when large firms acquire small firms and layoff even substantial number of employees in the small acquired firms, the size of such layoffs may be very small in terms of percentage of the combined workforce (and also may be hidden in the annual reports).

In sum, we think that the collected data is downward biased, rather than upward biased, because firms are more inclined not to report employee layoffs and even to conceal job losses, as this may affect to their market value, as discussed in the literature review chapter. Therefore, such layoffs in small acquired firms may not be reported in the media. To control for the potential bias due to size effect, in multivariate regressions we include relative size control variable.

#### **4.2.10 Comparison of workforce reduction data from Datastream and employee layoff data from the media search**

The analysis reveals that the number of firms which make public announcements on merger-related employee layoffs (101 acquirers) and the number of firms which reduce workforce according to the *Datastream* (115 acquirers) are comparable. The analysis shows that there is about 33% correlation between announced layoffs and *Datastream* workforce adjustments and this correlation (36%) is similar to the correlation (32%) reported by Krishnan *et al.* (2007). *Datastream* workforce adjustments also include changes due to unrecorded divestments, other unrecorded acquisitions and unannounced layoffs. Furthermore, layoff variable does not take into consideration employment growth. Therefore the correlation between these two variables may not be very strong.

However, the size of workforce reductions reported in the press is smaller than the *Datastream* reported size. One explanation could be the fact that managers are reluctant to publicise the true scale of workforce reductions, as this may affect the market value of their company. Both Krishnan *et al.* (2007) and Hillier *et al.* (2007) suggest that the measure of layoffs reported by the press is more precise than year-to-year changes in employment levels reported by databases as the latter may include the effect of divestments or asset disposals. However, although layoffs reported in the newspapers are more relevant, they do not give the full picture of workforce changes. All workforce reductions may not be reported in the newspapers or all announced layoffs may not actually materialize, providing a measurement bias, as suggested by Shah (2007).

The correlation coefficient between *Datastream* workforce reduction and newspaper-reported employee layoffs is 0.36. Although this coefficient is significant, lower level of announced employee layoffs indicates the high degree of consciousness of the companies regarding making public announcements about employee layoffs, as this may effect to their market value. Another reason for the difference between two outcomes could be the fact that acquirers make some asset disposals and divestments after acquisitions, which also reduce workforce Krishnan *et al.* (2007) also report 32% correlation coefficient.

### **4.3 Research strategy and overall research methodology**

The literature shows no dominating motive for takeovers and consequently the employment effect of such transactions is not predictable. As discussed there are several reasons for post-takeover workforce adjustments, including the need to improve firm performance, wealth transfer from employees to shareholders or decline in post-merger labour demand. We adopt a research strategy that attacks the issue of the employment effect of takeovers from several different perspectives.

As an overall research methodology, we adopt quantitative research techniques: univariate analysis and multiple regression methods. Specifically, we test operating and stock price performance using univariate tests. As some of the variables (such as the premium) are observed only once, we can only use cross-sectional regressions to investigate the first three questions (Q1, Q2 and Q3). For example, to investigate the role of different factors in explaining post-takeover workforce adjustments we use Ordinary Least Squares (OLS) regressions. Similarly, to examine post-takeover workforce adjustments as a function of target firm shareholders' short-run abnormal returns (measured by bid premium and short-run CARs) and acquiring firm shareholders' long-run abnormal returns (measured by BHARs), we use OLS regressions. However, to examine the fourth question (Q4) we use panel data based Generalised Method of Moments (GMM) regression methods to control for endogeneity and measurement errors.

In all OLS regressions (in Chapters 5, 6 and 7) we undertake the following regression post-estimation diagnostics to ensure that the estimation meets the Gauss-Markov assumptions on the validity of OLS estimates (Wooldridge, 2006). After specifying the model and running the initial regression we start the diagnostics by identifying outliers and influential points, using Cooks' D statistic. If this statistic is larger than  $4/n$  for an observation, where  $n$  is the number of observations in a particular regression, we exclude such an observation from the regression. After deleting outliers, we re-run the regression and estimate standardised residuals. At this stage we drop those observations with smaller than  $-2$  or larger than  $2$  standardised residuals. We test the normality of residuals with the Shapiro Wilk test, model specification with Ramsey's RESET and multi-collinearity with the Variance Inflation Factor (VIF) test. Finally, we re-run regressions using the heteroskedasticity robust estimation method to account for the serial correlation and report the results of these regressions. Such outlier deletions cause the

sample size to change by small degrees from one test or chapter to another. Such outlier deletions also cause the sum of observations from the subsample cases not to be equal to the number of observations in the full sample case.

Therefore, in order to check the robustness of the OLS regressions we also run quantile (mainly median – 50<sup>th</sup> percentile) regressions and report their results as a robustness test. However, at the moment it is not possible to run panel data based quantile regressions in STATA 11 and therefore in Chapter 8 we limit the analysis with the panel data based GMM regressions.

#### **4.4 Methods for measuring post-takeover employment and wage changes**

We measure the effect of ownership change on labour using two variables – number of employees and their average wages. Below we discuss some methods for measuring post-takeover changes in these variables, including: (1) simple pre- and post-event univariate tabulation of these variables; (2) difference-in-differences methodology and (3) the regression methodology, which controls for lagged values of wage and employment.

##### **4.4.1 Pre- and post-takeover univariate tabulation**

The simple univariate tabulation estimates the employment (wage) effect of takeovers by comparing the annual average pre-takeover number of workers with the annual average post-takeover number of workers. Pre-takeover pro-forma combined employment is computed by summing the target and bidder's workforce at the end of t-1. Employment change is measured by deducting this pro-forma number of employees from the acquirers' actual number of employees. This employment change could be considered as an ownership change effect. However, this method does not take into consideration the effect of contemporaneous events such as macroeconomic changes, technological changes and the dynamics of wages. Therefore the resulting quantity could be a biased estimator of the impact of the ownership change (Conyon *et al.*, 2002a; Girma and Gorg, 2003). Therefore any conclusion about the employment effect of takeovers on the basis of this method would be incorrect<sup>42</sup>.

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<sup>42</sup> Other limitations of this simple tabulation are that the data is not standardised by industry and it does not take into consideration the initial size of the merged firms (Lichtenberg and Siegel, 1990).

#### 4.4.2 Difference-in-differences method

To control for the effect of macroeconomic changes on workforce growth, prior research suggests comparing the sample firms' workforce change with a control group firms' workforce change, using the difference-in-differences method (Meyer, 1995; Bertrand and Mullainathan, 2003; Girma and Gorg, 2003). In using the difference-in-differences method in the mergers and acquisitions context an important criterion is that the selected control group firms should not experience an ownership change within three years before and three years after the sample firm acquisition event year (year  $t$ ).

The difference-in-differences method works as follows. First, we combine the pre-takeover workforce of the acquiring and acquired firms in order to create the pre-takeover pro-forma workforce of the merging firms. Secondly, we determine workforce growth in the sample merging firms as the difference between the post-takeover actual workforce of the acquirers and the pre-takeover pro-forma workforce (and we define this difference in merging firms' pre- and post-merger workforce as  $\Delta E_s$ ). In a similar way we determine workforce growth in the non-merging control firms (and define this difference in the control firms' pre- and post-takeover workforce as  $\Delta E_c$ ). Finally, we compute the difference between the merging firms' workforce growth ( $\Delta E_s$ ) and the control firms' workforce growth ( $\Delta E_c$ ), which gives the difference-in-differences estimator:  $\delta = \Delta E_s - \Delta E_c$ .

Within the difference-in-difference methodology context, adjusting the merging firms' workforce growth for the control firms' workforce growth removes the impact of macroeconomic conditions on employment, leaving only the effect of mergers on workforce change. Due to the initial set-ups, these economy-wide conditions would affect equally both merging and non-merging control firms. Subtracting the control firms' workforce growth from the merging firms' workforce growth enables to isolate the impact of economy-wide changes (such as economic growth or downturns) on employment and to measure the impact of ownership change on employment. In a similar manner, it is possible to estimate an unbiased effect of mergers on wage growth.

#### 4.4.3 The regression-based version of the difference-in-differences method

The difference-in-differences method can be undertaken using a regression technique, as implemented in Conyon *et al.* (2002a), Bertrand and Mullainathan (2003) and Girma and Gorg

(2003). In other words, the above defined difference-indifference estimator ( $\delta$ ) could be estimated using a panel data based regression method: when the same dataset is used both methods should produce the same result. The simplest panel data-based regression of the difference-in-differences method takes the following form:

$$E_{it} = \alpha + \delta D_i + \varepsilon_{it}, \quad (4)$$

where  $E$  indicates employment;  $i$  is firm index;  $t$  is time index;  $\delta$  indicates the difference in the merging firms' workforce growth and control firms' workforce growth post-merger;  $D$  is a merger dummy regressor, which takes 1 for merging firms and 0 for control firms. In this regression both merging and control firms are stacked together and the coefficient of the dummy regressor ( $\delta$ ), which indicates the difference in employment growth between merging and control firms, can be interpreted as the average percentage point growth in employment that is attributable to ownership change. Longer period lags of this dummy regressor can be included to analyse the effect of takeovers after a longer period, in addition to the contemporaneous effect. For example, the lagged dummy regressor indicates the employment effect of ownership change after one year.

#### 4.4.4 The Brown-Medoff regression method

Brown and Medoff (1988) estimate post-takeover wage and employment change, controlling for the lagged variables. Lagged values of wage and employment over a longer period can be included in the model as control variables, as specified below:

$$X_{t+j} = \sum_{k=t-3}^{t-1} \alpha_{jk} E_k + \sum_{k=t-3}^{t-1} \beta_{jk} W_k + \delta_j D + \varepsilon, \quad (5)$$

where  $X$  indicates the logarithm of average wages per employee per annum in the merging firms and control firms in the wage equation and the logarithm of the number of employees in the merging and control firms in the employment equation;  $t$  is the takeover completion year;  $j=\{1, 2, 3\}$  i.e. post-takeover years,  $W$  indicates the logarithm of average wages per employee per annum in the merging firms and control firms,  $E$  indicates the logarithm of the number of workers in the sample firms and control firms;  $k= \{t-1, t-2, t-3\}$ , i.e. pre-takeover years;  $D$  is a merger dummy variable, which takes 1 for merging firms and 0 for control firms.

In this regression the dummy regressor coefficient indicates the mean employment (or wage) growth for merging firms, comparing it with the employment (wage) growth in non-merging firms and holding constant the pre-takeover wages and employment of merging and non-merging firms.

Most studies use non-merging control firms as a *benchmark* when measuring changes in employment variables, shareholder value and operating performance. For example, Brown and Medoff (1988) and Conyon *et al.* (2002a, 2004) use non-merging firms in estimating the change in employment variables. Following these studies, we use average industry wage growth and matched non-merging control firms' employment growth as benchmarks<sup>43</sup>.

There are other benchmarks. Previous studies have estimated the expected growth in real wages using different methodologies. Rosett (1990) estimates annual real wage growth using all immediate and scheduled deferred wage increases and cost-of-living adjustments. Another possible benchmark is the historical growth rate for the employment variable for each sample firm. For example, Beckmann and Forbes (2004) construct this benchmark on the basis of the historical growth rates of employment and wages for both acquired and acquiring firms, using data for 5 years prior to takeovers. The authors define the cost-per-employee as the ratio of total employment costs to the total number of employees. Using the pre-bid separate growth rates in cost-per-employee for the target and bidding firm, they forecast the 'expected normal level' of cost-per-employee for the combined company, taking into consideration the relative weights of target and bidder data.

#### **4.5 Methods for analysing the association between operating performance changes and workforce adjustments**

To empirically investigate the first and second questions (Q1 and Q2) we need to measure pre-takeover performance of both acquired and acquiring firms as well as the change in post-takeover performance of acquiring firms. Powell and Stark (2005) argue that the research conclusions on the performance effects of takeovers are sensitive to the definition of the performance measures, deflator choice, benchmark selection and methodology used in a particular study. Therefore it is important to select an appropriate performance measure,

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<sup>43</sup> The methodology on the selection of non-merging matched firms is discussed in the next section.

benchmark and abnormal performance detection methods. Below we discuss prior research on these issues.

#### **4.5.1 Operating performance measures**

As accounting earnings measures can be easily manipulated by managers to increase the market value of companies around corporate events, such as takeovers, empirical research mainly uses cash flow-based performance measures to assess operating performance improvements after such events (Healy *et al.*, 1992; Ghosh, 2001; Powell and Stark, 2005). For example, earnings-based measures may be affected by accounting distortions, whereas cash flow is unaffected by depreciation, goodwill, accounting methods for acquisition and acquisition financing methods. Therefore cash flow-based measures provide a more accurate explanation of whether the source of improvement is the change in operating performance or the reversal of pre-event accruals. In the literature cash flow-based performance measures are classified into two groups: the ‘accruals’-based cash flow measure, defined as pre-depreciation profit and the ‘pure’ cash flow measure, defined as pre-depreciation profit adjusted for changes in working capital. Healy *et al.* (1992) argue that unlike other accounting variables ‘accruals’-based operating cash flow is not affected by accounting distortions such as depreciation and goodwill. However, according to Powell and Stark (2005), ‘accruals’-based cash flow is still likely to be distorted by accounting policies.

Barber and Lyon (1996) compare the performance of five accounting-based variables and conclude that ‘the choice of performance measure is generally inconsequential’<sup>44</sup>. However, they point out one important difference: test statistics based on a cash flow return on assets are uniformly less powerful than those based on other performance measures.

In order to obtain a comparable measure across firms, the performance indicators should be deflated by another accounting variable to create a return indicator. Prior studies use sales, book value and market value of total assets as deflators. Book value of assets is defined as the value of total assets reported in company accounts. Market value of assets is defined as the market value of equity plus net book value of debt and book value of preferred stock. Different values of total assets could be used: beginning of year, average of beginning and end

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<sup>44</sup> They consider the following five accounting-based performance measures: (1) operating income scaled by the book value of assets, (2) operating income scaled by the book value of assets less cash and marketable securities, (3) operating income scaled by sales, (4) operating income scaled by the market value of assets and (5) operating cash flow scaled by the book value of assets.

of year and end of year total assets. Healy *et al.* (1992) argue that post-takeover market value of assets excludes the change in equity values resulting from takeover announcements. If post-takeover market value does not exclude change in equity value during takeover announcement period, it is impossible to detect abnormal cash flows. Powell and Stark (2005) discuss two advantages of using total market value: this measure more accurately reflects assets returns and simplifies inter-temporal and cross-sectional comparisons, as the market value is not affected by distortions resulting from accounting policy changes.

In short, prior research uses different performance measures, such as Operating Cash Flow (OCF) (Powell and Stark, 2005) or Earnings before Interest, Tax, Depreciation and Amortisation (EBITDA) (Hillier *et al.*, 2007), deflated by beginning of year book value and market value of assets. On the basis the above discussions, in this thesis we use EBITDA, deflated by both market value and book value of assets at the beginning of the year.

#### **4.5.2 The effect of acquisition versus merger accounting on operating performance measure**

In the 1990s in the UK Financial Reporting Standards allowed companies to use either acquisition or merger accounting in the process of preparing combined financial statements after corporate takeovers. Applying either acquisition accounting or merger accounting differently affected both operating performance measure reported in the income statement and the level of total assets reported in the balance sheet. If a business combination was a merger, then the consolidated financial statements of the new company were prepared based on just combining net book values of two merging businesses' assets, because in this case it was considered no company acquired another company's assets. Consequently no goodwill (a type of intangible asset that could be determined as the difference between net book value of acquired assets and purchase price) recorded, as the event could be considered as a pooling of resources. Therefore, when a merger accounting was applied, a consolidated balance sheet was prepared by simply combining the net book values of the merging firms' assets.

However, under the acquisition accounting, it was required to record acquired assets' at their net book value, but at the same time it was required to record a goodwill arising as a result of acquisition, where goodwill was determined as the difference between net book value and purchase price. The recorded goodwill could be amortised over its defined useful life.

Subsequently, the resulting amortisation expense reduced the profitability of acquirers during post-merger years.

In this relation, merger accounting was a popular method, as it was possible to create provisions for future reorganisations, which might lead to artificial improvement of the profitability of acquirers post-merger. As goodwill was not recognised, assets were lower under the merger accounting method, post-merger profit would be higher under this method, due to lower depreciation/amortisation expenses. Furthermore, under this method it was not required to recognise goodwill which could reduce future expected profits through amortisation and impairment losses. Such goodwill write-offs could also affect the book value of assets, at the same time reducing the profitability of the acquiring firms<sup>45</sup>.

As merging companies had the choice of selecting between merger and acquisition accounting methods during early 1990s, it was important to control the effect of this choice on the performance measure – ROA. In this research we control the effect of using different accounting methods by applying EBITDA performance measure and using net book value of fixed assets and current assets (excluding goodwill and other intangible assets) and market value of assets controls for the differences in the acquisition accounting and merger accounting. Additionally, we control for the effect of applying different accounting methods by distinguish between cash-paid and stock exchange acquisitions. Cash paid acquisitions can be considered as true acquisitions and in such business combinations usually acquisitions accounting was used.

### **4.5.3 Operating performance benchmarks**

In assessing post-takeover performance change it is necessary to determine a benchmark which provides an expected level of operating performance in the absence of a takeover event. Internal or external benchmarks have been suggested.

As an internal benchmark, Healy *et al.* (1992) construct the pro-forma combined performance of the merging firms for the period of 5 pre-takeover years. Comparing this pro-forma performance with the post-takeover actual performance would show the effect of mergers on

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<sup>45</sup> To prevent such creative accounting techniques, Financial Reporting Standard 6 was adopted to ensure that merger accounting is used only for those business combinations where none of the merging firm dominates the other firm. Furthermore, merger accounting was banned in 1994.

firm performance. Another internal benchmark is analysts' long-run forecasts, where actual performance is compared to the combined performance of acquired and acquiring firms, forecasted by analysts. Harford (2005) argues that many takeovers occur after economic disturbances, which leads to rapid change in performance, including benchmarks. Therefore Harford (2005) uses analysts' forecasts as a proxy of operating performance, in addition to the external benchmarks.

Prior research uses two external benchmarks: the *industry-median firm* benchmark and the *industry-, size- and performance-matched firm* benchmark. Some of the post-takeover performance change may be a result of economy-wide or industry-wide shocks. To separate merger-related performance changes from economy- and industry-wide performance changes, it is customary to adjust the sample firms' performance using average industry performance indicators. In this case, every acquired and acquiring company performance is adjusted, using their relevant industry-median firm. According to this benchmark, the expected performance of a sample firm is equal to the performance of the industry-median firm, where the industry portfolio consists of all *Datastream* listed companies, except the acquired and acquirer companies.

However, some authors argue that in event studies it is important to take into consideration prior performance of firms (Barber and Lyon, 1996; Ghosh, 2001). The mean reverting process in accounting performance is well documented in the literature (Penman, 1991; Fama and French, 1995). If benchmark models do not follow this mean reverting process and do not control for levels of pre-event performance, then they may produce biased results, especially when sample firms include unusually high or low performing firms. There are at least two reasons indicating that the industry-median may produce biased results as discussed in Ghosh (2001). First, there are systematic differences across size of acquiring firms and industry-median firms, the former usually being larger than the latter. Secondly, firms undertake acquisitions after superior operating performance, causing non-random differences in the performance of acquiring firms and industry-median firms. Therefore Barber and Lyon (1996), Loughran and Ritter (1997) and Ghosh (2001) propose an alternative benchmark – the industry-, size- and performance-matched firm benchmark – that accounts for such systematic differences. This benchmark estimates a merged firm's performance as its past performance plus the change in the performance of a control firm. Ghosh (2001) argues that when the industry-median benchmark is used the results may incorrectly reveal positive abnormal

returns, since this model does not control for acquirer size and prior performance. In contrast, the matched firm benchmark takes into account the superior pre-acquisition performance, when sample firms' performance is unusually high or low. Therefore Ghosh' (2001) study reveals that the industry-median firm benchmark provides a significant abnormal return, while a matched firm benchmark does not detect any abnormal return. Lie (2001) also shows that the matched control firm benchmark outperforms other benchmarks. Powell and Stark (2005) show that both industry-median and industry-, size- and pre-performance-based benchmarks indicate a modest performance improvement following mergers.

Barber and Lyon (1996) compare the performance of nine benchmarks and conclude that the benchmark which takes prior firm performance into consideration outperforms other benchmarks by producing well specified test statistics. These authors argue that when the sample firms are matched to firms with similar pre-event performance, it will be possible to control for the mean-reversion tendency of an accounting performance. Furthermore, performance matching is important when sample firms have performed either well or poorly during the pre-takeover period. Therefore these authors propose to compare acquirers' performance to non-acquiring matching firm performance, selected on the basis of industry, size and pre-takeover performance criteria, as this method produces unbiased results.

On the basis of this discussion, the thesis uses two benchmarks of firm performance: *the industry-median firm* and *the industry-, size- and performance-matched firm* benchmarks.

#### **4.5.4 Models for detecting post-takeover abnormal operating performance**

Two different research methods have been suggested to assess post-takeover performance: (1) regression of post-takeover adjusted performance on pre-takeover adjusted performance (*the regression model*) (Healy *et al.*, 1992); and (2) simple comparison of the post-takeover adjusted operating performance with the combined pre-takeover adjusted performance of acquired and acquiring firms (*the change model*) (Ghosh, 2001).

The first model – *the regression model* – estimates post-takeover improvement (the difference between pre- and post-takeover performance) as a regression intercept, where post-takeover performance of the combined firm is regressed on pre-takeover pro-forma performance (weighted average performance of acquirer and targets). In this regression slope the coefficient indicates the portion of the post-takeover operating performance that can be determined from

the pre-takeover operating performance. The unexplained part of the performance change is shown by the intercept that can be considered a result of takeover. As the intercept is independent of the pre-merger performance, it indicates the effect of the takeover event on performance.

A number of studies use *the regression model* in detecting abnormal operating performance during a post-takeover period, first applied by Healy *et al.* (1992, 1997). Using this method, Manson *et al.* (2000) report that takeovers improve operating performance. Similarly, Powell and Stark (2005) report that takeovers improve performance by 0.8-3.3%, depending on the performance variable, deflator and benchmarks. The improvement is stronger when the adjusted total market is used as a deflator and an industry-, size- and performance-matched firm is used as a benchmark.

Ghosh (2001) argues that using *the regression model* (with an industry-median benchmark) is likely to produce biased results, as this method does not take into consideration pre-takeover superior operating performance of acquiring companies, as most firms tend to undertake large investments, including acquisitions, following superior performance (Morck *et al.*, 1990). When an industry-median benchmark is used, the measurement error is unlikely to be random and this non-random error is captured by the intercept of the regression, showing significant abnormal performance.

Therefore Ghosh (2001) applies an alternative method – *the change model* – first introduced by Barber and Lyon (1996). This method takes into account pre-takeover performance and firm size by comparing the merging firms’ performance to the matched firms’ performance. In *the change model* performance improvement is defined as the difference between the post-takeover performance of the combined firm and the pre-takeover pro-forma combined performance of merging firms, after adjusting to the performance of ‘similar’ firms.

In the US Linn and Switzer (2001) use *the change model* and report significant post-takeover performance improvement. Ghosh (2001) reports that *the regression model* using the industry-median benchmark shows significant performance improvement, while *the change model* using the matched firm benchmark shows no significant performance improvement<sup>46</sup>.

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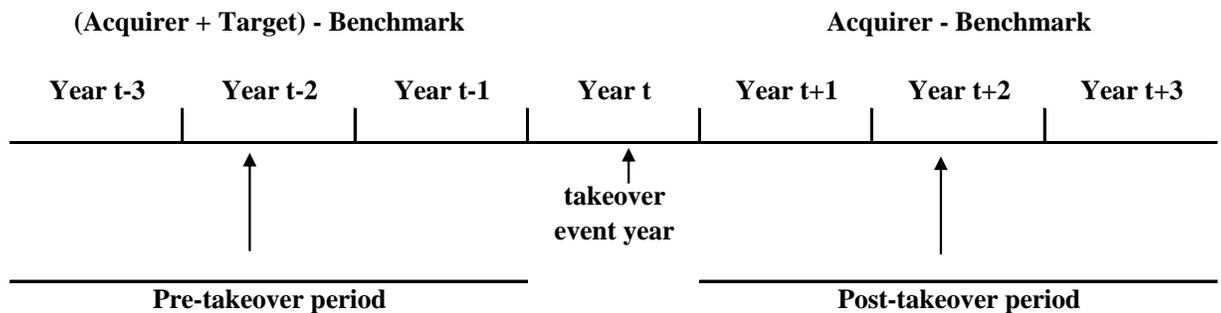
<sup>46</sup> According to Ghosh (2001) if, on average, merging firms do not outperform industry-median firms during the pre-takeover period, then the regression-based and change methods should provide the same, unbiased, results.

In the UK Powel and Stark (2005) compare the performance of the above models using both the industry-median firm benchmark and the industry-, size- and pre-performance- matched firm benchmark. The results reveal that *the regression model* shows stronger performance improvement in comparison to *the change model*<sup>47</sup>. *The change model* shows a significant improvement only in one case – when ‘accruals’ cash flow is used together with the adjusted market value of total assets. Therefore these authors conclude that “takeovers completed in the UK over the period 1985 to 1993 result in modest improvements in operating performance”.

#### 4.5.5 Measuring post-takeover abnormal operating performance using the change model

In this thesis, post-takeover operating performance will be analysed on the basis of *the change model*, using two benchmarks: industry-median firms returns and industry-, size- and performance-matched firm benchmarks. For this purpose we calculate pre-merger pro-forma performance by combining acquired and acquiring firms’ performance in year  $t-1$ . Then we compare this pro-forma performance with the post-merger actual performance of acquiring firms. The following diagram describes this process.

Diagram 4-1. Description of the performance analysis horizon



The pro-forma pre-merger performance measure is created by combining the acquired and acquiring firm performance in year  $t-1$  as follows:

$$ROA_{i,t-1} = \frac{EBITDA_{i,t-1}^{acquired} + EBITDA_{i,t-1}^{acquirer}}{TA_{i,t-2}^{acquired} + TA_{i,t-2}^{acquirer}} \quad (6)$$

<sup>47</sup> The intercepts from ‘accruals’ cash flow-based regressions are significant, although intercepts from ‘pure’ cash flow-based regression are insignificant

where  $ROA_{i,t-1}$  is the pre-takeover pro-forma performance measure of the acquired and acquiring firms at the end of year  $t-1$ ;  $ROA_{i,t-1}^{acquired}$  is  $i^{\text{th}}$  acquired firm's performance measure at the end of year  $t-1$ ;  $ROA_{i,t-1}^{acquirer}$  is  $i^{\text{th}}$  acquiring firm's performance measure at the end of year  $t-1$ ;  $TA_{i,t-2}^{acquired}$  is total market value of the assets of the  $i^{\text{th}}$  acquired firm at the end of year  $t-2$ ,  $TA_{i,t-2}^{acquirer}$  is total market value of the assets of the  $i^{\text{th}}$  acquiring firm at the end of year  $t-2$ .

The pre- and post-takeover operating performance indicators of the matched firms are combined in the same manner. Then, using the pre-takeover pro-forma performance of the merged firms and benchmarks (industry-median firms and matched firms) 'abnormal' operating cash flow performance is determined as follows:

$$\overline{ROA}_{i,t-1} = ROA_{i,t-1} - Benchmark_{i,t-1} \quad (7)$$

Similarly, the post-takeover abnormal operating performance of acquiring firms, relative to the benchmarks, will be calculated as follows:

$$\overline{ROA}_{i,t+k} = ROA_{i,t+k} - Benchmark_{i,t+k}, \quad k \in \{1, 2, 3\} \quad (8)$$

Then the operating performance change from the pre-takeover year to post-takeover years is computed as follows:

$$\Delta ROA_i = \overline{ROA}_{i,t+k} - \overline{ROA}_{i,t-1}, \quad k \in \{1, 2, 3\} \quad (9)$$

This thesis uses the above described methodology to determine the operating performance change in both merging and non-merging control firms.

#### **4.5.6 Modelling the association between operating performance change and workforce adjustment**

To model the relationship between changes in employment variables and post-takeover operating performance, Krishnan *et al.* (2007) use methodology based on mediating regression analysis. These authors show that when the mediating variable (workforce reduction) is not included in the model, the relation between premium and post-acquisition performance is statistically significant. However, when the regression model includes the workforce reduction

variable, the significance of the relationship between premium and post-acquisition performance disappears, but the relation between workforce reduction and post-acquisition performance is significant. Therefore the authors argue that workforce reductions mediate the relationship between premiums and post-acquisition performance: higher premiums lead to more workforce reductions, which in turn lead to a decline in post-acquisition performance. The Krishnan *et al.* (2007) results show that a 3.5% workforce reduction in an acquiring firm reduces the performance of this firm by 1.4 units.

Following Krishnan *et al.* (2007) we regress workforce adjustments on operating performance levels. In addition, we also regress workforce adjustments on the operating performance change variable. Barber and Lyon (1996) argue that the change in a firm's operating performance produces more accurate results than the level of a firm's operating performance. These regressions test whether there is a systematic association between post-takeover workforce adjustments and operating performance change, controlling for other relevant variables.

In sum, to investigate the improvement in post-takeover operating performance, this thesis uses the change method, using EBITDA deflated by the market value of assets at the beginning of the year. The sample of non-merging firms will be matched to the merging firms sample by size, industry and pre-takeover performance. The main objective of this comparison is to test whether the merging firms out-perform or under-perform the non-merging firms, controlled by industry, size and pre-takeover performance.

## **4.6 Methods for analysing the link between shareholder gains and employee wealth concessions**

To address the third question (Q3) we need to measure short-run shareholder gains around takeover announcement and long-run shareholder gains during post-takeover period. Below we discuss some relevant methods to measure the effect of takeovers on shareholder wealth.

### **4.6.1 The event study method**

To measure the effects of takeovers on shareholder wealth this study uses the *event study* method, first employed by Ball and Brown (1968) and Fama *et al.* (1969). According to this methodology the effect of an event (takeover announcement) on shareholder value will be analysed by comparing the actual share price returns around the event with the expected share

price returns in the case of no takeover being announced. The expected share prices are calculated using a benchmark model. The difference between actual share prices and expected share prices provide abnormal returns. Cumulating these differences over an event window produces Cumulative Abnormal Returns (CARs). We follow the Brown and Warner (1985) methodology in calculating short-term CARs using daily share price returns. Below we define an event window and a ‘normal’ return-generating process.

#### **4.6.2 Measuring short-run abnormal returns earned around takeover announcements**

As share prices reflect the expected cash flows from holding these shares, a rise in share prices upon takeover announcement may indicate an increase in future expected cash flows that could be considered as value created by takeovers. Therefore some commentators argue that the difference between the actual share price and a share price in the case of no takeover indicates takeover gains: an increase in expected cash flows resulting from the takeover-related efficiency improvements (Jensen and Ruback, 1983). The difference between actual returns on a stock over the event window and benchmark returns not conditional on the event is defined as an abnormal return, attributable to takeovers.

##### *Event window*

By comparing the actual return accumulated during the short period around the takeover announcement date (‘event window’) to a market-predicted ‘normal’ return, expected if there were no takeover event and no new information was released to the market, we test whether the gained returns are significantly greater or less than the expected ‘normal’ returns. In order to capture the full effect of takeover events, the study calculates the abnormal returns using three event windows: 11 days (-5, +5), 3 days (-1; +1) and event date windows. Fuller *et al.* (2002) conclude that a five-day event window is wide enough to capture the full market reaction to a merger announcement. We use longer windows (11 days) in order to account for the full effect of information leakage to the market before the actual announcement and to account for the delayed market reaction to the announcement. Also by comparing the shorter event date window results with longer-period windows (11 days and 3 days) we can decide whether there was an information leakage or market reaction delay.

### *Abnormal return-generating benchmark models*

The selection of a *benchmark model* to provide the expected share price for the ‘event window’ period or the construction of benchmark portfolios is one of the most important issues in an event study. There are several different models that can be used in calculating the expected returns: the market model, the market-adjusted model, the Capital Asset Pricing Model (CAPM) and the Fama-French Three Factor model (FFTFM). Furthermore, external benchmark portfolios constructed on the basis of pre-determined characteristics (such as size, market-to-book ratio, industry) can be used to determine the expected returns.

Researchers have used different benchmark models to calculate predicted market returns during the event period. Brown and Warner (1985) show that a simple mean adjusted return model and market model perform no worse than other models which adjust for market-wide factors and for risk. On the basis of this we use the following two models to compute CARs.

The first model is *the market model*, which determines the takeover announcement period abnormal returns as the difference between the actual stock return and the expected return relative to the market (such as FTSE All-share Index). The market model parameters are estimated by regressing market returns on stock returns using the estimation period (for example, from -300 days to – 60 days) return data. Using the relevant parameters from these regressions, the market model estimates the expected return as follows:

$$MM_{it} = \alpha_i + \beta_i R_{mt}, \quad (10)$$

where  $MM_{it}$  is the estimated stock return according to the market model,  $\alpha$  and  $\beta$  are the market model parameters and  $R_{mt}$  is the return on market portfolio.

The takeover announcement-period abnormal return is the difference between the actual stock return and the expected return estimated by the market model:

$$AR_{it} = R_{it} - MM_{it}, \quad (11)$$

where  $AR_{it}$  is the daily abnormal return, and  $R_{it}$  is the return on stock  $i$ <sup>48</sup>.

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<sup>48</sup> Computation of the return on a stock based on Datastream information is shown in Appendix 5.

The second model is the *market adjusted model*, where market model parameters are adjusted as  $\alpha = 0$  and  $\beta = 1$ . Thus, according to this model, the expected return is equal to the market return:

$$MA_{it} = R_{mt} , \quad (12)$$

This model calculates daily abnormal stock returns as follows:

$$AR_{it} = R_{it} - MA_{it} \quad (13)$$

To calculate CARs first we need to aggregate abnormal returns for each firm over the event window:

$$CAR_i = \sum_{t=\tau_1}^{\tau_2} AR_{it} , \quad (14)$$

where  $CAR_i$  is  $i^{\text{th}}$  stock's cumulative abnormal return,  $\tau_1$  is the start date of the event window,  $\tau_2$  is the end date of the event window.

Next the event window end-date CARs of all sample firms are summed and divided by the number of firms to determine the mean CAR for the sample:

$$\overline{CAR} = \frac{1}{N} \sum_{i=1}^{N_f} CAR_{it} , \quad (15)$$

where  $\overline{CAR}$  is the sample mean cumulative abnormal return.

As we exclude overlapping events from the sample, we can use conventional t-statistics. As the event window has several days, the statistical significance of short term CARs over the event window has been tested using the methodology applied in Brown and Warner (1985), Kothari and Warner (1997) and Goergen and Renneboog (2004). According to this methodology, the standard deviation of abnormal returns is multiplied by the square root of the number of event window days, providing a t-statistic for testing the significance of CARs over the event window:

$$t = \frac{\overline{CAR}}{\sigma(AR)\sqrt{T}} \quad (16)$$

where the  $\overline{CAR}$  is defined as above,  $T$  is the number of days in the event window;  $\sigma(AR)$  is the standard deviation of abnormal returns, which is determined using the estimation period (for example, from -300 days to -60 days) abnormal returns:

$$\sigma(AR) = \sqrt{\frac{1}{239} \sum_{t=-300}^{t=-60} (\overline{AR}_t - \overline{\overline{AR}})^2}, \quad (17)$$

$$\overline{AR} = \frac{1}{N} \sum_{i=1}^{N_t} AR_{it}, \quad (18)$$

$$\overline{\overline{AR}} = \frac{1}{240} \sum_{t=-300}^{t=-60} AR_t \quad (19)$$

### 4.6.3 Measuring long-run abnormal returns

Prior research well recognises the limitations of using CARs in calculating long-run abnormal returns. Specifically, it points to several major sources of bias in the estimation of long-run abnormal returns, including skewness, a new listing and correlated abnormal returns (Barber and Lyon, 1997; Mitchell and Stafford, 2000; Kothari and Warner, 2007). When daily or monthly abnormal returns are cumulated in the long run, they produce positively skewed test statistics (Roll, 1983). Another problem is related with new share listings during a long observation period<sup>49</sup>. A new listing bias arises due to significant underperformance after the initial public offerings (Ritter, 1991). If a market index and portfolio approach is used, then these underperforming new listings may produce higher abnormal returns. Furthermore, in the long run returns tend to be cross-sectionally correlated because sample firms have overlapping long-term event windows. As a result of this cross-correlation long-term abnormal returns tend to be right-skewed.

Other sources of potential bias are the selection of benchmark model and survivorship bias. Together these biases affect the reliability of the sample mean abnormal returns and sample

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<sup>49</sup> This is a part of wider methodological problem related with detecting abnormal returns attributable for a particular event in the long run. In the long run there may occur other corporate events that may also affect share prices. However, it is difficult to isolate the sole effect of the event being investigated.

standard deviation. Jointly these biases may lead to misspecification and to the violation of zero mean abnormal returns (the normality assumption).

Recognising these limitations, researchers agree that using CAR methodology with a reference portfolio or asset pricing models in long-run event studies may produce mis-specified results. Kothari and Warner (1997) undertake a simulation study to examine CAR methodology with all four asset-pricing models (the market adjusted model, the market model, the CAPM and the FTFM). Their results indicate that all models produce both positive and negative abnormal returns too often. The authors argue that in these cases, due to the sources of bias discussed above, parametric test statistics do not satisfy zero mean and unit normality assumptions. Therefore they suggest applying non-parametric test statistics and bootstrapping methodology for testing the long-run abnormal returns.

Therefore empirical research, investigating post-event long-term abnormal returns, uses Buy-and-Hold Abnormal Returns (BHAR) and Calendar Time Abnormal Returns (CTAR) approaches, although the statistical properties of these approaches are still being debated among financial economics scholars.

#### *Buy-and-Hold Abnormal Returns*

BHAR is the average multiyear return from investing in a portfolio of acquiring firms in comparison to investing in a portfolio of non-acquiring firms. This model calculates long-term abnormal returns as the simple difference between a realised buy-and-hold investment return on an acquiring firm's portfolio and the expected return on a buy-and-hold investment in a benchmark portfolio.

Barber and Lyon (1997) advocate calculating BHARs using the benchmark of matched firms' portfolio, constructed according to the matched size and book-to-market ratio, rather than using a reference portfolio, such as a market index. According to these authors, calculating BHARs on the basis of a matched firms' portfolio is a better methodology, because 'it accurately measures an investor experience of investment'. Similarly, Kothari and Warner (1997) show that, with the reference portfolio approach or asset pricing models, the BHARs could be at least as biased as CARs, as it is difficult to obtain both unbiased mean abnormal returns and variance estimates in the long-run to be used to derive reliable t-statistics.

However, the problem of BHAR methodology is that it may show a larger abnormal return for a longer period. For example, if in fact there exist abnormal returns for the first 6 months and no abnormal returns exist during the remaining period of 3 years, it shows that abnormal returns exist for whole 3-year period. Furthermore, the above-mentioned sources of bias a new listing, the rebalancing of a benchmark portfolio, and the skewness of multiyear returns – still apply in the case of BHAR (Barber and Lyon, 1997, Kothari and Warner, 1997).

Another deficiency of the BHAR methodology is that it ignores the cross-sectional dependence of abnormal returns and therefore may produce overestimated test statistics (Mitchell and Stafford, 2000). One way of dealing with this problem is to use skewness-adjusted test-statistics or t-statistics estimated using the bootstrapping methodology.

#### *The Calendar Time approach*

One of the main requirements of the long-term abnormal return calculation methodologies is that such methodologies should adjust for the changes in the relevant risk for each stock. This is not required for the short-term abnormal returns calculation. But in the long-run calculation any small error in risk adjustment can bring about economically large differences in abnormal returns (Kothari and Warner, 2007). The CTAR model, which was first introduced by Mandelker (1974), takes into consideration the change in risk and subsequent change in required rates of return after takeovers<sup>50</sup>.

Later Fama (1998) and Mitchell and Stafford (2000) advocate the CTAR method, as they argue that it eliminates cross-sectional dependence in random samples by accounting for them in portfolio variances and therefore the distribution of this estimator is better approximated by the normal distribution. After accounting for the cross-correlation of sample firm abnormal returns, Mitchell and Stafford (2000) report no long-run abnormal returns for acquirers. At the same time, these authors stress that this result is due to the elimination of cross-sectional dependence in sample firm abnormal returns, not due to the construction of benchmark portfolios. In contrast to the previous research which suggests that CTAR has little power to detect abnormal returns (Loughran and Ritter, 2000), Mitchell and Stafford (2000) show that the CTAR method has more power than the BHAR method, after accounting for dependence.

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<sup>50</sup> Appendix 7 explains in detail the procedures of abnormal returns calculation using the CTAR approach.

Lyon *et al.* (1999) show that the control firm benchmark performs well with both BHAR and CTAR methods. Furthermore, as CTARs are less skewed than BHARs, conventional t-statistics yield more reliable statistics.

In sum, following Ritter (1991) and Barber and Lyon (1997), we apply BHAR methodology to measure post-takeover long-run stock price performance, which is specified as follows:

$$BHAR_i = \prod_{t=1}^T (1 + R_{i,t}) - \prod_{t=1}^T (1 + R_{imat,t}), \quad (20)$$

where  $R_{i,t}$  is the monthly return on the  $i^{th}$  acquiring firm stock for month  $t$ , and  $R_{imat,t}$  is the return on matching  $i^{th}$  firm for month  $t$ .

As the sample used in this thesis excludes overlapping events, the standard t-statistics can be used to test the significance of the abnormal returns, which is calculated as follows:

$$t = \frac{\overline{BHAR}_\tau}{\sigma(BHAR_\tau) / \sqrt{n}}, \quad (21)$$

where  $\overline{BHAR}_\tau$  is the sample mean BHAR for a  $\tau$  month period,  $\sigma(BHAR_\tau)$  is the cross-sectional sample standard deviation of abnormal returns, and  $n$  is the number of sample firms.

#### 4.6.4 The Efficient Market Hypothesis and the validity of return-generating models

The widely reported long-term negative abnormal returns for acquirers can be explained by one of the three possible explanations: (1) takeovers are in fact value-destroying or value-re-distributing investments; (2) the market may be over-reacting to the announcement of takeovers, casting doubts on the validity of the Efficient Market Hypothesis (EMH); (3) the abnormal returns-generating models or test statistics may be mis-specified.

In this regard, the validity of the EMH assumption is crucial in calculating reliable short- and long-run abnormal returns. Kendall's (1953) results reveal that stock prices follow a random walk, which means that future prices are not predictable and current prices fully reflect all available information. Only the arrival of new information causes a change (increase or decrease) in the share prices. A semi-strong form of market efficiency states that all publicly available information should be instantaneously incorporated into the share prices, leaving no

opportunity for making abnormal returns in future<sup>51</sup>. Under the EMH any future effect of an event should be immediately incorporated into the share price upon announcement of the event. Fama (1965) defines an efficient market as follows:

‘In an efficient market, competition among many intelligent participants leads to a situation where, at any point in time, actual prices of individual securities already reflect the effects of information based on events that have already occurred and on events which, as of now, the market expects to take place in the future. In other words, in an efficient market at any point in time the actual price of a security will be a good estimate of its intrinsic value’.

While the extant evidence on the CARs is in compliance with the EMH, the evidence on long-run abnormal returns casts some doubts on the validity of the EMH, as under this hypothesis any effect of takeovers should be immediately incorporated into the share price upon announcement of the event and there should not be any abnormal returns in the long run. If takeovers are value-destroying investments, then return-generating models may be correctly specified, indicating the invalidity of the EMH. In this case, markets react to the takeover announcements with a substantial time delay (perhaps only after obtaining performance data).

Alternatively, negative long-term abnormal returns may indicate overestimation of takeover gains by the market (Shleifer, 2000). This alternative explanation is more consistent with the phenomenon that takeover announcement gains accumulated to target shareholders are largely offset by declines in the combined firm share price. In short, the research has not been able to agree on valid empirical models, especially for measuring the long-term effect of takeovers on shareholder wealth.

#### **4.6.5 Modelling the association between shareholder gains and workforce adjustments**

After measuring the post-merger changes in both shareholders’ and employees’ wealth, the thesis investigates the relationship between these two variables. Changes in employment and wages might account for a significant fraction of the takeover-related gains accrued to the shareholders (Shleifer and Summers, 1988). Supporting the idea that takeover gains come purely from cost savings, Houston *et al.* (2001) provide evidence that the main source of re-valuations is the estimated cost savings, rather than performance improvements. Different

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<sup>51</sup> Other forms of EMH are the weak form and the strong form. According to the weak form of market efficiency, all past information should be reflected in current share prices. According to the strong form of market efficiency, all past, currently publicly available and private information should be incorporated into share prices.

kinds of cost savings may motivate takeovers, including cost savings resulting from joint operation synergies or cost savings from investment cuts and employee layoffs.

*The value-redistribution theory* argues that takeovers facilitate wealth transfer from workers to shareholders (Shleifer and Summers, 1988). In this case, workforce and wage growth should be inversely related to target shareholders' gains. To investigate this hypothesis we regress workforce adjustments on target shareholders' gains (CARs). Alternatively, *the value-creation theory* of takeovers suggests that takeovers benefit all stakeholders, including workers, by improving efficiency (Manne, 1965). In this case, workforce and wage growth should depend on the success of mergers, where success is measured by long-run abnormal returns. To investigate this hypothesis we regress workforce adjustments (and wage changes) on shareholders' long-run abnormal returns (BHARs).

#### **4.7 Methods for analysing the labour demand effects of takeovers**

The fourth question investigates the labour demand impact of takeovers. In estimating the labour demand effect we follow the modelling strategy adopted by previous research and use the panel data estimation methods. Below we discuss these methods.

##### **4.7.1 Modelling the association between labour demand and employee layoffs**

As previously discussed, prior research determines the post-merger optimum labour level, taking into consideration lagged employment, wages (relative to cost of capital) and output (Haynes and Thompson, 1999a; Conyon *et al.*, 2001, 2002a, 2004). Following this research, to analyse the labour demand effect of mergers, we estimate an autoregressive distributed lag model as described in equation (3).

When this model includes a merger dummy, it compares the post-takeover labour demand shift in merging firms with the labour demand change in non-merging firms. Furthermore, when related and unrelated merger dummies are used instead of the merger dummy, the model compares related and unrelated mergers' labour demand effect with the labour demand change in non-merging firms. Similarly, to distinguish the effects of hostile versus friendly takeovers, the model includes hostility and friendly dummy regressors.

The advantage of this methodology is that it controls for output and wages as well as for macro-economy-wide changes. In contrast, Brown and Medoff's (1988) regression

methodology only controls for initial employment and wages. Another advantage of this model is that by using panel data structure the effect of unobservable variables, such as management quality, can be eliminated. Omitting these unobservable variables creates a correlation between explanatory variables and error terms. The effect of unobservable variables can be eliminated by first differencing all variables included in the model. However, even after first differencing, the lagged dependent variable will still be correlated with the error term.

Under the active market for corporate control, synergy or better labour management should reduce post-merger labour demand. Acquirers should make merger-related employee layoffs based on the extent of labour demand decline. We investigate whether labour demand decline is higher in mergers that involve layoffs than in mergers that do not, using panel data-based GMM regression methods. Using the same dynamic adjustment model (equation 3), this thesis replaces the merger dummy with the layoff dummy and non-layoff dummy regressors. This enables us to compare the labour demand change in acquisitions that involve employee layoffs with the labour demand in acquisitions that do not involve employee layoffs. With this estimation it will be possible to test the argument that the post-merger employee layoffs are undertaken after those mergers that result in higher labour demand decline.

In the equation (3) the presence of a lagged dependent variable and an unobservable variable causes a correlation between explanatory variables and the error term. To deal with the endogeneity issue prior research uses the Instrumental Variable estimation method (Conyon *et al.*, 2002a) and the difference GMM method (Gugler and Yurtoglu, 2004). Based on the recent recommendations on dealing with the weak instruments problem (Arellano and Bover, 1995; Blundell and Bond, 2000), we use the systems GMM estimation method, which uses more reliable instrumental variables. Below we discuss panel data estimation methods and Appendix 8 provides extended discussion on this issue.

#### **4.7.2 Panel data based regression methods**

Cross-sectional regression shows the relationship between dependent and independent variables at one point in time. In contrast, panel data-based regression enables us to investigate the dynamic effect of independent variables on the dependent variable, using data on several years. This is important in analysing the dynamic effect of takeovers on labour demand, as it may take several years for the full effect of mergers to materialise. Thus, using panel data-

based estimation methods, it will be possible to examine the effect of mergers on employment several years after takeover.

The endogeneity issue is one of the main problems of cross-sectional analysis. There may be measurement error and simultaneous association between the dependent and independent variables. At the same time, the merger event itself may be endogenous: acquirers select targets with better performance and high growth (Ravenscraft and Scherer, 1987; McGuckin and Nguyen, 2001). Reverse causality is another source of endogeneity: acquirers may adjust the workforce taking into consideration the operating performance results, but also they can reduce post-merger employment to cover a high premium, as suggested by Krishnan *et al.* (2007). To control for the endogeneity problem, this paper uses dynamic panel data estimation methods to analyse the consequence of workforce adjustments for performance.

In an autoregressive distributed lag model, such as equation 3, some of the independent variables may not be strictly exogenous, as they may be correlated with the error term due to (1) the presence of the lagged dependent variable and (2) unobserved firm-specific heterogeneity. Furthermore, there is the additional possibility that some explanatory variables may be endogenous variables. The estimation methods based on cross-sectional data cannot deal with the endogeneity problem. Even pooled OLS estimates are inconsistent. Therefore we use a panel data-based estimation method to control for firm-specific heterogeneity across observations. We remove the effect of firm-specific unobservable variables by first differencing. However, a first-differenced lagged dependent variable may still be correlated with the error term due to autocorrelation. Therefore we instrument endogenous variables with their own lagged dependent variable and lagged first differences<sup>52</sup>.

Recent research recommends using lagged levels as well as lagged first differences of all endogenous variables as instrumental variables to improve the efficiency of an estimator. Arellano and Bond (1991) argue that using additional instrumental variables in the context of a GMM estimator optimally exploits all available information. Specifically, they suggested that the first-differenced lags could be weak instruments and proposed to use all available lagged levels as instrumental variables for the differenced variables. If data is available for T

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<sup>52</sup> Appendix 8 discusses some of the static and dynamic panel data estimation methods.

period then a set of available instrumental variables becomes  $(y_{i1}, y_{i2}, \dots, y_{iT-2})$ . A GMM estimator that only uses lagged levels as instrumental variables is called a ‘difference GMM’.

The second condition is that instrumental variables should explain some part of the variation in the endogenous variable. Arellano and Bover (1995) argue that lagged levels could be poor instruments for first differences. In particular, when the correlation between first differences and lagged levels to be used as instrumental variables is weak, instruments become less informative and the estimates may be biased. Arellano and Bover (1995) and Blundell and Bond (2000) suggest using the *differenced lags* along with the *lagged levels* as instruments for the equations in first differences, if they are not correlated with the error term.

Arellano and Bover (1995) and Blundell and Bond (2000) show that both *lagged differences* and *lagged levels* could be used as instrumental variables to increase efficiency in an estimator. This estimator is called a ‘systems GMM’ as it combines the lagged level instruments with the lagged difference level instruments. To investigate the fourth question (Q4), we apply the systems GMM estimation method, which instruments endogenous variables with their own lags and lagged first differences.

## **4.8 Conclusions**

This chapter has identified appropriate research methods to be applied in the empirical chapters of this thesis. Overall, these research methods come from three academic disciplines – accounting, finance and industrial economics – and include univariate and (cross-sectional and panel data-based) multiple regression techniques.

First, to explore the reasons for workforce adjustments, we need to analyse the pre-takeover operating performance of both acquired and acquiring firms. Then we use the regression methods to analyse different factors that may prompt post-takeover workforce adjustments.

Secondly, we analyse post-takeover operating performance change using the change method. The performance of merging firms will be compared with the performance of non-merging firms. We also investigate the association between workforce adjustments and operating performance levels, as well as the association between workforce adjustment and operating performance change, using the regression methods.

Thirdly, we analyse the association between post-takeover workforce adjustments and shareholder gains. For this purpose, we need to measure short- and long-run abnormal returns for shareholders. To empirically investigate the association between shareholder gains and employee wealth concessions, we regress workforce adjustments on target shareholders' short-run abnormal returns and acquirer shareholders' long-run abnormal returns. These regressions provide empirical evidence on the wealth transfer hypothesis.

Finally, the thesis investigates labour demand and wage effects of takeovers. In particular, we are interested in whether labour demand and wage effects of takeovers are different in the layoff-involving acquisitions from in the acquisitions that do not involve employee layoffs. As labour demand adjustment could be dynamic, the estimation model includes a lagged dependent variable, which is correlated with the error term, creating an endogeneity problem. Therefore the final empirical chapter uses panel data estimation methods.

## 5 CAUSES OF POST-MERGER WORKFORCE ADJUSTMENTS

### 5.1 Introduction

#### 5.1.1 Research motivation

It is well known that mergers and acquisitions lead to substantial workforce reductions. However, systematic empirical evidence on the causes of post-takeover workforce reductions is inconclusive. In contrast to the common expectation that workforce reductions are undertaken to improve firm performance, some commentators argue that such reductions are undertaken to create shareholder value and to regain premiums paid to targets. Empirical evidence on this question would contribute to an understanding of whether post-merger labour management decisions are influenced by market-based mechanisms of corporate governance or whether such decisions are made on the basis of independent managerial judgements for the purpose of achieving success for the company, as required by company law.

This chapter empirically investigates the factors underlying post-merger employee layoffs. Prior research suggests several conflicting factors that may prompt such layoffs. On the one hand, it is argued that efficiency improvement through management disciplining and elimination of duplicative activities may reduce demand for labour, which may trigger workforce reductions. This argument is supported by recent empirical research, which concludes that mergers lead to improvements in efficiency. For example, O'Shaughnessy and Flanagan (1998) report that low labour efficiency in acquired firms leads to a high probability of post-merger job losses. Using sophisticated econometric models, a number of recent studies have shown that mergers reduce labour demand, leading to significant rationalisations in the use of labour and thereby increasing efficiency (Conyon *et al.*, 2002a, 2002b; Gugler and Yurtoglu, 2004; Amess *et al.*, 2008). Labour demand may decline due to synergy or better labour management post-merger.

On the other hand, post-merger workforce reductions could be undertaken to achieve higher returns on capital and/or to cover high premiums paid to target firm shareholders (Shleifer and Summers, 1988; Froud *et al.*, 2000; Sirower, 2000). In support of this view, the Krishnan *et al.* (2007) results indicate that managers make post-merger employee layoffs to regain high premiums. So, the need for performance improvement, management disciplining, synergy and high premiums have all been suggested as possible explanations for post-takeover workforce

adjustments, implying that there may be different causes of post-merger layoffs<sup>53</sup>. However, no one study has investigated the role of these competing factors in explaining post-merger workforce adjustments.

Identifying factors associated with layoffs may give some insights into causes of such layoffs. This chapter not only investigates factors leading to post-merger workforce reductions, but also factors that may prompt workforce growth. Therefore, in addition to the full sample analysis, we undertake further analysis, splitting the full sample into two sub-samples according to post-takeover changes in the number of workers: ‘the workforce reduction’ sub-sample (‘WFR’ hereafter), where post-merger combined employment levels decline relative to the pre-merger combined employment level, and ‘the workforce growth’ sub-sample (‘WFG’ hereafter), where post-merger employment levels grow relative to the pre-merger employment level. Comparing the performance of these two sub-samples provides further evidence on the factors that prompt post-takeover workforce changes.

First, to investigate the causes of post-merger workforce adjustments, the chapter compares pre-takeover operating performance of the WFR and WFG sub-samples using a univariate analysis. Next it uses a regression technique to examine the role of target firm under-performance, hostility, relatedness and a high premium in explaining post-takeover workforce changes in the full sample as well as in the sub-samples.

### **5.1.2 Brief results and contributions**

The results show that post-merger employee layoffs are undertaken in under-performing target firms, where there is a need and scope for efficiency improvement. Univariate analysis provides weak evidence of under-performance of the WFR sub-sample firms in comparison to the WFG sub-sample firms.

Regressions show that acquired firms’ prior performance explains both post-takeover workforce reductions and workforce growth, while acquirers’ prior performance only explains workforce growth. The full sample regressions show that related acquisitions lead to a higher level of workforce adjustments than unrelated acquisitions do. Hostile and related acquisitions lead to slower workforce growth in comparison to friendly and unrelated acquisitions,

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<sup>53</sup> Other factors that may lead to a higher level of workforce adjustments include post-merger asset divestments and cash payments during acquisitions.

respectively. Furthermore, the results show that high premiums are associated with lower workforce reductions. At the same time, high premiums are associated with slower workforce growth, possibly due to a higher level of synergy resulting from expensive acquisitions. The results imply that managers undertake employee layoffs when there is a need for efficiency improvement.

The chapter contributes to the literature by clarifying the reasons for post-merger workforce adjustments. There may be several different reasons for efficiency improvement: the need to stop further performance deterioration, the realisation of synergy or the disciplining of inefficient management. The results of this chapter suggest that managers undertake post-merger employee layoffs for efficiency improvement purposes, not to create shareholder value at the expense of labour, as suggested by prior research (Shleifer and Summers, 1988). In the long run, such efficiency improvements should also benefit employees. Therefore it can be concluded that one of the main governance mechanisms for restructuring to maximise shareholder value – corporate takeovers – does not necessarily negatively affect labour.

## **5.2 Theoretical background and hypothesis development**

There is growing evidence on the employment losses post-merger. For example, Black *et al.* (2007) show that higher levels of mergers and acquisitions activity leads to shorter job tenure, which means that such transactions involve employee layoffs. Deakin and Slinger (1997) and Lehto and Böckerman (2008) conclude that almost all changes in ownership lead to job losses. Conyon *et al.* (2001, 2002a, 2002b) show that mergers significantly reduce the *absolute* number of workers. However, the factors that lead to post-takeover employee layoffs are not well understood.

Prior literature suggests several factors that may lead to post-merger workforce reductions. Haynes and Thompson (1999a) discuss four possible ways that may enhance efficiency in bank mergers, namely: the exploitation of economies of scale, the elimination of duplicated capacity, the transfer of control over assets to better management and the opportunity to renegotiating explicit and implicit contracts post-merger. Each of these methods may involve employee layoffs. On the basis of this literature, we identify several factors that help to explain post-merger employee layoffs. These include: pre-takeover poor performance of merging firms, the disciplinary role of takeovers, synergy created by mergers and the high premium paid to targets.

Within the active MCC acquirers target under-performing firms to create shareholder value by re-allocating resources to the most efficient users and by improving firm performance (Manne, 1965). Efficient use of resources may also include enhancing labour efficiency through workforce reductions. Therefore it is expected that takeovers of under-performing targets may lead to workforce reductions. There are several reasons for workforce reductions after such efficiency improving takeovers.

First, employee layoffs may occur when firms already have declining business opportunities and related financial problems, as recovering from poor operating performance may require cost savings. In such cases, poor performance may also be associated with more traditional factors leading to employee layoffs, such as a decline in product demand, arising as a result of general business cycle conditions, technological or other industry-wide changes (Cappelli, 2000). The extant evidence suggests poor operating performance as one of the main antecedents of employee layoffs (Coucke *et al.*, 2007; Hillier *et al.*, 2007). Furthermore, there is some evidence showing significant improvement in firm performance after downsizing (Elayan *et al.*, 1998; Espahbodi *et al.*, 2000; Chen *et al.*, 2001). Second, low labour productivity may precede employee layoffs. Froud *et al.* (2000) argue that labour cost cuts provide relatively easy and unproblematic gains when firms are in a difficult position. Therefore layoffs may be undertaken to enhance labour efficiency. O'Shaughnessy and Flanagan (1998) report that post-merger employee layoffs are made to improve labour efficiency. Lichtenberg and Siegel (1992) show that acquisitions involve job losses, while at the same time they improve labour productivity. McGuckin and Nguyen (1995b) and McGuckin *et al.* (1998) report that ownership change causes further improvement in labour productivity. Conyon *et al.* (2004) show that mergers cause significant improvement in employee profitability.

In sum, the need for performance improvement may necessitate post-merger employee layoffs, because when firms perform poorly shareholders expect managers to undertake some restructuring activities (Morck *et al.*, 1989). There may be different reasons for poor performance, such as decline in product demand or technological change. This means that takeovers undertaken by profit-maximising managers could lead to employee layoffs in the short-run, although long-run employee wealth concessions depend on the success of mergers. Therefore the extent of the employee layoffs should be a function of acquired firms' pre-takeover performance. On the basis of this discussion, the following hypothesis will be tested:

Q1-H1: *The pre-takeover performance of both acquired firms and acquiring firms is positively associated with post-takeover workforce adjustments.*

It is suggested that synergetic gains are more likely to motivate friendly mergers, whereas gains from replacing inefficient management motivate hostile takeovers (Morck *et al.*, 1990). This means that hostile takeovers occur to discipline under-performing managers, who may avoid corporate downsizing even if it is required for efficiency improvement. If takeovers are motivated by disciplinary reasons, then profit-maximizing managers may undertake higher cost cuts after hostile takeovers than after friendly mergers. Therefore the extent of workforce reductions should depend on the mode of takeovers.

Similarly, hostile takeovers may occur to discipline managers who have just opted for a ‘quiet life’, who may have increased employment levels above the optimal level or may not have exerted enough control to monitor labour efficiency. In other words, employment levels may have been sub-optimal due to the behaviour of the incumbent management, who may have entrenched themselves and may have been applying inefficient labour management practices, leading to performance deterioration. Bertrand and Mullainathan (2003) show that when takeover threat is weak, managers may not exert enough effort to monitor workers and to shut down inefficient plants, but instead avoid difficult labour management decisions. They prefer to lead a ‘quiet life’, increasing staffing levels and paying high wages. These arguments imply that workforce reductions do not take place, even in under-performing firms, when managers are not monitored by external corporate governance mechanisms, such as the MCC. Thus, removal of such managers through takeovers should lead to workforce adjustment and to acquirers’ undertaking workforce reductions in under-performing firms.

Although the primary purpose of hostile takeovers is to discipline inefficient management, there is growing evidence showing that targets of hostile takeovers are not always under-performing firms. This means that hostile takeovers may occur for other reasons. Therefore some commentators argue that hostile takeovers do not necessarily occur to correct for managerial failure (Franks and Mayer, 1996; Agrawal and Jaffe, 2003). Instead, hostility may arise because incumbents expect staff cost cuts and therefore oppose such takeovers to protect workers. In other words, hostility may arise due to the incumbents’ disagreement with the proposed restructuring measures, such as employee layoffs (Franks and Mayer, 1996).

At the same time, hostile takeovers are more likely to facilitate wealth transfer from employees to shareholders and therefore they are more likely to reduce workforce (Shleifer and Summers, 1988; Pagano and Volpin, 2005a). Hostile takeovers provide high premiums (Franks and Mayer, 1996) and generate higher positive abnormal returns for both target and bidder shareholders (Goergen and Renneboog, 2004; Sudarsanam and Mahate, 2006). Such gains may come from renegeing on implicit contracts between the firm and employees.

Hostile takeovers may lead to excessive senior-level staff dismissal (Franks and Mayer, 1996) and higher levels of workforce reductions (Conyon *et al.*, 2001). However, supporting the efficiency enhancement role of hostile takeovers, Conyon *et al.* (2002a) show that such takeovers also cause greater reductions in labour demand: hostile takeovers reduce labour demand by 17%, while the decline is 9% after friendly mergers. Similarly, Gugler and Yurtoglu (2004) report that tender offers (hostile in nature) produce significantly different labour demand effects than other mergers. The Conyon *et al.* (2001) results indicate that both hostile and friendly takeovers are associated with a similar decrease in labour demand, averaging 7.5%, after controlling for output and wage changes. On the basis of these results, the authors suggest that a steep decline in the *absolute* number of workers after hostile takeovers is mainly due to large asset divestment and the resulting output decline.

All of these theories imply that a new management team may undertake the required corporate downsizing, meaning that employment reductions should be greater in hostile takeovers than in friendly mergers:

*Q1-H2: Hostile takeovers are associated with (i) greater workforce reductions and (ii) lower workforce growth than friendly takeovers.*

According to Cappelli (2000) corporate downsizing occurs as a result of the search for new operational efficiencies in the use of labour. Synergy created by mergers may lead to such rationalisations in the use of labour. Synergy may arise due to the elimination of duplicative activities. Thus, employee layoffs could be undertaken to materialise operational synergies, arising from economies of scale and scope. The extent of workforce reductions should depend on the level of synergies arising as a result of combining two businesses.

In this regard synergy has been suggested as one of the main rationales for mergers and acquisitions (Sirower, 2000). In support of this view, McGuckin and Nguyen (1995a, 2001) conclude that synergy is the main motive of takeovers.

As the scope for integrating two businesses is greater in related acquisitions than in unrelated acquisitions, the former should provide higher synergy: the scope for elimination of duplicative activities and other cost cuts should be greater in such cases. Rumelt (1974) argues that related diversifications provide superior performance to unrelated diversifications. Thus, related acquisitions should lead to higher levels of workforce reductions than unrelated acquisitions. In fact, prior evidence shows that acquirers determine optimal employment levels taking into consideration synergy resulting from mergers and the required level of workforce to produce the combined output. O'Shaughnessy and Flanagan (1998) find that the probability of layoff announcements is higher in related acquisitions than in unrelated acquisitions. Furthermore, more recent research shows that related acquisitions reduce labour demand more than unrelated acquisitions do (Conyon *et al.*, 2002a, 2002b; Gugler and Yurtoglu, 2004).

In sum, as a result of the elimination of duplicative activities, mergers may reduce demand for labour: the combined firm may be able to produce the combined product with a lower level of labour. Decline in labour demand may be greater in related acquisitions than in unrelated acquisitions (Conyon *et al.*, 2002a). On the basis of this discussion, the following hypothesis will be tested:

*Q1-H3: Related acquisitions are associated with (i) greater workforce reductions and (ii) lower workforce growth than unrelated acquisitions.*

A growing body of research provides evidence showing that managers pay a high premium for acquired firms. Such high premiums require higher returns, which could be achieved through labour cost cuts, when other options are limited (Froud *et al.*, 2000). Therefore a high premium was suggested as one of the main reasons for post-merger workforce reductions (Shleifer and Summers, 1988; Krishnan *et al.*, 2007).

Acquiring firm managers may pay high premiums as a result of *over-optimism*: they may systematically over-estimate their managerial capabilities and/or expected synergies (Roll, 1986; Malmendier and Tate, 2005). In fact, due to information asymmetries and difficulties in estimating synergies, even rational managers may overpay for targets. Hayward and Hambrick

(1997) empirical work shows a strong relationship between size of premium and CEO hubris, measured with several variables, such as acquiring firms' recent performance and recent media praise for the CEO. Sirower (2000) claims that many of these premium payments have created a requirement for performance improvements that are virtually impossible to realize, even by the best executives in the best of industry conditions. Thus, one available option for managers is to cut costs. Froud *et al.* (2000) argue that labour cost is the largest cost component that can be easily cut. Krishnan *et al.* (2007) argue that high premiums are the main factor leading to post-merger workforce reductions, as their results show that there is a positive association between premiums and the number of workers laid off post-merger.

However, under strong pressure from the MCC to maximise shareholder value, managers may pay low premiums for under-performing businesses and subsequently undertake wide-scale restructuring to turn these businesses around. Alternatively, managers may increase shareholder value by acquiring better performing firms with growing business opportunities, which may require higher premiums. Many authors argue that acquirers target better performing firms (Ravenscraft and Scherer, 1987; McGuckin and Nguyen, 2001). Franks and Mayer (1996) study reveals that targets were not poorly performing firms. In such acquisitions, incumbents may reject offers in order to secure high premiums. The following hypothesis will be tested:

Q1-H4: *The higher the premium, (i) the higher the workforce reductions and (ii) the lower the workforce growth.*

## 5.3 Data and methods

### 5.3.1 Econometric model specification

To test the above hypotheses, the following model will be estimated:

$$\Delta E = \alpha + \beta_1 ROA_T^{pre} + \beta_2 ROA_A^{pre} + \beta_3 H + \beta_4 R + \beta_5 Prem + \beta_6 Size + \beta_7 Lev + \beta_8 Board + \varepsilon \quad (22)$$

where  $\Delta E$  is the change in the logarithm transformed number of employees from t-1 to t+3, as described in equation (23),  $ROA_T^{pre}$  and  $ROA_A^{pre}$  represent the average industry-adjusted performance, for acquired and acquiring firms respectively, for the two years prior to takeovers;  $H$  is a hostility dummy, which takes 1 if the initial offer was rejected and 0 otherwise;  $R$  is a relatedness dummy, which takes 1 if both target and acquiring firms are in

the same industry and 0 otherwise; *Prem* is the premium, measured as the excess amount of bid price over share price one month prior to takeover announcement; *Size* is logarithm of the ratio of acquiring firm size to the transaction value (target firm size); *Lev* is the debt-to-equity ratio at the end of the takeover completion year; *Board* is the ratio of non-executive directors to the total number of directors, and  $\varepsilon$  indicates the error term. In extended models we also include the interactions of the *R* and *H* dummies with pre-takeover performance of target firms ( $ROA_t^{pre}$ ).

In the model we control for relative size, leverage and board structure on the basis of prior research findings. First, the integration of larger firms may create a greater challenge as well as more synergy than the integration of smaller firms. In this respect, McGuckin and Nguyen (2001) and Conyon *et al.* (2002a, 2004) find that the impact of acquisitions depends on the size of acquisition. Therefore we control for the relative size, measured as the ratio of acquired firm size (transaction value) relative to acquirers' market value at the end of t-1. Ofek (1993) argues that higher leverage following poor performance increases the probability of corporate restructuring, including employee layoffs. Therefore in the takeover context higher leverage may also force acquirers to cut costs by reducing the workforce. We measure leverage as the ratio of debt to total assets at the beginning of the relevant year. Finally, a higher number of non-executives on the Board of Directors may force managers to undertake restructuring activities that maximise shareholder value and prior research suggests that higher the number of non-executive directors, the more effective the Board (Cosh *et al.*, 2006; Yawson, 2006). Therefore we control for the Board composition of the acquiring firms.

### **5.3.2 Data**

A sample of takeovers of UK public companies occurring during the period 1990-2000 was hand-collected from the *Acquisitions Monthly* journal. Subsequent transactions undertaken by multiple acquirers were excluded from the sample: i.e. only one acquisition per acquirer within any consecutive five years was included in the sample. After the exclusion of mergers involving financial institutions, property companies and utility companies, the sample consists of 235 mergers and acquisitions. Furthermore, we required availability of financial data for at least one year for both acquired and acquiring firms during the pre-takeover period and for at

least one year for the acquiring firms during the post-takeover period<sup>54</sup>. Financial data was obtained from *Datastream*, and in some cases complemented with data from sample firms' Annual Reports, downloaded from the *Nexis*<sup>®</sup> database.

One month premium is usually used to control for rumours about takeovers and to determine the true size of the premium. As in other studies this variable is defined as the difference between the purchase price and the price 30 days before takeover, divided by the price 30 days before takeover (Hayward and Hambrick, 1997; Sirower, 2000).

Data on acquirer boards' composition has been collected from *Hemmington-Scott Corporate Registers*. Following Cosh *et al.* (2006) and Yawson (2006), the collected data includes the size of board (total number of directors) and composition of boards (number of executive and non-executive directors).

Appendix 2 provides the definitions of the variables used in this thesis. Appendix 3 provides pairwise correlation between these variables. Table 5.1 reports summary descriptive statistics for the variables. Panel A shows employment and annual average wage rate for acquired firms and their matched firms, while Panel B reports similar data for acquiring firms and their matching firms. This data reveals that acquirers are nearly four times larger than acquired firms in terms of number of employees. The data also reveals that the WFR sub-sample firms are larger than the WFG sub-sample firms. Panel C of the table reports other variables used in this thesis.

### **5.3.3 Measuring post-takeover workforce change**

A firm's workforce is measured by the number of employees, using *Datastream* data, which represents the annual average number of both full and part-time employees of the firm. The pre-takeover pro-forma combined employment level is computed by summing the target and bidder's workforce at the end of  $t-1$ . Then the post-takeover employee change variable is created by deducting this pro-forma number of employees from the acquirers' number of employees at the end of the third post-takeover year.

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<sup>54</sup> We collect data for the period of three years before the takeover completion year and three years after the takeover completion year. In most cases we have data for all three of the pre-takeover years and the three-year post-takeover periods.

We divide the full sample into the WFG and WFR sub-samples on the basis of the percentage change in the number of employees over a three-year period after the takeover completion year:

$$\% \Delta E = \log(E_{t+3}) - \log(E_{t-1}), \quad (23)$$

where  $\% \Delta E$  denotes the percentage change in employment,  $E$  denotes the number of employees. If, for an acquirer, the employment percentage change is positive, then this acquirer is included in the WFG sub-sample; if negative, then the acquirer is included in the WFR sub-sample.

**Table 5.1 Descriptive statistics**

		<b>Full sample</b>	<b>Matched firm</b>	<b>WFR sub-sample</b>	<b>WFG sub-sample</b>
<b>Panel A: Acquired firms' employment and wage data</b>					
Number of employees	Mean	3,313	2,088	4,485	1,586
	Median	770	706	1,096	623
	Std. Dev.	9,067	4,729	11,068	4,295
Annual wage per worker	Mean	23.33	25.30	22.39	24.71
	Median	21.58	22.80	21.23	21.81
	Std. Dev.	12.08	13.85	9.80	14.76
<b>Panel B: Acquiring firms' employment and wage data</b>					
Number of employees	Mean	13,088	9,214	16,427	8,167
	Median	2,975	2,661	3,285	2,903
	Std. Dev.	27,036	16,740	32,413	15,000
Annual wage per worker	Mean	23.04	23.12	22.77	23.44
	Median	22.11	22.60	21.68	22.96
	Std. Dev.	9.77	9.64	10.53	8.57
<b>Panel C: Other variables</b>					
Hostility dummy (1=hostile, 0=friendly)	number	52		34	18
Relatedness dummy (1=in the same industry, 0=otherwise)	number	136		72	64
Payment dummy (1=cash, 0=all equity or combination)	number	68		40	28
Premium	%	39		38	40
Relative size of acquired and acquiring firms	ratio	0.60		0.67	0.50
Leverage	ratio	0.47		0.48	0.45
Board composition (ratio of non-executive directors to total number of directors)	ratio	0.44		0.44	0.43
Board ownership	%	6.46		5.23	7.76
Number of observations	number	235	470	111	95

*Notes:* In 29 observations there is no data for the second and/or third post-takeover year; these are excluded from the sample when the sample is divided into the WFR and WFG sub-samples. Therefore the total number of observations in the WFR and WFG sub-samples differs from the full-sample observations.

Alternatively, the full sample could be divided into sub-samples based on specific determinants, where the sub-sample membership determinants could be estimated using a probit regression. Therefore, we analyse the determinants of sum-sample membership using profit regression, as shown in the table 5.2. The results show that target firms' pre-takeover performance is a significant determinant of post-merger workforce reductions, where workforce reductions are determined based on Datastream information. The negative

coefficient of this regressor indicates that an increase in the acquired firms' performance reduces the predicted probability of workforce reduction (so, in acquisitions involving poorer performing targets the probability of employee layoffs is higher than in acquisitions involving better performing targets). The results also show that acquiring firms' pre-takeover performance is a significant determinant of publicly announced merger-related employee layoffs<sup>55</sup>. Relatedness dummy is a significant determinant of workforce reductions only after 3 years period. These probit regressions also show that hostility dummy does not affect the probability of post-merger workforce reductions. The regressions also show that the higher the premium the higher the probability of workforce reductions after three years post-merger. Control variables also perform as expected: when acquirers acquire larger firms relative to their size, then the predicted probability of workforce reductions is higher; an increase in the board ownership in the acquiring firms reduces the predicted probability of post-merger workforce reductions.

In sum, these regressions show that acquired and acquiring firms' pre-takeover performance, industry relatedness and premiums are all significant determinants of post-merger workforce adjustments. Therefore, the full sample could be divided into sub-samples using these variables as the sub-sample membership characteristics. However, as there are several determinants of the sub-sample membership, dividing the full sample into sub-samples on the basis of these characteristics may be a complex process. Therefore, we split the full sample into the WFR and WFG sub-samples on the basis of *Datastream* post-merger workforce change.

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<sup>55</sup> Unreported results show that when other regressors (acquiring firm pre-takeover performance and dummy variables) are excluded from the regression, the acquired firms' pre-takeover performance becomes significant at 10% significance level in this regression as well.

**Table 5.2 Determinants of the post-merger workforce reductions**

<b>Independent variables</b>	<b>Dependent variables</b>			
	<b>Workforce reduction after 1 year</b>	<b>Workforce reduction after 2 years</b>	<b>Workforce reduction after 3 years</b>	<b>Announced layoffs</b>
Target firm pre-performance	- 1.211***	- 0.749**	- 0.227	- 0.595
Bidder firm pre-performance	- 0.014	0.081	0.099	- 1.321*
Relatedness dummy	- 0.237	- 0.245	- 0.458**	- 0.245
Hostility dummy	0.296	0.300	0.235	0.243
Premium	- 0.222	0.116	0.461*	0.003
Relative size	0.184***	0.117*	0.128**	0.218***
Leverage	1.035**	0.814	1.08**	1.293**
Board structure	- 0.157	- 0.013	- 0.171	- 1.112
Board ownership	- 0.033**	- 0.024***	- 0.026***	- 0.062***
Constant	0.304	0.227	- 0.113	0.349
Number of observations	235	235	235	235

*Notes:* The estimation method is probit regression. The dependent variable takes 1 if post-merger workforce change is negative and 0 otherwise. Post-merger workforce changes are determined as t+1 (t+2 and t+3) year workforce less t-1 year combined workforce of acquired and acquiring firm.

### 5.3.4 Selection of matched firms

Following the methodology proposed by Barber and Lyon (1996) and Loughran and Ritter (1997), for each sample firm we select a matching firm at the end of year t-1 on the basis of the following criteria: first, we filter all firms in the same industry with the sample firm; second, we select all firms within the 25% to 200% size interval of the sample firm's size, size being measured by total assets; third, we select the non-acquiring firm with the closest performance measure to the matching firm. In order to capture the full differences in the performance of acquiring and non-acquiring firms, the matched firms should not have undertaken any significant acquisition around the sample takeover event which is being investigated. Therefore as matched firms we select only those firms which have made significant acquisitions during the two years before takeovers and three years after takeovers. Matched-firm-adjusted performance is obtained by deducting the matched firm's performance from the sample firm performance. Appendix 4 discusses in detail the full procedure of the matched firm selection procedure.

## 5.4 Results

### 5.4.1 Univariate analysis of merging firms' pre-takeover performance

This section reports the results of univariate analysis of acquired and acquiring firms' pre-takeover operating performance. Operating performance is measured using EBITDA, divided by Total Assets, (hereafter 'Returns On Assets', (ROA)). This performance measure is adjusted using two benchmarks: industry-median firm and industry-, size- and performance-matched firm benchmarks<sup>56</sup>.

Taking into consideration the skewness of operating performance data and in order to control for the effects of outliers, it is customary to report median performance values. Therefore this thesis reports median values<sup>57</sup>. The null hypothesis tested is that the samples of both merged firms and matched firms come from the same population and there is no significant difference in the performances of these two samples. Barber and Lyon (1996) compare the performance of parametric t-statistics and non-parametric Wilcoxon test statistics in tests designed to detect abnormal returns. These authors conclude that non-parametric Wilcoxon test statistics are uniformly more powerful than parametric t-statistics. Furthermore, both test statistics are well specified only when sample firms are matched to control firms with similar pre-event performance. Following Barber and Lyon (1996), in univariate tests we use the non-parametric Wilcoxon matched-pairs signed-ranks test to test the significance of median values. The significance of the adjusted performance is tested using the Wilcoxon matched-pairs signed-ranks test, while the significance of the difference between the WFG and WFR sub-groups is tested using the two-sample Wilcoxon rank-sum (Mann-Whitney) test.

As Panel A of Table 5.3 shows, the WFG sub-sample acquired firms' performance does not differ significantly from their industry-median performance, while they outperform their matched firms in year t-1. The WFR acquired firms' performance does not differ from their industry-median performance either, while they outperform their matched firms only three years before takeovers. This suggests that the WFR acquired firms' performance declines immediately before takeovers and this performance decline may require some restructuring

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<sup>56</sup> Appendix 4 provides the full procedure on the selection of an industry-, size- and performance-matched firm for each acquired and acquiring firm.

<sup>57</sup> Unreported tests of the data show the non-normal distribution of the operating performance data. Therefore it is more appropriate to use median values rather than mean values.

activities. However, both benchmarks show that there is no significant difference between the performance of acquired firms in the WFG and WFR sub-samples.

**Table 5.3 Pre-takeover performance of the acquired and acquiring firms**

Pre-takeover years	Unadjusted performance	z-stat	Industry median firm adjusted performance	z-stat	Matched firm adjusted performance	z-stat
<b>Panel A: Acquired firms' pre-takeover performance</b>						
A-1: Full sample acquired firms						
t-3	0.1942		-0.0084	0.07	0.0125	1.94
t-2	0.1913		-0.0030	-0.08	0.0121	0.35
t-1	0.1724		-0.0076	-0.56	0.0030	1.73
A-2: The WFG sub-sample acquired firms						
t-3	0.1848		-0.0133	-0.28	-0.0036	0.55
t-2	0.1912		0.0010	0.07	-0.0132	-0.70
t-1	0.1691		-0.0076	-0.51	0.0064	2.01
A-3: The WFR sub-sample acquired firms						
t-3	0.2044		0.0000	0.37	0.0177	2.11
t-2	0.2000		-0.0046	-0.14	0.0191	1.09
t-1	0.1787		-0.0049	-0.36	0.0008	0.63
A-4: Difference between the WFG and the WFR sub-samples acquired firms' performance						
t-3	-0.0196	-1.10	-0.0133	-0.58	-0.0213	-0.89
t-2	-0.0088	-0.21	0.0057	0.13	-0.0323	-1.25
t-1	-0.0097	-0.26	-0.0027	-0.21	0.0055	1.09
<b>Panel B: Acquiring firms' pre-takeover performance</b>						
B-1: Full sample acquiring firms						
t-3	0.2422		0.0158	2.90	0.0152	0.52
t-2	0.2303		0.0209	4.32	0.0105	1.06
t-1	0.2307		0.0432	6.42	0.0053	2.84
B-2: The WFG sub-sample acquiring firms						
t-3	0.2578		0.0592	3.95	0.0030	-0.13
t-2	0.2576		0.0522	4.25	0.0063	0.63
t-1	0.2488		0.0632	5.75	0.0066	2.54
B-3: The WFR sub-sample acquiring firms						
t-3	0.2313		0.0032	0.39	0.0206	0.78
t-2	0.2146		0.0094	1.96	0.0170	0.89
t-1	0.2149		0.0270	3.59	0.0038	1.68
B-4: Difference between the WFG and the WFR sub-sample acquiring firms' performance						
t-3	0.0265	1.43	0.0560	3.01	-0.0175	-0.67
t-2	0.0430	1.78	0.0428	2.59	-0.0108	-0.12
t-1	0.0339	1.30	0.0363	2.08	0.0028	0.80

*Notes:* This table reports pre-takeover performance (ROA, defined as EBITDA/TA) of acquired and acquiring firms. Unadjusted performance indicates sample median firm performance. Industry median firm adjusted performance indicates the difference between industry median performance and firm performance. Matched firm adjusted performance indicates the difference between the sample median performance and matched firms' sample median performance.

As Panel B reports, the WFG acquirers outperform their industry-median firms during all three pre-takeover years and outperform their matched firms in year t-1. Similarly, the WFR

acquirers outperform their industry-median firms during two pre-takeover years and outperform their matched firms in year t-1, although it is only significant at the 10% level. Furthermore, the results show that the WFG acquirers perform significantly better than those WFR acquirers in all three pre-takeover years, when the industry-median firm benchmark is used. However, acquirers' pre-takeover performances in these two groups do not differ from each other, when the matched firm benchmark is used.

Several important points emerge from this analysis. In general it is believed that acquired firms are not underperforming firms (Franks and Mayer, 1996, 1997). However, our analysis provides some evidence showing that the WFR acquired firms' performance declines immediately prior to takeovers. In contrast, the WFG acquired firms outperform their matched firms before the takeover event year, whereas the WFR acquired firms perform similarly to their matched firms. At the same time, the WFG acquirers' performance is significantly better than the WFR acquirers' performance. These two factors together suggest that managers undertake post-merger employee layoffs in underperforming firms. Another point is that acquirers outperform both industry-median firms and matched firms immediately prior to acquisitions. This confirms the view that acquirers undertake mergers during or immediately after high performance years.

This analysis suggests that managers may make post-merger workforce reductions to stop further performance deterioration and/or to improve efficiency in labour usage. Furthermore, workforce reductions could be undertaken following hostile takeovers made to discipline those managers who enjoy a 'quiet life'. At the same time layoffs could be undertaken to achieve synergies through the elimination of duplicative activities, even though the targets' performance is not poor. On the other hand, employee layoffs could be undertaken to achieve higher levels of cost-savings to premiums paid for acquisitions. The next section investigates these reasons for post-merger employee layoffs in the multiple regression contexts.

#### **5.4.2 Multivariate analysis of the causes of post-takeover employment adjustments**

##### *OLS regression results*

As previously discussed, there may be several reasons for post-merger workforce adjustments. This section reports the results of regressions of post-takeover workforce adjustments on merging firms' pre-takeover performance, hostility (a management disciplining measure),

relatedness (a measure of synergy created by mergers) and premium. We are also interested to understand the factors leading to workforce reductions. Therefore, we re-run separate regressions for the full sample, as well as for the WFR and WFG sub-samples<sup>58</sup>. The extended models include the interactions of the hostility (relatedness) dummy variable with the pre-takeover performance of acquired firms.

In all regressions we identify outliers and influential points, using Cooks' D statistic. If this statistic is larger than  $4/n$  for an observation, where  $n$  is the number of observations in a particular regression, we exclude such an observation from the regression. Such outlier deletions cause the sample size to change from one test to another. Such outlier deletions also cause the sum of observations from the sub-sample cases not to be equal to the number of observations in the full sample case.

As Table 5.4 shows, acquired firms' pre-takeover performance is positively related to the post-takeover workforce changes. In the full sample, a one unit higher performance of acquired firms leads to 0.53% higher employment growth. The WFR sub-sample regression indicates that there is a negative association between the pre-merger target performance and workforce reductions, meaning that the poorer the acquired firms' performance, the greater the workforce reductions<sup>59</sup>. Specifically, a one unit lower performance causes a 0.38% greater workforce reduction. The positive coefficient of the target firm pre-takeover performance variable in the WFG sub-sample regression confirms this association: the higher the performance, the higher the workforce growth. Therefore the results support the hypothesis that post-takeover adjustments are positively associated with the pre-takeover performance of acquired firms.

The full sample regression shows that acquirers' prior performance does not explain the changes in employment, though this variable is only significant in the WFG sub-sample. Thus, acquirers' prior performance only explains workforce growth rather than workforce

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<sup>58</sup> There may be some issues related with using OLS regression technique in the WFR and WFG sub-samples, as in these regressions the dependent variables are split into negative and positive values – in the WFR sub-sample the dependent variable is negative workforce change (in absolute values), whereas in the WFG sub-sample the dependent variable is positive workforce change. In other words, the dependent variables of these sub-samples are truncated at 0. Therefore, in these sub-samples we have also run truncated regressions, the results of which are not reported in this thesis, as the overall results regarding the main variables of interests are similar in OLS and truncated regressions. Furthermore, the main conclusions of the thesis are made on the basis of the full sample results, whereas the sub-sample results are only used to confirm the full sample results.

<sup>59</sup> Equation (23) determines the percentage workforce reductions in negative numbers. However, in the WFR sub-sample dataset, the percentage workforce reductions are entered in absolute terms. So, in this sub-sample, the workforce reductions are given with positive signs, although in the full sample they have negative signs.

reductions. In contrast, in the WFR sub-sample, there is no association between acquirers' prior performance and subsequent workforce change. This partially supports the view that workforce adjustments are positively associated with the pre-takeover performance of acquiring firms: better performing acquirers further increase the number of their workforce.

Although the signs of the hostility dummy regressor are negative, the coefficients are not significant<sup>60</sup>. In the models that include interaction terms, the results show that workforce growth is significantly lower after hostile takeovers relative to workforce growth after friendly acquisitions. Only one model provides support for the hypothesis that hostility leads to lower workforce growth. In the WFG sub-sample the interaction term between hostility and target pre-takeover performance enter the model with significant negative coefficient, meaning that there is a significant difference in the effect of pre-takeover performance on workforce growth in hostile versus friendly takeovers. In hostile acquisitions a one point higher pre-takeover target performance causes 2.1% [= 0.989 – 3.088] slower employment growth. Previous research (Conyon et al., 2001) shows that hostile takeovers involve high levels of asset divestment during post-merger years, which may result in lower employment growth.

**Table 5.4 OLS regressions explaining post-takeover workforce adjustments.**

Independent variables	Full sample	WFR	WFG	Full sample	WFR	WFG
Acquired firm pre-takeover performance	0.528***	- 0.380***	0.334**	0.230	- 0.145	0.989***
Acquiring firm pre-takeover performance	0.353	0.145	0.371***	0.195	0.133	0.412
Hostility dummy	- 0.021	- 0.048	- 0.060	- 0.007	- 0.035	- 0.105*
Relatedness dummy	0.133***	- 0.009	- 0.094*	0.176***	- 0.026	- 0.041
Premium	0.001	- 0.107*	- 0.165**	0.059	- 0.078	- 0.049
Relative size	- 0.017	0.017	0.014	- 0.021	0.023	0.001
Leverage	- 0.687***	0.150	- 0.020	- 0.649***	0.314**	0.041
Board structure	- 0.203	0.068	0.075	- 0.238	0.114	0.123
Hostility dummy · Acquired firm performance				- 0.509	0.055	- 3.088***
Relatedness dummy · Acquired firm performance				0.251	- 0.247	- 0.772**
Constant	0.266**	0.240***	0.401***	0.188	0.143	0.235*
F-stat	7.12	4.38	4.34	5.75	2.87	7.20
Adjusted R-square	0.21	0.16	0.20	0.18	0.13	0.21
Number of observations	180	89	86	180	89	83

*Notes:* Dependent variables are workforce change in the full sample, workforce reduction in the WFR sub-sample and workforce growth in the WFG sub-sample. The estimation method is OLS, using heteroscedasticity-robust standard errors (White, 1980). Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

The full sample regressions show that related acquisitions lead to higher level workforce change during a post-takeover period than unrelated acquisitions, as shown by the significant

<sup>60</sup> This may be due to a small number of hostile takeovers in the WFR and WFG sub-samples. Another argument is that after controlling for under-performance, hostile takeovers may not be able to explain workforce adjustments.

and positive coefficient of the relatedness dummy regressor. However, although the relatedness dummy regressor coefficient is negative in the WFR sub-sample, it is not significant<sup>61</sup>. The WFG regression shows that related acquisitions cause a significantly lower increase in the number of workers than unrelated acquisitions. These results are consistent with prior research. For example, O'Shaughnessy and Flanagan (1998) report that the probability of employee layoffs is higher in related acquisitions than in unrelated acquisitions. Similarly, decline in labour demand is greater in related acquisitions than in unrelated acquisitions due to the existence of synergy in such mergers. In contrast, in the WFG sub-sample the interaction term between the relatedness dummy and acquired firm pre-takeover performance enters the model with significant negative coefficient, meaning that there is a significant difference in the effect of pre-takeover performance on employment growth in related versus unrelated takeovers. For example, in unrelated acquisitions a one point higher pre-takeover performance causes 1% higher employment growth, while in related acquisitions this effect is 0.2% [= 0.989 – 0.772].

The negative coefficient of the premium regressor implies that highly paid acquisitions lead to lower levels of workforce reductions. This result supports the view that acquirers pay lower premiums for under-performing firms, but subsequently undertake employee layoffs as a part of corporate restructuring to turn around acquired businesses. In contrast to this, the WFG regression shows that there is an inverse relationship between premium and workforce growth. This negative association suggests that acquirers pay high premiums for the targets with high expected synergy arising from merging the human resources of two businesses. One of the sources of synergy may be the scope for elimination of duplicative activities, as a result of which there will be high cost savings. This higher scope for synergy results in lower employment growth in such acquisitions where high premium have been paid.

Among the control variables, only leverage is significantly associated with post-takeover workforce change: higher leverage leads to lower employment growth. The other two control variables – relative size and board structure – do not significantly affect workforce change.

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<sup>61</sup> In this regression the intercept shows the expected post-merger workforce change for unrelated acquisitions, when the relatedness dummy takes 0. When the relatedness dummy takes 1, the sum of the intercept and the relatedness dummy shows the expected post-merger workforce change. The positive coefficient in the relatedness dummy indicates a higher level of post-takeover workforce change in the case of related acquisitions, after controlling for other relevant variables.

In sum, the regression results indicate that acquired firms' performance explains both the extent of workforce reductions and workforce growth, while acquirers' pre-merger performance explains only workforce growth. There is some evidence showing that hostile takeovers cause lower workforce growth, while related acquisitions lead to higher workforce adjustments. At the same time, the premium is inversely related to both workforce reduction and workforce growth. This means that a higher premium is associated with lower workforce reductions. At the same time, a higher premium is also associated with lower workforce growth. Thus, the results of this chapter show that high premiums do not cause excessive post-merger employee layoffs, which contradicts prior research results.

Overall, the sub-sample results confirm the full sample results. As in the WFR sub-sample the dependent variable – the workforce reduction – is in absolute values, the negative coefficient of the acquired firms' pre-takeover performance variable supports the full sample results: the lower the performance the higher the workforce reductions. Similarly, in the WFG sub-sample the positive coefficient of the acquired firms' pre-takeover performance indicates that the higher the pre-takeover performance of the acquired firms the higher the workforce growth. Similarly, in the full sample, the relatedness dummy indicates that workforce adjustments are higher after related acquisitions than after unrelated acquisitions. At the same time the WFG sub-sample results indicate that workforce growth is lower after related acquisitions than after unrelated acquisitions. In sum, the sub-sample results confirm the full sample results and in some cases provide additional evidence on the factors leading to workforce reductions and workforce growth post-merger.

However, as the full sample is divided into the WFR and WFG sub-samples on the basis of *Datastream* workforce change, the conclusions from this comparative analysis may be biased. The reason for such possible bias from this comparative analysis is that the *Datastream* workforce change may not represent “true” merger-related workforce change, as the workforce changes during post-merger period may occur due to a number of other reasons, including divestments, changes in macroeconomic conditions or other factors, although we have controlled for the effects of subsequent acquisitions<sup>62</sup>. In other words, workforce reductions could be due to employee layoffs without asset divestments or could be due to

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<sup>62</sup> In the sample, selection process we excluded those acquires which make multiple acquisitions with three year period after the sample acquisition.

divestment of unprofitable businesses. In this relation, the WFR and WFG sub-samples may also differ with other characteristics, not only with their merger-related workforce change variable. On the other hand, based on the qualitative search of the data on post-merger employee layoffs, we could argue that *Datastream* provides a fairly accurate representation of merger-related workforce change. Furthermore, the sub-sample results are only used to confirm the full sample results and the main conclusions of this thesis are based on the full sample results. Thus, recognising the problems associated with the sub-sample results, the full sample regression results are considered as the main findings of the thesis.

### *Quantile regression results*

OLS regression model the relationship between a set of independent variables and the mean conditional distribution of the dependent (response or quantity being predicted) variable. This conditional mean only measures the central location of the conditional distribution of this dependent variable. However, when the conditional distribution is not normal, asymmetric and heavy-tailed, such modelling of the central location may not represent the whole distribution and, therefore, may not be informative. For example, when the conditional distribution is heavy tailed the central tendency measure – mean – may not be satisfactory to represent the tail behaviour of such distributions. Also one of the main assumptions of the OLS regression – homoscedasticity assumption may fail, invalidating the empirical results. Furthermore, outlier deletions involved in OLS regressions may distort the results.

In such situations, an alternative estimation method – quantile regression – is useful. Quantile regression enables to estimate various quantile functions of the conditional distribution. In particular, quantile regressions may indicate different coefficients for the independent variables in various locations of the conditional distribution of the response (in different quantiles). For example, 50<sup>th</sup> quantile regression produces a median line under which 50% of the dependent variable are located, while 75<sup>th</sup> quantile regression produces a regression line under which 75% of the dependent variable are located. This implies that the different regressors may have different impacts on the dependent variable at different locations of the conditional distribution of the dependent variable. In other words, the rate of change of the dependent variable may be different in various quantiles. As quantile regressions provide detailed information about relationships between independent variables and the dependent variable in each quantile, this method of analysis gives a complete picture about the full

conditional distribution, including heavy tailed distributions. Furthermore, quantile regressions are robust to outliers. Thus, quantile regressions are useful where extreme values are important and when homoscedasticity assumption fails. Therefore, as a robustness check of the OLS regressions we also run quantile regressions.

Using quantile regressions, we investigate the factors leading to post-merger workforce reductions, the results of which are reported in table 5.5. In the full sample regressions the number of observations is 206, because we have workforce data for this number of observations for 206 acquirers, whereas 29 acquirers were themselves taken over or liquidated during post-merger second or third year.

These quantile regressions show that the acquired firms' pre-takeover performance regressor is only significant determinant of workforce adjustments in 25<sup>th</sup> percentile regression for the full sample and significant in the median (50<sup>th</sup> percentile) regression in the WFG sub-sample. This implies that the acquired firms' pre-takeover performance is an important determinant in lower tails of the workforce adjustment variable (possible due to the fact that the acquired firms are smaller firms than the acquiring firms), but this variable is not an important predictor of the higher level post-merger workforce adjustments (in 50% and 75<sup>th</sup> percentiles of the dependent variable). These results also imply that the OLS results on the significance of the acquired firms' pre-takeover performance in determining post-takeover workforce adjustments depend on assumptions about the statistical distribution.

Another determinant of post-merger workforce adjustments – industry relatedness dummy regressor is significant in both 25<sup>th</sup> and 50<sup>th</sup> percentile regressions, using the full sample. Acquiring firms' pre-takeover performance is significant only in 75<sup>th</sup> percentile regression using the WFG sub-sample. This means that the acquiring firms' pre-takeover under- or over-performance leads to higher level workforce adjustments post-takeover and this makes sense if we take into consideration that acquirers are larger firms than the acquired firms.

25<sup>th</sup> percentile and median regressions indicate that at lower tails of the workforce adjustment variable the related acquisitions lead to a higher level of post-merger workforce adjustments than unrelated acquisitions (possible due to higher level of rationalisations in the industry related acquired firms). But 75<sup>th</sup> percentile regressions show that, when post-merger workforce

adjustments are higher then there is no difference between related versus unrelated acquisitions.

**Table 5.5 Quantile regressions explaining post-takeover workforce adjustments.**

Independent variables	Full sample	WFR	WFG	Full sample	WFR	WFG
<b>0.25 Quantile regressions</b>						
Acquired firm pre-takeover performance	0.502*	- 0.219	0.234	0.068	- 0.203	1.025
Acquiring firm pre-takeover performance	- 0.010	0.078	0.064	- 0.001	0.075	- 0.106
Hostility dummy	0.030	- 0.046	- 0.016	0.004	- 0.054	- 0.068
Relatedness dummy	0.144**	- 0.016	- 0.095	0.099	- 0.035	- 0.047
Premium	- 0.004	0.010	- 0.086	0.039	0.005	- 0.138
Relative size	- 0.039*	0.001	- 0.005	- 0.045*	0.000	0.007
Leverage	- 0.905**	0.214	- 0.117	- 0.758*	0.221	- 0.087
Board structure	- 0.346	- 0.061	- 0.144	- 0.282	- 0.046	0.161
Hostility dummy · Acquired firm performance				- 0.107	- 0.083	- 0.026
Relatedness dummy · Acquired firm performance				0.546	- 0.304	- 0.822
Constant	0.110	0.107	0.212	0.024	0.102	0.215
<b>0.50 Quantile regressions</b>						
Acquired firm pre-takeover performance	0.219	- 0.238	0.373*	0.208	- 0.191	0.637
Acquiring firm pre-takeover performance	- 0.090	0.044	0.263	- 0.088	0.026	0.232
Hostility dummy	- 0.005	- 0.061	- 0.033	- 0.003	- 0.091	- 0.040
Relatedness dummy	0.176***	- 0.025	- 0.183**	0.175**	- 0.02	- 0.173**
Premium	- 0.056	- 0.114	- 0.060	- 0.048	- 0.125	- 0.08
Relative size	- 0.030	0.013	0.020	- 0.031	0.019	0.023
Leverage	- 0.633***	0.127	- 0.164	- 0.627**	0.158	- 0.228
Board structure	- 0.123	0.384	0.291	- 0.118	0.352	0.266
Hostility dummy · Acquired firm performance				- 0.029	0.089	- 1.229
Relatedness dummy · Acquired firm performance				0.060	- 0.423	- 0.291
Constant	0.145	0.172	0.384*	0.135	0.184	0.428*
<b>0.75 Quantile regressions</b>						
Acquired firm pre-takeover performance	0.402	- 0.490	0.111	1.201	- 0.330	0.243
Acquiring firm pre-takeover performance	0.484	- 0.040	0.539**	0.175	- 0.043	0.425*
Hostility dummy	- 0.129*	0.049	- 0.113	- 0.105	- 0.007	- 0.214
Relatedness dummy	0.145	0.039	- 0.044	0.109	0.020	- 0.045
Premium	- 0.063	- 0.145	- 0.068	0.003	- 0.134	- 0.090
Relative size	- 0.024	0.038	0.046	- 0.039	0.017	0.026
Leverage	- 0.551**	0.237	- 0.008	- 0.596**	0.451	- 0.183
Board structure	- 0.175	0.762*	0.253	0.117	0.858*	0.551*
Hostility dummy · Acquired firm performance				- 2.159	- 0.063	- 1.455
Relatedness dummy · Acquired firm performance				- 0.557	- 0.906	0.014
Constant	0.483***	0.195	0.529***	0.366	0.036	0.436**
Number of observations	206	111	95	206	111	95

Notes: Dependent variables are workforce change in the full sample, workforce reduction in the WFR sub-sample and workforce growth in the WFG sub-sample. The estimation method is Quantile regression. Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

Some further differences emerge between the OLS regression results and quantile regression results. For example, in contrast to the theoretical expectations, hostility dummy indicates that post-merger workforce adjustment (may be workforce growth, as the workforce growth may be positive or negative) is smaller after hostile acquisitions (in the 75<sup>th</sup> percentile regression using the full sample). Furthermore, OLS regressions show that premium is negatively associated with both workforce reductions in the WFR sub-sample and workforce growth in the WFG sub-sample, although it is not significant in the full sample. However, quantile regression results do not confirm these sub-sample results and, similar to the OLS results, premium is not an important determinant in the full sample, implying that post-merger workforce adjustments do not depend on the level of premium paid at acquisitions.

The full sample regressions show that high level of debt financing negatively associated with the workforce adjustments in all three quantiles, although this variable is insignificant in sub-samples. In general, as we make the main conclusions of the thesis on the basis of the full sample results, on the basis of the quantile regressions it can be concluded that in general acquired firms' pre-takeover performance (25<sup>th</sup> quantile regression), industry relatedness and leverage are all significant determinants of post-merger workforce adjustments in the full sample. However, the behaviour of these variables is significantly different from the performance of the corresponding variables in the WFR and WFG sub-samples. Furthermore, in contrast to OLS results, these quantile regressions show that premium is not an important determinant of post-merger workforce adjustments in both full sample and sub-samples. Therefore, it seems that OLS results, which are highly dependent on the normality assumption and outlier deletion process, may be misleading in some cases, especially when the sample size is small as in the WFR and WFG sub-samples.

## **5.5 Discussion**

The results of this chapter support the hypothesis that both acquired and acquiring firms' prior performance determines post-takeover workforce adjustments (Q1-H1). Univariate analysis shows that workforce reductions are undertaken in under-performing acquired firms. Regression analyses indicate that acquired firms' prior performance explains both post-takeover workforce reductions and workforce growth. In particular, post-takeover workforce adjustments are positively related to acquired firms' prior performance. This means that in the WFR sub-sample acquired firms' low performance is associated with higher post-takeover

workforce reduction, while in the WFG sub-sample acquired firms' higher performance is associated with faster post-takeover workforce growth.

Regarding the acquiring firms' pre-takeover performance, the univariate analysis shows that in the WFR sub-sample their performance does not differ from the industry median and control firm performance, while in the WFG sub-sample they outperform control firms. Regressions show that acquirers' prior performance only explains post-takeover workforce growth.

There is some evidence supporting the hypothesis that hostility leads to higher levels of employee layoffs (Q1-H2). The WFG sub-sample regressions show that hostile acquisitions lead to slower workforce growth in comparison to friendly acquisitions. However, although it is negative, the coefficient of this dummy regressor is not significant in the WFR sub-sample.

The full sample regressions show that post-takeover workforce adjustment is significantly higher in related acquisitions than in unrelated acquisitions. The WFG sub-sample regressions also show that related acquisitions also lead to slower workforce growth in comparison to unrelated acquisitions (Q1-H3). This is consistent with prior research conclusions suggesting that related acquisitions lead to a higher level of rationalisation in the use of labour than unrelated acquisitions do (Conyon *et al.*, 2002a, 2004).

However, the results do not support the hypothesis that high premiums lead to higher post-merger employee layoffs (Q1-H4). This contradicts prior research conclusions. The results show that high premiums are associated with lower workforce reductions, but are also associated with slower workforce growth, possibly due to the wider scope for synergy arising from good acquisitions. In brief, such associations imply that managers do not undertake employee layoffs to cover high premiums, as suggested by prior empirical evidence (Krishnan *et al.*, 2007). The inverse relationship between premium and workforce reduction implies that acquirers do not pay high premiums for under-performing targets or for businesses with declining product demand that require corporate restructuring, including downsizing. But acquirers may pay high premiums for acquisitions that create a wider scope for synergy. In support of this view, the results show that premiums negatively affect workforce growth.

Overall, the results imply that post-merger labour management decisions are not affected by the shareholder value creation requirements of the market model of corporate governance. Instead, management decisions are made on the basis of independent managerial judgments to

provide success and viability for their businesses through efficiency enhancement, as suggested by Gospel and Pendleton (2003) and Pendleton (2009).

One limitation of this study is that we do not control for asset divestments, which may be one of the reasons for workforce reductions. Workforce levels may decline due to divestments, while employment growth could be due to new acquisitions. Although we controlled for multiple acquisitions, it was not possible to control for divestments due to data limitations.

## **5.6 Conclusions**

Although it is generally agreed that takeovers lead to workforce reductions, the reasons for such post-merger layoffs are debatable. While some authors argue that mergers reduce labour demand and consequently managers undertake workforce reductions to improve labour efficiency and to derive operating synergy (Conyon *et al.*, 2002a), other authors argue that managers undertake excessive employee layoffs to cover high premiums paid for acquisitions and that these negatively affect operating performance (Krishnan *et al.*, 2007).

Analysing the factors leading to post-takeover workforce changes, this chapter concludes that post-merger employee layoffs are undertaken to improve firm performance, not to create shareholder value. The results do not support the view that takeover premiums lead to excessive job losses. Instead, a high premium is associated with lower workforce reductions and slower workforce growth. Layoffs are undertaken on the basis of acquired firms' pre-takeover performance: the poorer the targets' performance, the greater the reduction in employment, and the higher the target performance, the higher the growth in post-takeover employment levels. Furthermore, on the basis of the results it can be concluded that related acquisitions cause higher levels of workforce adjustments.

## **6 CAUSE AND EFFECT RELATIONSHIP BETWEEN POST-MERGER PERFORMANCE CHANGE AND WORKFORCE ADJUSTMENTS**

### **6.1 Introduction**

#### **6.1.1 Research motivation**

Prior empirical research provides substantial evidence showing that mergers and acquisitions lead to operating performance deterioration (Ghosh, 2001). At the same time such transactions involve workforce reductions, as reported in the public media. However, systematic empirical evidence on the association between operating performance and workforce adjustments is inconclusive. On the one hand workforce reductions may be undertaken to improve efficiency and firm profitability (Cascio *et al.*, 1997) or to arrest further performance deterioration (Hillier *et al.*, 2007). On the other, post-takeover layoffs may be undertaken to create shareholder value and to regain premiums paid to targets. Consequently, it is suggested that such layoffs destroy the human capital of acquired firms and thereby negatively affect firm performance post-merger (Krishnan *et al.*, 2007). Thus, the answers to (1) whether post-takeover performance decline leads to workforce reductions and (2) whether such layoffs positively or negatively affect firm performance are unknown. This chapter aims to provide new empirical evidence on these two questions. Empirical evidence on these questions would clarify whether post-merger labour management decisions are made to further enhance efficiency and firm profitability.

Although there is well established research of the antecedents and consequences of workforce downsizing, it is still unclear whether prior poor performance determines subsequent downsizing decisions and whether such workforce reductions lead to performance improvement (Datta *et al.*, 2010). There is evidence that supports the view that firm performance is an important factor in explaining workforce reductions (Coucke *et al.*, 2007; Hillier *et al.*, 2007). At the same time, there is also some evidence showing no link between prior performance and downsizing (Perry and Shivdasani, 2005). Similarly, empirical evidence on the consequences of workforce adjustments for firm performance is inconclusive. A general conclusion of this research is that employee layoffs positively affect performance only when there is a slack to cut (Cappelli, 2000; Love and Nohria, 2005).

Although empirical research that investigates the factors leading to post-merger workforce reductions is long established (O'Shaughnessy and Flanagan, 1998; Conyon *et al.*, 2001, 2002a; Gugler and Yurtoglu, 2004), empirical research investigating the consequences of post-merger workforce adjustments is still in its infancy. There are very few studies on this issue: Krishnan and Park (2002) and Krishnan *et al.* (2007) show that in related acquisitions excessive layoffs, which are made to cover large premiums, lead to organisational performance deterioration.

The situation is complicated by the requirement that the association between operating performance and workforce reductions should be analysed within the broader context of takeovers' effects on firm performance. Although research on the effect of takeovers on firm performance is well established, evidence on this issue is mixed: some studies report modest operating performance improvement after takeovers, other studies report performance decline over a two-to-five year period following acquisitions, yet other studies report indistinguishable operating performance improvement in comparison to a sample of non-merging benchmark firms (Martynova *et al.*, 2007). Taking into consideration post-takeover operating performance change is important, as failure of business integration and post-takeover deterioration in operating performance may lead to employee layoffs.

This chapter investigates the role of post-takeover operating performance decline as a factor leading to workforce reductions. Then it investigates the consequences of such workforce reductions for firm performance. The empirical work of this chapter links three strands of literature: (1) research on antecedents and consequences of workforce downsizing, (2) research on performance consequences of employee layoffs following mergers and (3) research on performance consequences of takeovers. Using research methods from these strands of literature, we measure performance change and workforce change following mergers and investigate the association between these two variables. In addition to the full sample analysis, we compare the performance of the WFG and WFR sub-samples<sup>63</sup>. In the multiple regression context, first we examine the association between post-takeover operating performance *changes* and post-takeover workforce *changes* in order to understand whether performance decline leads to workforce reductions. To examine whether workforce

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<sup>63</sup> These terms are explained in the previous chapter.

adjustments negatively or positively affect performance, we then regress workforce *changes* one year after mergers (from t-1 to t+1) on operating performance *change* over three years.

### **6.1.2 Brief results and contributions**

Using the full sample, the univariate analysis reveals that acquirers operating performance does not improve after takeovers, but, on the contrary, declines, which is consistent with most of the research in this area. When the sample is split, the results show that the performance decline is steeper in the WFR sub-sample during the first two post-takeover years, while the performance decline is steeper in the WFG sub-sample during the third post-takeover year.

The regressions show a strong positive association between operating performance change and workforce change following mergers, which means that performance deterioration is an important factor in explaining employee layoffs post-merger. In terms of operating performance consequences of workforce reductions, the results show that workforce *changes* are inversely related to operating performance *change*. Therefore it can be concluded that post-merger workforce reductions positively contribute to operating performance change.

The results of this chapter contribute to the literature on the antecedents and consequences of merger-related employee layoffs by providing new evidence on the positive role of corporate downsizing in the mergers and acquisitions context. The results suggest that post-takeover performance decline could be one of the reasons for workforce adjustments. The conclusion that post-merger workforce reductions positively contribute to operating performance change implies that labour management decisions are made in order to improve efficiency and to maintain the viability of the firms.

## **6.2 Theoretical background and hypothesis development**

One factor that may lead to post-takeover workforce reductions is firm performance decline after such transactions. Mergers may negatively affect firm performance for several reasons, such as unsuccessful business integration, inadequate strategic fit or cultural differences between merging firms.

Although accounting studies do not investigate the issues of why firm performance may deteriorate post-merger, these studies thoroughly measure performance change post-merger. However, the extant evidence on the operating performance consequences of takeovers is

mixed: some empirical research shows that takeovers cause only modest improvement (Healy *et al.*, 1992; Powell and Stark, 2005) or no improvement (Ghosh, 2001), while other studies report significant decline in firm performance (Martynova *et al.*, 2007). Reviewing the literature in this area, Martynova *et al.* (2007) find that 14 out of 25 studies report significant decline in post-takeover operating performance, 6 studies report insignificant change, while 5 studies report significant improvement in operating performance after takeovers. For example, Meeks (1977) and Ravenscraft and Scherer (1987) report that profitability of merging firms declines significantly. Thus, most evidence indicates that acquirers' performance deteriorates post-merger.

The conventional view is that firm performance is an important factor in downsizing decisions. Prior research concludes that performance decline often leads to employee layoffs (Iverson and Pullman, 2000; Chen *et al.*, 2001). For example, Hillier *et al.* (2007) find that layoffs follow a period of poor operating and stock price performance. Coucke *et al.* (2007) report that firms make redundancies after a decline in return on equity. Therefore it is reasonable to expect workforce reductions following performance deterioration during a post-takeover period. Such a performance decline may necessitate workforce reductions. On the basis of this discussion, the following hypothesis will be tested<sup>64</sup>:

*Q2-H1: Post-takeover decline in operating performance leads to workforce reductions.*

Although corporate downsizing is usually undertaken to cut costs and to further enhance efficiency, it may negatively affect firm performance, especially when it follows mergers. Recent evidence presented by Krishnan *et al.* (2007) shows that excessive employee layoffs after related acquisitions, undertaken to cover high premiums, lead to significant performance deterioration. There are several reasons for this adverse effect of labour cost cuts within the mergers and acquisitions context.

The success of an acquisition depends on the ability of firms to effectively integrate acquired intangible capital in the form of human resources, which embody valuable tacit knowledge (Seth *et al.*, 2002). First, managers may not be able to correctly estimate the required level of employee layoffs to achieve the optimal employment level. Second, in this process some

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<sup>64</sup> Post-takeover firm performance decline could be another reason for post-merger employee layoffs, as acquirers undertake labour cost cuts to stop further performance deterioration. This hypothesis could be tested by regressing workforce adjustments on post-takeover performance.

senior key staff of acquired firms may voluntarily leave due to disagreement with the new management (Walsh, 1988). In support of this, Martin and McConnell (1991) and Franks and Mayer (1996) show that management turnover is significantly higher after acquisitions than in normal periods. Third, in the case of workforce reductions it may be difficult to determine whom to layoff, especially when most managers and 'white collar' workers of an acquired company leave the combined business. Finally, the post-layoff morale of surviving staff may be low due to uncertainties about their own future. Cascio (1993) argues that downsizing may lead to poor morale in the surviving employees, creating 'survivors' syndrome' and decreasing labour productivity.

Furthermore, the resource-based view of the firm can be used to explain the negative effect of downsizing in the mergers and acquisitions context. According to this theory human capital is one of the three main resources that enable firms to implement value-creation strategies, along with physical capital resources and organisational capital resources (Barney, 1991). This theory suggests that the departure of key staff destroys acquired firms' strategic capabilities and this leads to poor performance. Among other things, human capital includes training, experience, relationships and insights of individual managers and workers. If, in the integration process, this resource is destroyed, then the strategic competitiveness of the firm is no longer sustainable. Moreover, as the resource-based view considers a firm as a bundle of the above resources, routines and capabilities, the role of mergers and acquisitions is to facilitate the exchange of these firm-specific resources and capabilities that are otherwise costly to imitate and are not tradable (James, 2002).

In sum, mergers and acquisitions may negatively affect human capital, destroying one of the most important strategic capabilities of the firm that is difficult to imitate. Therefore employees view such transactions as destructive events, because they increase job uncertainty, risk and stress, which in their turn may negatively affect the firm's performance. Such changes in the work environment may also change employees' work attitude, which in its turn may negatively affect employee performance and subsequently may lead to firm performance deterioration.

In contrast, it has been shown that post-merger workforce reductions lead to rationalisations in the use of labour and increased efficiency (Conyon *et al.*, 2002a) and improve employee

profitability (Conyon *et al.*, 2004). Thus, post-merger downsizing should lead to improvement in firm performance.

Post-merger employee layoffs are a part of wider corporate downsizing activity. Although the effect of corporate downsizing on firm performance has been researched extensively, the extant evidence is inconclusive. Palmon *et al.* (1997) show that downsizing inversely affects firm performance, while Elayan *et al.* (1998), Espahbodi *et al.* (2000), and Chen *et al.* (2001) report significant firm performance improvement and an increase in labour efficiency after downsizing. However, Cascio *et al.* (1997), Denis and Kruse (2000) and Love and Nohria (2005) report that downsizing does not alter firm performance in general. Cascio *et al.* (1997) conclude that only those firms that combine downsizing with asset sales improve profitability. Cappelli (2000) argues that downsizing makes sense only when establishments experience excess operating capacity. Otherwise, downsizing may hurt firm performance, as trying to cut slack when there is no slack to cut may negatively affect organisational capabilities. The Love and Nohria (2005) results show that downsizing only improves performance when there is a good deal of organisational slack and when downsizing is a part of broad corporate restructuring and is done during the periods of stability or performance improvement.

Even though employee layoffs positively affect performance, their full effect might only be felt after some time – 2 to 3 years after downsizing (Palmon *et al.*, 1997; Espahbodi *et al.*, 2000; Perry and Shivdasani, 2005). Meanwhile the downsizers' performance *level* may still be low in comparison to that of non-downsizers, even though there is positive performance *change* during early periods after layoffs. Hillier *et al.* (2007) show that layoff-making firms continue to under-perform their industry benchmark three years after the event. In other words, the extent of performance change in layoff-making acquirers may be different from that of acquirers that do not make layoffs, due to the positive effect of labour rationalisations. Therefore we investigate the association between post-merger employee layoffs and performance change:

Q2-H2: *Post-takeover workforce changes are inversely associated with operating performance changes.*

## 6.3 Data and methods

### 6.3.1 Econometric model specification

To test the hypothesis Q2-H1 the following model will be estimated:

$$\Delta E_{t+3} = \alpha + \beta_1 \Delta ROA_{t+2}^{post} + \beta_2 H + \beta_3 R + \beta_4 Prem + \beta_5 Size + \beta_5 Lev + \beta_7 Board + \varepsilon \quad (24)$$

where  $\Delta E$  is the change in the logarithm transformed number of employees from  $t-1$  to  $t+3$ , as described in equation (23),  $\Delta ROA_{t+2}^{post}$  is the first post-takeover two years' ( $t+1$  and  $t+2$ ) average change in operating performance of acquiring firms;  $H$  is a hostility dummy, which takes 1 if the initial offer was rejected and 0 otherwise;  $R$  is a relatedness dummy, which takes 1 if both target and acquiring firms are in the same industry and 0 otherwise;  $Prem$  is the premium, measured as the excess amount of bid price over share price one month prior to takeover announcement;  $Size$  is the ratio of acquiring firm size to the transaction value (target firm size);  $Lev$  is the debt-to-equity ratio at the end of the takeover completion year;  $Board$  is the ratio of non-executive directors to the total number of directors, and  $\varepsilon$  indicates the error term. In extended models we also include the interactions of the  $R$  and  $H$  dummies with the operating performance change variable.

To test the hypothesis Q2-H2 the following model will be estimated:

$$\Delta ROA_{t+3}^{post} = \alpha + \beta_1 \Delta E_{t+1} + \beta_2 Prem + \beta_3 \Delta ROA^c + \beta_4 Size + \beta_5 Lev + \beta_6 Board + \beta_7 H + \beta_8 R + \varepsilon \quad (25)$$

where  $\Delta ROA_{t+3}^{post}$  is the performance change during three post-takeover years (from  $t-1$  to  $t+3$ );  $\Delta E$  is the change in the logarithm transformed number employees from  $t-1$  to  $t+1$ , as described in equation (23),  $\Delta ROA^c$  is the change in matched firm performance during the corresponding period, and other variables are as explained above.

In these models we control for relative size, leverage and board structure on the basis of prior research. First, the integration of larger firms may create a greater challenge as well as more synergy than the integration of smaller firms. In this relation, McGuckin and Nguyen (2001) and Conyon *et al.* (2002a, 2004) find that the impact of acquisitions depends on the size of acquisition. Therefore we control for the relative size measured as the ratio of acquired firm

size (transaction value) relative to acquirers' market value at the end of t-1. Ofek (1993) argues that higher leverage following poor performance increases the probability of corporate restructuring, including employee layoffs. Therefore in the takeover context higher leverage may also force acquirers to cut costs by reducing the workforce. We measure leverage as the ratio of debt to total assets at the beginning of the relevant year. Finally, a greater number of non-executives on the Board of Directors may force managers to undertake restructuring activities that maximise shareholder value and prior research suggests that the higher the number of executive directors, the more effective the Board (Cosh *et al.*, 2006). Therefore we control for the Board structure of the acquiring firms.

### **6.3.2 Data and measuring post-takeover workforce adjustments**

This chapter uses the same sample and data as described in the previous chapter. Post-merger workforce change is measured using the same technique as in the previous chapter.

### **6.3.3 Measuring post-takeover operating performance change**

The operating performance measure (ROA), has been adjusted using two benchmarks: industry-median firm and industry-, size- and performance-matched firm benchmarks, selected on the basis of methodology recommended by Barber and Lyon (1996). Industry-adjusted performance is obtained by deducting industry-median firm performance from the sample firm performance<sup>65</sup>.

The industry-, size- and performance-matched firm benchmark is one of the most frequently used performance benchmarks in contemporary accounting and finance research (Espahbodi *et al.*, 2000). This benchmark performs better than the industry-median firm benchmark, especially when sample firms have performed either unusually well or unusually poorly (Barber and Lyon, 1996). As firms may undertake acquisitions during better-performing years, matching on pre-takeover performance controls for the potential bias arising due to mean reversion in earnings.

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<sup>65</sup> We also scaled EBITDA by Total Market Value (TMV), which is defined as the market value of outstanding shares plus preferred stock and book value of total liabilities at the beginning of each year. In addition to this we use Operating Cash Flow (OCF) defined as operating income plus depreciation, depletion and amortisation expense, scaled by TMV and TA. Barber and Lyon (1996) conclude that test statistics on the basis of OCF are uniformly less powerful than those on the basis of other performance measures. Therefore we only report the results on the basis of EBITDA scaled by the TA measure.

Using the methodology proposed by Barber and Lyon (1996) and Loughran and Ritter (1997), for each sample firm we select a matching firm at the end of year t-1 as follows: first, we filter all firms in the same industry with the sample firm; second, we select all firms within the 25% to 200% size interval of the sample firm's size, size being measured by total assets; third, we select the non-acquiring firm with the closest performance measure to the matching firm. In order to capture the full differences in the performance of acquiring and non-acquiring firms, the matched firms should not have undertaken any significant acquisition around the sampled takeover event. Therefore as matched firms we select only those firms which do not make significant acquisitions during the two years before takeovers and three years after takeovers. Matched-firm-adjusted performance is obtained by deducting the matched firm performance from the sample firm performance.

Following Ghosh (2001) we use 'the change method' to measure the operating performance effect of takeovers. Ghosh (2001) argues that this method is superior to the regression method suggested by Healy *et al.* (1992), which identifies the performance change as the intercept of the regression of post-takeover performance on pre-takeover performance. As firms undertake acquisitions after superior performance, acquirers outperform industry medians during pre-takeover years. Ghosh (2001) points out that this non-random measurement error will result in a biased intercept in the regression, showing the positive effect of acquisitions. If, on average, merging firms do not outperform industry-median firms, then the regression method and the change method should provide identical unbiased estimates. Following other studies (Healy *et al.*, 1992), the pre-takeover pro-forma combined performance measure is constructed by summing the target and acquirer performance measures at the end of year t-1. This pro-forma performance is subtracted from the post-takeover performance to identify the change in the industry (or industry, size and pre-takeover performance) adjusted performance.

## **6.4 Results**

### **6.4.1 Univariate analysis of post-takeover performance change**

Table 6.1 reports performance change during post-takeover years relative to the pre-takeover level for the whole sample as well as for the WFR and WFG sub-samples. As reported in Panel A, the full sample, acquirers' unadjusted firm performance declines significantly during the post-merger years relative to the pre-merger level. This is consistent with the Powell and Stark (2005) and Martynova *et al.* (2007) results. The results also show that full sample

acquirers outperform their industry-median firms during the first two post-takeover years and outperform their matched firms during the first post-takeover year. However, acquirers' industry-adjusted performance declines significantly relative to the pre-merger level during all three years: the three-year median industry-adjusted performance is 1.1% lower than the pre-merger level. Similarly, matched-firm-adjusted performance shows that performance declines during the third post-takeover year. The above results suggest that takeovers at best do not improve operating performance, which is consistent with most of the prior research (Martynova *et al.*, 2007). This performance decline could be due to the fact that firms undertake acquisitions during or immediately after better-performing periods.

As Panel B shows, the WFG sub-sample acquirers outperform their industry-median firms during three post-takeover years and outperform their matched firms during two post-takeover years. Both benchmarks show that the WFG sub-sample acquirers' performance does not differ from the pre-takeover level during the first two post-takeover years. However, both benchmarks show that this sub-sample acquirers' performance declines relative to the pre-takeover level during the third post-takeover year. The third year industry-adjusted (matched-firm-adjusted) ROA is 2% (1%) lower than the pre-takeover level.

In contrast, Panel C shows that the WFR sub-sample acquirers' performance does not differ from their industry-median performance and matched firm performance during all three years. The WFR sub-sample acquirers' industry-adjusted performance declines during the first two years, but the third year performance does not significantly differ from the pre-takeover level. This sub-sample acquirers' matched-firm-adjusted measure shows no significant change during the post-takeover years relative to the pre-takeover level.

Finally, Panel D reports that the WFG sub-sample acquirers outperform the WFR sub-sample acquirers by the unadjusted firm performance measure and matched-firm-adjusted performance measures. One explanation for the continuous under-performance of the WFR sub-sample firms may be the fact that the full effect of labour rationalisation might only be felt after some time. Therefore the WFR sub-sample performance may still be lower than the WFG sub-sample performance during the early post-takeover years. However, the WFR sub-sample's operating performance change from the pre-takeover level to the post-takeover level could be significantly different from the corresponding change in the WFG sub-sample operating performance due to the positive effect of the workforce reductions.

**Table 6.1 Post-takeover operating performance**

Year around merger	Unadjusted performance	z-stat	Industry median firm adjusted performance	z-stat	Matched firm adjusted performance	z-stat
<b>Panel A: Full sample</b>						
t-1	0.2139		0.0255	4.99	0.0080	2.76
t+1	0.1700		0.0127	2.98	0.0145	1.95
t+2	0.1511		0.0113	1.71	0.0144	1.31
t+3	0.1429		0.0102	1.16	-0.0052	-0.34
Median for t+1, t+2 and t+3	0.1528		0.0115	2.55	0.0048	0.99
t+1 less t-1	-0.0388	-6.56	-0.0043	-1.73	-0.0070	0.24
t+2 less t-1	-0.0688	-8.37	-0.0209	-3.22	0.0013	-0.53
t+3 less t-1	-0.0801	-8.89	-0.0174	-3.23	-0.0056	-2.07
Post median less t-1	-0.0532	-7.73	-0.0111	-2.53	-0.0089	-1.12
<b>Panel B: The WFG sub-sample</b>						
t-1	0.2296		0.0527	4.58	0.0195	2.97
t+1	0.1980		0.0340	4.57	0.0197	2.11
t+2	0.1755		0.0331	3.84	0.0268	2.24
t+3	0.1515		0.0243	2.21	-0.0005	-0.11
Median for t+1, t+2 and t+3	0.1680		0.0302	4.43	0.0184	1.70
t+1 less t-1	-0.0277	-2.89	0.0019	-0.25	-0.0011	0.12
t+2 less t-1	-0.0399	-3.25	-0.0010	-0.48	0.0098	0.47
t+3 less t-1	-0.0661	-4.96	-0.0200	-1.98	-0.0101	-1.91
Post median less t-1	-0.0399	-3.93	-0.0062	-0.92	0.0002	-0.45
<b>Panel C: The WFR sub-sample</b>						
t-1	0.1980		0.0171	0.11	0.0021	0.60
t+1	0.1531		0.0012	-0.27	-0.0007	1.02
t+2	0.1398		0.0014	-1.49	-0.0080	0.14
t+3	0.1312		0.0004	-0.64	-0.0086	-0.39
Median for t+1, t+2 and t+3	0.1425		0.0007	-0.71	-0.0067	0.29
t+1 less t-1	-0.0505	-6.21	-0.0071	-1.91	-0.0088	0.79
t+2 less t-1	-0.0933	-6.84	-0.0319	-3.17	-0.0058	-0.75
t+3 less t-1	-0.1031	-5.53	-0.0142	-1.54	-0.0035	-0.73
Post median less t-1	-0.0644	-6.57	-0.0137	-2.03	-0.0143	-0.46
<b>Panel D: Difference between the WFG and WFR sub-samples</b>						
t-1	0.0317	2.02	0.0356	-1.1	0.0175	1.46
t+1	0.0449	3.24	0.0329	0.65	0.0203	2.44
t+2	0.0357	3.71	0.0317	-0.42	0.0348	1.93
t+3	0.0203	1.40	0.0239	-0.88	0.0081	2.18
Median for t+1, t+2 and t+3	0.0255	3.24	0.0295	-0.42	0.0251	2.66
t+1 less t-1	0.0228	2.21	0.0090	1.14	0.0077	-0.37
t+2 less t-1	0.0535	2.40	0.0309	1.73	0.0156	0.96
t+3 less t-1	0.0370	-0.39	-0.0058	-0.42	-0.0066	1.08
Post median less t-1	0.0246	1.70	0.0075	0.67	0.0145	-0.09

*Notes:* This table reports change in acquirers' post-takeover performance (ROA, defined as EBITDA/TA). Unadjusted performance indicates sample median firm performance. Industry median firm adjusted performance indicates the difference between industry median performance and firm performance. Matched firm adjusted performance indicates the difference between the sample median performance and matched firms' sample median performance.

Consistent with this view, the above results imply that the WFR acquirers' performance further deteriorates during the first two post-merger years, necessitating the need for efficiency

improvements and cost savings through labour cost cuts. Therefore although their performance is significantly low during the first two post-takeover years relative to the pre-takeover level, in the third year there is no difference between pre- and post-takeover performances. In contrast to this, in the WFG sub-sample both industry-adjusted and matched-firm-adjusted performance shows significant performance deterioration in the third year. Thus, these univariate results suggest that employee layoffs are undertaken in under-performing firms<sup>66</sup>.

Overall, all three performance measures show that firm performance deteriorates post-merger. In this case the related question is whether this performance deterioration explains workforce reductions post-merger. The next section analyses this question using the regression technique.

#### **6.4.2 Post-takeover performance decline as a factor leading to workforce reductions**

##### *OLS regression results*

To investigate the role of post-takeover performance decline in explaining employee layoffs, we regress post-takeover workforce adjustments on performance change. As the dependent variable, we use workforce adjustments during three post-takeover years and as the main independent variable we use the two-year average industry-adjusted operating performance change (for t+1 and t+2)<sup>67</sup>.

As reported in Table 6.2, the regression results show that there is significant positive association between workforce adjustments and operating performance change. In the full sample, a 1% higher ROA during the first two post-takeover years leads to 1.78% greater workforce growth. This suggests that in the WFR sub-sample the association should be inverse, meaning that the lower the ROA, the higher the workforce reduction. In contrast, in the WFG sub-sample the association between these two variables should be positive: the better the performance, the higher the workforce growth. The WFR and WFG sub-sample

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<sup>66</sup> We also experiment with the above univariate analysis, splitting the full sample into ‘layoff’ and ‘non-layoff’ sub-samples, using merger-related layoff information. This analysis leads to similar conclusions. One explanation for less performance deterioration in the ‘layoff’ sub-sample could be the fact that layoffs arrest further performance deterioration. Both benchmarks show that ‘layoff’ combinations performance does not change significantly during the post-takeover years. In contrast to this, the performance of the ‘non-layoff’ sub-group firms significantly declines during post-takeover years. ‘Non-layoff’ acquirers’ industry-adjusted performance is significantly lower relative to the pre-takeover level during two post-takeover years, while matched-firm-adjusted performance is lower in year t+3. These results indicate that employee reductions may contribute to halting further performance deterioration.

<sup>67</sup> The results are similar when we use the operating performance change after one year and the change after two years individually in the above regression.

regressions confirm these associations. In the WFR sub-sample, operating performance is negatively associated with workforce reduction: a 1% lower ROA leads to 1.04% greater workforce reduction. In the WFG sub-sample the workforce growth variable is positively associated with the operating performance: a 1% higher operating performance leads to 0.7% greater workforce growth<sup>68</sup>.

These regressions show insignificant difference between the impact of performance change on post-merger workforce change following hostile takeovers and friendly takeovers. However, related acquisitions cause significantly higher workforce adjustments than unrelated acquisitions do, as shown by the full sample results. Consistent with the Krishnan *et al.* (2007) results, a high premium negatively affects workforce growth, although it is only significant in the WFG sub-sample. In this sub-sample a 1% higher premium leads to 0.16% slower workforce growth. The negative coefficient of the relative organisational size indicates that the larger the acquired company, the lower the post-takeover workforce growth. This is consistent with the view that when a larger company is acquired there will be more duplicative activities to integrate this company into the existing business, thus providing greater scope for workforce reductions. Although signs of the leverage variable are negative in all regression models, the coefficients are not significant. Finally, consistent with the prior research, the signs of the Board structure variable indicate that outside directors play an important governance role in layoff decision-making (Yawson, 2006). The full sample regressions indicate that the lower the proportion of outside directors, the higher the workforce growth and, in contrast, the higher the proportion of outside directors, the greater the workforce reductions. The WFR sub-sample regressions confirm this association: the positive coefficient of the Board structure variable means that when boards include a higher proportion of outside directors, they become more effective in taking layoff decisions<sup>69</sup>.

When the models include interactions of the dummy regressors with the performance change variable, the results show that the difference between the slopes of hostile versus friendly acquisitions' operating performance effect is not significant. The full sample results indicate that in friendly acquisitions a 1% greater performance change is associated with a 2% higher

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<sup>68</sup> These results do not change if we control for the matched firm performance. As expected, industry-adjusted matched firm performance is strongly positively associated with merging firm performance.

<sup>69</sup> Leverage becomes significant when we use the performance change variable after one year and the performance change after two years individually. But it becomes insignificant when we use a two-year average performance variable.

workforce adjustment, while in hostile takeovers a 1% higher ROA is associated with a 1% [=1.999 – 0.932] greater workforce adjustment. Furthermore, in the WFG sub-sample the interaction term implies that in hostile acquisitions a 1% higher ROA would cause 0.36% [=1.149 – 1.484] lower workforce growth. So, the effect of operating performance on employment growth is smaller after hostile takeovers than after friendly mergers. However, the results show no difference between the slopes of related versus unrelated acquisitions' operating performance effect on workforce growth.

**Table 6.2 OLS regressions explaining post-takeover workforce adjustments**

<b>Independent variables</b>	<b>Full sample</b>	<b>WFR</b>	<b>WFG</b>	<b>Full sample</b>	<b>WFR</b>	<b>WFG</b>
Acquirers' post-takeover performance change	1.782***	- 1.035***	0.704***	1.999***	- 1.235***	1.149**
Hostility dummy	- 0.010	- 0.046	- 0.093	- 0.007	- 0.041	- 0.020
Relatedness dummy	0.137***	- 0.030	- 0.096*	0.121**	- 0.017	- 0.105*
Premium	- 0.005	- 0.077	- 0.161**	- 0.017	- 0.073	- 0.080
Relative size	- 0.043***	0.030**	0.018	- 0.044***	0.030**	0.023
Leverage	- 0.273	- 0.046	- 0.007	- 0.271	- 0.063	- 0.126
Board structure	- 0.333**	0.257*	- 0.038	- 0.325**	0.220	- 0.023
Hostility · Performance change				- 0.932**	0.118	- 1.484***
Relatedness · Performance change				- 0.337	0.454	- 0.046
Constant	0.079	0.303***	0.464***	0.094	0.317***	0.498***
F-stat	17.06	5.37	4.15	13.91	5.82	3.53
Adjusted R-square	0.36	0.35	0.15	0.36	0.35	0.19
Number of observations	183	98	83	183	98	86

*Notes:* The dependent variable is workforce change three years after takeovers (from  $t-1$  to  $t+3$ ). Acquirers' post-takeover performance change is the average of the change after one year and the change after two years. The estimation method is OLS, using heteroscedasticity-robust standard errors (White, 1980). Significance levels: \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

In sum, the results show that one of the factors that may lead to post-takeover workforce adjustments could be the performance decline following takeovers: there is a significant positive association between post-takeover performance change and workforce change.

### *Quantile regressions*

We also investigate the role of post-merger operating performance change in explaining post-merger workforce adjustments using quantile regressions, the results of which are given in table 6.3. In these regressions the dependent variable is post-merger workforce adjustment and the main variable of interest is the post-takeover operating performance change variable. The full sample results consistently show that acquirers' post-merger performance change is positively associated with post-merger workforce adjustments in all three quantile regressions. This positive association indicates the better the performance change, the higher the workforce growth; the worse the performance change the lower the workforce growth. Thus, on the basis

of these quantile regressions it can be concluded that post-merger performance decline may also lead to workforce reductions. In addition, the WFR sub-sample regressions show that post-merger performance changes are negatively associated with workforce reduction variables in the 50<sup>th</sup> and the 75<sup>th</sup> percentile regressions, confirming the OLS regression results.

**Table 6.3 Quantile regressions explaining post-takeover workforce adjustments**

Independent variables	Full sample	WFR	WFG	Full sample	WFR	WFG
<b>0.25 Quantile regression</b>						
Acquirers' post-takeover performance change	0.855**	- 0.453	- 0.063	1.703***	- 0.741	0.103
Hostility dummy	- 0.056	- 0.010	- 0.059	- 0.035	- 0.031	- 0.032
Relatedness dummy	0.024	0.013	- 0.046	0.072	0.016	- 0.074
Premium	0.075	- 0.071	0.014	0.043	- 0.056	- 0.017
Relative size	- 0.053*	0.006	- 0.004	- 0.048***	0.016	0.008
Leverage	- 0.588*	- 0.109	0.167	- 0.500**	0.149	- 0.134
Board structure	- 0.284	0.172	- 0.098	- 0.247	- 0.140	0.228
Hostility · Performance change				- 0.184	0.606	- 0.041
Relatedness · Performance change				- 1.195**	0.163	- 0.191
Constant	- 0.065	0.160	0.131*	- 0.094	0.180	0.139
<b>0.50 Quantile regression</b>						
Acquirers' post-takeover performance change	1.283***	- 0.956***	0.045	1.569***	- 1.339**	0.636
Hostility dummy	0.001	- 0.017	- 0.010	0.019	- 0.046	0.034
Relatedness dummy	0.136*	0.002	- 0.127	0.160***	0.025	- 0.138
Premium	- 0.019	- 0.099	0.009	- 0.068	- 0.063	- 0.041
Relative size	- 0.054*	0.026*	0.013	- 0.052**	0.025	0.012
Leverage	- 0.187	0.359	0.026	- 0.336	0.026	- 0.268
Board structure	- 0.317	0.077	- 0.362	- 0.067	0.342	0.000
Hostility · Performance change				- 1.277**	0.927	- 0.944
Relatedness · Performance change				- 0.410	0.114	- 0.368
Constant	- 0.009	0.189	0.507***	- 0.044	0.193	0.503**
<b>0.75 Quantile regression</b>						
Acquirers' post-takeover performance change	1.335**	- 1.323***	0.928	2.504***	- 1.699**	0.590
Hostility dummy	- 0.129	0.052	- 0.152	- 0.086	0.050	0.007
Relatedness dummy	0.094	0.102	- 0.086	0.033	0.137	- 0.135
Premium	0.057	- 0.046	- 0.035	0.006	0.056	- 0.099
Relative size	- 0.008	0.053	0.054**	- 0.018	0.048	0.051
Leverage	0.050	0.912***	0.493*	- 0.323	- 0.207	- 0.018
Board structure	- 0.442	0.007	0.088	0.022	0.914**	0.444
Hostility · Performance change				- 1.697***	0.635	- 2.149
Relatedness · Performance change				- 0.986	0.097	0.546
Constant	0.308	0.128	0.400*	0.328	0.159	0.529*
Number of observations	206	111	95	206	111	95

Notes: Dependent variables are workforce change in the full sample, workforce reduction in the WFR sub-sample and workforce growth in the WFG sub-sample. The estimation method is Quantile regression. Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

In contrast to this, other control variables are not consistent in all three quantile regressions. For example, the relatedness dummy regressor is significant only in the median (50<sup>th</sup> percentile regression) in the full sample regressions. The relative size variable is significant in the 25<sup>th</sup> percentile and median regressions, while leverage is only significant at 25<sup>th</sup> percentile regression.

Furthermore, in these regressions Board structure (composition) variable becomes insignificant in all specifications, implying that this variable is highly dependent on the normality assumption and outlier deletion.

### **6.4.3 Consequences of post-merger workforce adjustments for operating performance**

#### *OLS regressions*

To investigate the effect of workforce change on operating performance, we use operating performance *change* instead of operating performance *levels*, as the dependent variable in the regression analysis. In order to control for reverse causality between dependent and independent variables, in these regressions we use workforce *change* during the first post-takeover year as the main independent variable and operating performance change three years after the takeover completion year as the dependent variable.

The results of these regressions are given in Table 6.4. The full sample regressions indicate that the workforce change variable is inversely related to operating performance change: 1% employment growth leads to a 0.07% smaller change in ROA. This means that greater workforce reductions are associated with more positive operating performance change, while higher workforce growth is associated with more negative performance change. The WFR regressions show that a 1% workforce reduction during the first post-takeover year leads to a 0.15% greater change in ROA after two years. The WFG regressions imply that the higher the workforce growth, the more negative the operating performance change: 1% workforce growth leads to a 0.09% smaller change in ROA. One interpretation of these results is that post-merger workforce reductions at least arrest further performance deterioration, whereas accelerated employment growth may negatively affect performance. Thus, these results support the hypothesis that workforce reductions positively contribute to operating performance change.

Regarding the control variables, the full sample results show that the premium is positively associated with the change in operating performance: in acquisitions for which high premiums are paid operating performance decline is smaller. This is consistent with the view that acquirers pay high premiums for better-performing firms. However, further analysis shows that the premium may affect operating performance differently for different sub-groups. In the WFR sub-sample, the premium positively affects the change in operating performance, which is consistent with the full sample results. In contrast, in the WFG sub-sample, the premium is negatively associated with operating performance change, indicating that in this sub-sample paying a higher premium for the target firms leads to lower operating performance.

**Table 6.4 OLS regressions explaining post-takeover performance change**

<b>Independent variables</b>	<b>Full sample</b>	<b>WFR</b>	<b>WFG</b>	<b>Full sample</b>	<b>WFR</b>	<b>WFG</b>
Workforce change from t-1 to t+1	- 0.068***			- 0.086***		
Workforce reduction from t-1 to t+1		0.060			0.146**	
Workforce growth from t-1 to t+1			- 0.090**			0.025
Premium	0.048**	0.049	0.028	0.042*	0.079**	- 0.001
Control firm performance	0.320***	0.374***	0.220***	0.316***	0.358***	0.340***
Relative size	- 0.003	0.004	- 0.014**	- 0.004	0.006	- 0.016**
Board composition	0.112**	- 0.095	- 0.046	- 0.092**	- 0.120*	- 0.019
Leverage	- 0.037	- 0.119*	0.045	- 0.012	- 0.126*	0.071
Hostility dummy	0.020	0.016	0.021	0.034*	0.022	- 0.010
Relatedness dummy	0.032**	0.041*	0.034	0.036**	0.091**	0.096***
Hostility dummy · Workforce change				0.061	- 0.026	0.017
Relatedness dummy · Workforce change				0.001	0.193**	- 0.291**
Constant	- 0.001	0.044	- 0.070	- 0.027	0.024	- 0.112**
F-stat	6.72	3.14	3.97	5.35	3.33	3.11
Adjusted R-square	0.19	0.14	0.15	0.15	0.19	0.27
Number of observations	181	104	79	186	103	79

*Notes:* The dependent variable is the ROA change three years after the merger completion year. Workforce change (reduction or growth) is the change one year after the merger completion year (change from t-1 to t+1). The estimation method is OLS, using heteroscedasticity-robust standard errors (White, 1980). Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

As expected, control firm performance change is positively associated with acquiring firm performance change in all models. The results show that high leverage leads to more negative performance change. Relative size is also inversely related to operating performance change in the WFG regressions: acquiring large firms affect performance change more negatively. The board composition variable is negatively associated with operating performance change.

The models that include dummy regressors and their interactions with the workforce change variable confirm the positive influence of workforce reductions on operating performance change. For example, in the WFR sub-sample a 1% workforce reduction leads to a 0.15%

greater change in ROA. The interaction term coefficients indicate that the effect of workforce adjustments on operating performance is significantly different in related and unrelated acquisitions, while it is not significantly different for hostile versus friendly acquisitions. In the WFR sub-sample, a 1% higher workforce reduction in unrelated acquisitions causes a 0.15% greater operating performance change, while in the related acquisitions this effect is 0.34% [= 0.146 + 0.193]. In the WFG sub-sample, 1% higher workforce growth causes a 0.27% [= 0.025 – 0.291] smaller operating performance change. Thus, in related acquisitions, workforce reductions lead to materialisation of post-merger synergy and positively contribute to operating performance change, while excessive workforce growth negatively affects performance change. In sum, these results imply that post-merger workforce reductions positively affect firm performance.

### *Quantile regressions*

We also investigate the effect of post-merger workforce adjustments on the subsequent post-merger operating performance, using quantile regressions, which controls for the effect of outliers. It is important to control for the effect of outliers in these regressions, where the dependent variable is the change in operating performance (ROA), which can be negative or positive and therefore was not transformed into logarithmic form. The results of these regressions are given in table 6.5. In these regressions the main variable of interest is workforce change from  $t-1$  to  $t+1$  in the full sample, workforce reduction in the WFR sub-sample and workforce growth in the WFG sub-sample.

The 50<sup>th</sup> percentile (median) regressions and the 75<sup>th</sup> percentile regressions confirm the OLS regression results: the full sample regressions indicate that the workforce change variable is inversely related to operating performance change. This means that 1% employment growth leads to a 0.06% smaller change in ROA, as indicated in the median regression. Thus, the workforce change variable is not an important predictor at lower levels of operating performance change.

However, only leverage is significant at 75<sup>th</sup> percentile regression and all other variables, such as premium, Board composition and relatedness dummy variables, are insignificant within this semi-parametric test specification (quantile regressions), while they are significant within parametric test specification (OLS regressions). There may be several reasons for this. One

possible explanation is that outlier deletion in the OLS regression framework significantly impact the results. Alternatively, highly non-normality of the dependent variable – operating performance change measure – may impact the results. As this variable was constructed as the difference between post-takeover and pre-takeover performance (which may be positive or negative) we could not use logarithmic transformation of this variable, which would be ideal normality transformation.

**Table 6.5 Quantile regressions explaining post-takeover performance change**

<b>Independent variables</b>	<b>Full sample</b>	<b>WFR</b>	<b>WFG</b>	<b>Full sample</b>	<b>WFR</b>	<b>WFG</b>
<b>0.25 Quantile regression</b>						
Workforce change from t-1 to t+1	- 0.030			- 0.032		
Workforce reduction from t-1 to t+1		- 0.003			- 0.013	
Workforce growth from t-1 to t+1			- 0.124			- 0.123
Premium	0.040	0.035	- 0.054	- 0.038	0.025	- 0.143**
Control firm performance	0.393**	0.285	0.503	0.358	0.112	0.330
Relative size	- 0.016	- 0.001	- 0.026	- 0.015	0.003	- 0.020
Board composition	0.020	- 0.280	0.185	0.043	- 0.212	0.075
Leverage	0.102	- 0.090	0.319	0.020	- 0.111	0.256
Hostility dummy				0.067**	0.042	0.099*
Relatedness dummy				0.063**	0.068	0.019
Constant	- 0.189**	0.078	- 0.336*	- 0.189***	0.005	- 0.265**
<b>0.50 Quantile regression</b>						
Workforce change from t-1 to t+1	- 0.055***			- 0.064		
Workforce reduction from t-1 to t+1		- 0.012			- 0.003	
Workforce growth from t-1 to t+1			- 0.083			- 0.081
Premium	0.023	0.046	0.026	0.007	0.049	- 0.006
Control firm performance	0.338**	0.402***	0.324	0.314*	0.374	0.363**
Relative size	- 0.003	0.007	- 0.009	- 0.003	0.005	- 0.011
Board composition	- 0.093	- 0.146	- 0.062	- 0.134	- 0.198*	- 0.109
Leverage	0.036	0.066	0.039	0.058	0.049	0.081
Hostility dummy				0.012	0.012	0.010
Relatedness dummy				0.036*	0.020	0.036
Constant	- 0.006	0.027	- 0.026	- 0.020	0.034	0.042
<b>0.75 Quantile regression</b>						
Workforce change from t-1 to t+1	- 0.087**			- 0.072		
Workforce reduction from t-1 to t+1		0.007			0.014	
Workforce growth from t-1 to t+1			- 0.141***			- 0.120*
Premium	0.027	0.034	0.040	0.012	0.039	0.021
Control firm performance	0.546***	0.505***	0.235	0.519***	0.482**	0.219
Relative size	0.000	0.012*	- 0.011	0.002	0.016	- 0.022***
Board composition	- 0.080	- 0.098	- 0.067	- 0.087	- 0.097	- 0.089
Leverage	- 0.082*	- 0.163*	- 0.043	- 0.075	- 0.153	- 0.075
Hostility dummy				0.017	0.020	0.020
Relatedness dummy				0.021	0.009	0.037
Constant	0.115***	0.199***	0.076	0.104**	0.179**	0.055
Number of observations	206	113	93	206	113	93

## 6.5 Discussion

*Does post-takeover performance deterioration lead to workforce adjustments?* We fail to reject the hypothesis that post-takeover performance deterioration leads to workforce reductions, as there is significant positive association between these two variables, shown by both full sample and sub-sample regressions (Q2-H1). This evidence implies that acquirers take into consideration post-takeover performance change while making downsizing decisions. This evidence also supports the view that such layoffs are undertaken for efficiency improvement purposes, as suggested by Conyon *et al.* (2002a).

*What are the consequences of post-takeover workforce adjustments for operating performance?* Firstly, the univariate analysis indicates the WFG sub-sample acquirers' performance does not differ from the pre-takeover levels during the first two post-takeover years, but significantly declines during the third post-takeover year. In contrast, the WFR sub-sample acquirers' performance declines during the first two post-takeover years, but does not differ from the pre-takeover levels during the third post-takeover year. In other words, both benchmarks show that the WFG sub-sample acquirers' performance declines, while the WFR sub-sample acquirers' performance does not, during the third post-takeover year. This means that workforce reductions may halt further performance deterioration.

As the full effect of employee layoffs might only be felt several years after downsizing, we use performance change after three years as a dependent variable. The results reveal an inverse relationship between workforce *change* and operating performance *change* (Q2-H2). This suggests that workforce reductions are associated with more positive operating performance change. The results also indicate that the extent of post-merger workforce adjustments is greater in related acquisitions than in unrelated acquisitions. The interaction of the relatedness dummy with the workforce adjustment variable is significant in both sub-samples. In the WFR sub-sample, a 1% employment reduction in related acquisitions leads to significantly better performance than a 1% employment reduction in unrelated acquisitions. Similarly, in the WFG sub-sample, workforce growth hurts more those acquirers who acquire firms in the same industry. This is consistent with the view that related acquisitions provide more synergy, facilitating a large reduction in labour demand in comparison to unrelated acquisitions.

In other words, using the operating performance *change* variable, we are not able to further support the hypothesis that excessive employee layoffs lead to operating performance

deterioration, as suggested by Krishnan *et al.* (2007). Instead, the results indicate that workforce reductions contribute to positive operating performance change, while accelerated workforce growth may lead to steeper decline in operating performance.

## 6.6 Conclusions

This chapter has analysed the role of post-merger performance deterioration in explaining workforce reductions. It has also examined whether post-merger employee layoffs arrest a decline in performance or whether they cause further performance deterioration. The results support the view that firm performance deterioration after acquisitions also plays an important role in explaining post-takeover workforce reductions. Both univariate and regression analyses indicate that post-merger decline in performance may also lead to the workforce reductions.

Using a US sample, Krishnan and Park (2002) and Krishnan *et al.* (2007) show that managers undertake excessive post-merger employee layoffs to cover high premiums, which may lead to subsequent firm performance deterioration. However, a counter-argument exists: a primary reason for downsizing is to improve operating performance. The objective of downsizing is to stop further performance deterioration and it may take some time to materialise the effect of downsizing. Therefore workforce change is expected to positively affect firm performance change. In support of this, the results show an inverse relationship between workforce *change* and operating performance *change*, which implies that workforce reductions halt further performance deterioration, given the fact that takeovers in general lead to a decline in operating performance. On the basis of this, we argue that post-merger workforce reductions are associated with more positive operating performance change.

We could not support the Krishnan and Park (2002) and Krishnan *et al.* (2007) findings using a sample of UK acquisitions. In contrast to the results of these papers, our results show that workforce reductions do not negatively affect operating performance: post-merger workforce change is inversely related to operating performance change. This association suggests that post-merger employee layoffs contribute to materialising post-merger synergy and, thereby, positively affect firm performance. Furthermore, our results show that the need for performance improvement necessitates workforce reductions. So, it can be concluded that managers do not put shareholders' interests above the labour forces' interest. Therefore managers can be seen as active participants in governance and make decisions to improve firm performance.

# 7 SHAREHOLDERS AND EMPLOYEES: RENT TRANSFER OR RENT SHARING IN CORPORATE TAKEOVERS

## 7.1 Introduction

### 7.1.1 Research motivation

The introduction of the ideology of maximising shareholder value and the rise of institutional investors in LMEs contributed to the development of an active MCC, which threatens managers with replacement if they do not act in the best interests of shareholders. However, some authors argue that excessively pressurising managers to undertake corporate restructuring through the MCC may negatively affect labour (Froud *et al.*, 2000; Lazonick and O'Sullivan, 2000). It is suggested that such corporate governance practices may discourage employees from investing in firm-specific human capital and may pressurise managers into taking short-term profit-maximising actions instead of investing in long-term sustainable projects (Blair, 1995).

Specifically, it is suggested that ownership change through takeovers facilitates wealth transfer from employees to shareholders by allowing acquirers to renege on intrinsic contracts with employees, such as promises of extra-marginal wage payments (Shleifer and Summers, 1988). These renegotiations may result in more favourable value redistribution for shareholders. In expectation of the advantages of this bargaining process, acquiring firm managers pay high premiums, leading to a significant rise in share prices. In short, this *value-redistribution theory* suggests that takeovers may be undertaken with the purpose of *rent transfer* from employees to shareholders. This implies that post-takeover employee welfare should be inversely related to shareholder gains earned at the time of the takeover announcement.

Alternatively, *the value-creation* theory of takeovers suggests that shareholder gains come from expected efficiency improvements arising as a result of shifting target firm assets to more efficient users (Manne, 1965)<sup>70</sup>. Under this theory, post-takeover workforce and wage changes should depend on the success of mergers, which may be characterised by successful integration, higher profitability and better business opportunities. Such positive changes in

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<sup>70</sup> As outsiders' cash flow expectation from using target assets is higher than the cash flow expectation of incumbent managers, their valuation of these assets is higher than the incumbent's valuation. This higher valuation enables outsiders to make a higher bid. This higher bid (or expectation of such a bid) causes an increase in the market value of the target shares.

firm performance should be incorporated into acquirers' share price post-merger. Such efficiency improvements should also benefit employees (Holmstrom, 1988; Conyon *et al.*, 2004). In short, takeovers may be undertaken with the purpose of improving the welfare of all stakeholders, leading to *rent sharing* between them. This implies that post-takeover changes in labour welfare should depend on the success of mergers, where the success could be measured by acquiring firm shareholders' long-run abnormal returns.

Despite extensive research on the effect of takeovers on shareholder value and employee wealth, the question of whether there is any association between these two variables remains unanswered. There is little prior empirical evidence which directly tests this association. At the same time, this small body of literature provides mixed conclusions on the validity of the rent transfer argument: there is evidence both rejecting and supporting the rent transfer hypothesis (Rosett, 1990; Gokhale *et al.*, 1993; Becker, 1995; Beckmann and Forbes, 2004).

To assess these competing hypotheses one needs to analyse the changes in both owners' and employees' wealth around the time of takeover announcements and then test the relationship between these variables. We measure the impact of takeovers on labour using changes in two items of labour data: number of workers and their annual wages. We consider changes in two sets of owners: target firms' short-run abnormal returns surrounding the takeover announcement and acquiring firms' long-run abnormal returns as possible explanations of post-takeover changes in labour welfare<sup>71</sup>. Takeover announcement share price changes should also reflect efficiency gains arising as a result of mergers, in addition to the wealth transfer from employees to shareholders. In fact, as discussed above, the main motivations of takeovers are to derive a synergy from merging business or to discipline underperforming managers which eventually should lead to an improvement in operating performance of merged businesses. However, such efficiency improvements should be incorporated in acquiring firm share prices, rather than target firm share prices. In this regard, we only use target firm shareholders abnormal returns and premiums paid to target firm shareholders as merger-related wealth transfer measures.

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<sup>71</sup> After mergers some target firm shareholders may become shareholders of acquiring firm, if payment was in the form of stock.

In addition to the full sample analysis, we measure the shareholder wealth effect of takeovers in the WFR and WFG sub-samples<sup>72</sup>. According to *the value-redistribution* theory, the WFR sub-sample shareholders should earn higher abnormal returns than the WFG sub-sample shareholders. To test these predictions, first, we compare short-run shareholder abnormal returns for the WFR and WFG sub-samples. Furthermore, wage growth should depend on target firm shareholder gains. To test this prediction, we regress post-takeover employment and wage changes on target firm shareholders' gains.

According to *the value-creation* theory, the WFG sub-sample shareholders should earn higher long-run abnormal returns than the WFR sub-sample shareholders. Therefore we compare long-run share price abnormal returns of acquiring firms for the WFG and WFR sub-samples. Furthermore, workforce and wage growth should depend on the value created by mergers, which could be measured with the acquirers' long-run abnormal returns. Therefore we test whether post-takeover long-run abnormal returns are associated with the changes in workforce and wages by regressing long-run abnormal returns on employment and wage growth.

### **7.1.2 Brief results and contributions**

We find that around takeover announcements the WFR sub-sample shareholders earn lower abnormal returns than the WFG sub-sample shareholders. This contradicts the predictions of the rent transfer argument. Interestingly, the WFR sub-sample acquirers lose significantly, while the WFG acquirers' wealth does not change much. Similarly, in the long run the WFR sub-sample acquirers earn significant negative abnormal returns, while the WFG sub-sample acquirers' performance does not differ from the performance of non-merging control firms.

Furthermore, the regressions show a positive association between target shareholders' abnormal returns and workforce growth, while the premium is positively associated with wage growth. Only in cash-financed acquisitions higher abnormal returns are associated with lower wage growth, while in hostile takeovers a higher premium is associated with lower wage growth. Similarly, in related acquisitions a high premium leads to slower employment growth.

In contrast, the results support the rent-sharing argument: there is significant positive association between shareholders' long-run abnormal returns and post-takeover changes in

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<sup>72</sup> The WFR and WFG sub-samples are explained in the chapter 5.

both workforce and wage, meaning that in acquisitions with low shareholder returns, wage and employment growth is also low. Thus, we conclude that in corporate takeovers employee wealth concessions do not depend on the rent expropriating behaviour of shareholders, but post-takeover jobs and wages depend on the value created by takeovers; if shareholders gain from takeovers, then employees also benefit from such transactions; if shareholders lose from the acquisitions, then employees also suffer from them.

The contribution of this chapter is twofold. First, it provides new evidence on the relationship between shareholder gains and employee wealth concessions around takeover transactions. Although there is well established research on the shareholder wealth effect of takeovers on the one hand, and the effect of takeovers on labour on the other hand, the research on the direct relationship between these two effects of takeovers is limited to a few papers only (discussed in the next section).

Secondly, the chapter clarifies takeover motivations and sources of gains arising from such transactions. *The value-redistribution* theory suggests rent transfer from other stakeholders to shareholders as a source of takeover gains. Alternatively, *the value-creation* theory suggests efficiency improvements as a source of takeover gains. So empirical evidence on these two competing theories clarifies the issues related with the effectiveness of corporate governance practices in LMEs.

Shareholder gains around takeover announcements are well documented: in the short run target shareholders earn significant abnormal returns, while bidder shareholders' wealth does not change much. At the same time there is growing evidence showing that in the long run acquiring firm shareholders lose significantly. However, the source of these gains is controversial and, more importantly, the reasons for the long-run stock price underperformance, termed as the 'post-takeover performance puzzle' in corporate finance, is unknown. In short, the question of *how* takeovers *create* or *destroy* shareholder value is still unanswered. Therefore the results of this chapter also clarify the matter of whether acquirers' underperformance could be related to the changes in employment and wages.

## **7.2 Theoretical background and hypothesis development**

### **7.2.1 Target shareholders' gains and post-takeover changes in employee wealth**

It is suggested that market mechanisms such as the 'exit' strategy, used in LMEs to discipline managers, excessively pressurise them into maximising shareholder value. As a result, managers may take actions to increase shareholder value at the expense of other stakeholders. Specifically, ownership change may also lead to a change in management control, where new management may not be responsible for adhering to the implicit contracts between incumbent management and employees. Being themselves under market pressure, new management have incentives to breach those implicit contracts and renegotiate them in favour of shareholders. On the basis of this Shleifer and Summers (1988) suggest that gains to target shareholders at least partially come at the expense of labour, in the form of job losses, wage cuts and other forms of rent reductions for employees. Under the 'nexus of contracts' view of the firm, long-term contracts between shareholders and employees could be implicit, providing a trust-based framework to employees for investing firm-specific capital. Although *ex ante* such contracts are valuable for both shareholders and employees, *ex post* shareholders may derive some benefit from renegeing on such contracts by firing more senior workers, whose wage exceeds their marginal product and who were underpaid when they were young. As these implicit contract holders are mainly incumbent managers, shareholders can breach these contracts by replacing the incumbent management through ownership change. Chemla (2005) suggests that even friendly mergers may involve breach of trust between shareholders and other stakeholders, and hence the existence of a takeover threat reduces the ex-ante investments of other stakeholders. Therefore all takeovers may affect long-term labour relations.

In such cases, incumbent management and workers form alliances against shareholders. Hellwig (2000) argues that incumbent management and workers are natural allies against non-controlling shareholders and therefore they have incentives to make implicit contracts. Pagano and Volpin (2005a) develop a model formally showing that managers and employees have incentives to make alliances against shareholders. Managers transform employees into anti-takeover defence mechanisms by offering them long-term employment contracts, paying high wages and not monitoring too strictly, when they have small ownership stakes. The reason for such a coalition is that managers value the private benefits of a 'quiet life', while employees fight hostile takeovers to protect their long-term contracts and high salaries. Thus, a generous

employment policy can serve as an entrenchment instrument for the incumbent management and it may be preferable for shareholders to discipline such behaviour through 'exit'.

At the same time, many other authors argue that acquiring firm managers pay high premiums to target shareholders and subsequently cover these by cutting labour costs (Hayward and Hambrick, 1997; Sirower, 2000). This also suggests post-takeover employee layoffs, induced by target firm shareholders' gains in the form of a takeover premium (Krishnan *et al.*, 2007).

The empirical tests of *the value-redistribution* theory include analysing union wealth change, wage growth or labour demand adjustments after takeovers. Some authors have provided at least partial support for the rent transfer argument. Becker (1995) finds that the mean difference in target shareholder returns for unionised and non-unionised firms was statistically significant and economically large. Shareholder returns in unionized target firms were 14-16% larger than average target shareholder returns of 37%, supporting the rent expropriation theory. Rosett (1990) provides evidence showing that 10% (5%) of shareholder gains in hostile (friendly) takeovers could come from labour losses over a period of 18 years after takeovers. Lichtenberg and Siegel (1990) estimate that workforce growth in ownership-changing auxiliary (production) units is 17% (4.5%) lower than in non-ownership-changing units. However, Brown and Medoff (1988) report a 5% increase in employment, while McGuckin and Nguyen (2001) report an insignificant 3% growth in employment.

The results of Gokhale *et al.* (1993) suggest that hostile takeovers reduce employment for more senior workers than other workers. Bhagat *et al.* (1990) find that in 28 of 62 hostile takeover cases on average 5.7% of workers were laid off, which provided cost savings to cover only 10-20% of the takeover premium. Using a small UK sample, but adjusting for the effect of relevant asset divestments, Beckmann and Forbes (2004) report an 11% employment decline during the five years post-takeover. Gugler and Yurtoglu's (2004) results reveal that US tender offer takeovers reduce employment by 8%, while other takeovers do not change employment. Such differential effect has been interpreted as being consistent with the rent transfer hypotheses as tender offers can be assumed to cause a larger element of hostility than other takeovers. However, interestingly, their results show that UK tender offer takeovers do not significantly change employment, while other deals reduce employment by 14%. In short, according to the rent transfer hypothesis, post-takeover workforce changes are predicted to be an inverse function of target shareholders' gains (share price abnormal returns or premium):

Q3-H1: *Target firm shareholders' short-run abnormal returns surrounding takeover announcements are negatively associated with post-takeover workforce growth.*

Q3-H2: *The takeover premiums paid to target firm shareholders are negatively associated with post-takeover workforce growth.*

In addition to employee layoffs, the rent transfer could also involve slower wage growth and cuts in other rents to workers. Several empirical studies report that unexplained extra-marginal wage differentials exist even amongst firms within the same industries with similar financial indicators (Krueger and Summers, 1988). Lazear (1979) suggests that it is preferable for both firms and workers to agree to a long-term wage stream that pays workers less than the value of their marginal product when they are young and more than the value of their marginal product when they are older. Such an extra-marginal wage provides long-term incentives, urging workers to make firm-specific human capital investment. However, it may be beneficial for shareholders to reverse such payments through ownership change that facilitates the renegotiation of such extra-marginal wage payments.

As discussed above, the Pagano and Volpin (2005a) model predicts that incumbent managers have incentives to pay higher wages to protect the private benefits of their own 'quiet life'. In contrast, post-takeover new managers have incentives to cut wages as much as possible and to introduce more intensive monitoring of workers to maximise takeover gains. Their model predicts that such wage cuts cause an increase in the company's share price in proportion to the share of the total wage bill that is paid to employees with renegotiable contracts.

Gokhale *et al.* (1993) analyse extra-marginal wage payments to workers in the form of employer-specific wage differentials and steeper-than-average seniority wage payments. Analysing the pre-event characteristics of hostile takeover targets and the probability of subsequent hostile takeovers, they could not find any significant relationship between these two variables. The Gokhale *et al.* (1993) results reveal that senior employees' wage profiles flatten for firms with an initially high concentration of senior workers, indicating the wealth expropriation after such takeovers. Neumark and Sharpe (1996) argue that if the highest wage premia and the steepest wage profiles for more-tenured workers reflect extra-marginal wage payments, then hostile takeovers should target firms with these characteristics. However,

logistic regressions do not show that the likelihood of being a hostile takeover target is related to such characteristics.

However, only one UK study in this area – that of Beckmann and Forbes (2004) - reports that wage growth is also higher than a benchmark wage growth<sup>73</sup>. In their study the regressions of premiums on job cuts and wages indicate no significant association between these variables.

In brief, many authors agree that a substantial part of shareholder gains results from employee losses. For example, Pontiff *et al.* (1990) report that pension fund revisions are higher after hostile takeovers (15%) than after friendly takeovers (8%), consisting of on average 11% of target shareholders' takeover announcement gains. Takeover gains could come in the form of wage cuts (covering 10% of gains, as reported by Rosett (1990)), pension fund revisions (covering 15% of gains, as reported by Pontiff *et al.* (1990))<sup>74</sup> and employee layoffs (covering 10-20% of gains, as reported by Bhagat *et al.* (1990)). On the basis of this discussion, the following hypotheses will be tested:

Q3-H3: *Target firm shareholders' short-run abnormal returns surrounding takeover announcements are negatively associated with post-takeover wage growth.*

Q3-H4: *The takeover premiums paid to target firm shareholders are negatively associated with post-takeover wage growth.*

### **7.2.2 Acquirer shareholders' gains and post-takeover changes in employee wealth**

As discussed above, a strand of literature suggests that in LMEs managers shift risks onto labour during hard times (Froud *et al.*, 2000; Lazonick and O'Sullivan, 2000). According to this view managerial actions will be dictated by the market and managers under market pressure favour shareholders' interests over labour interests. However, a recently emerging strand of literature argues that such a view does not fully represent the reality of labour management (Deakin, 2005). Gospel and Pendleton (2003) and Pendleton (2009) argue that the existing evidence does not support the above hypothesized negative effect on labour of restructuring for shareholder value. Instead the labour management practice in the publicly

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<sup>73</sup> Beckmann and Forbes (2004) estimate the wage growth benchmarks on the basis of pre-takeover historic wage growth and industry average wage growth.

<sup>74</sup> However, Pontiff *et al.* (1990) report that this type of rent cut occurs only in about 10% of cases of takeovers.

listed firms in LMEs could also be considered as more favourable towards labour and Pendleton (2009) discusses several reasons for a such management style. Institutional investors have started to use relational forms of governance rather than market forms of governance as the latter is becoming more costly. This gives managers a greater degree of 'strategic choice' and autonomy from shareholders in decision-making. At the same time, corporate law requires managers to exercise independent judgement and to promote the success of the company, balancing the interests of all stakeholders involved, including shareholders and employees.

On the basis of this it can be argued that wages and workforce growth depend on the value created by takeovers. In other words, post-takeover employee wealth concessions should be determined by a successful outcome of business integration process that enhances firm profitability and creates new growth opportunities. Such changes should alter post-takeover operating performance and gradually raise the share price of acquiring firms. Thus, one of the measures of merger success is the acquiring firms' long-run stock price abnormal returns. Workforce reductions may occur after unsuccessful takeovers, resulting from poor acquisition strategy, mis-match of acquired and acquiring business or failure of business integration. In contrast, only those acquisitions that create high business growth opportunities may benefit workers with new jobs and accelerated wage growth. Therefore we argue that success of mergers is measured by acquirers' long-run abnormal returns. Furthermore, post-takeover wage and employment growth should be associated with acquirers' long-run abnormal returns. Consistent with this hypothesis, the WFR sub-sample acquirers' abnormal returns should be more negative than WFG sub-sample acquirers' abnormal returns.

There may be several reasons for faster wage growth during a post-merger period. First, workers may earn higher wages as a result of changes in the wage setting process and a post-merger profitability increase. Conyon *et al.* (2004) report that both profitability and wages rise following mergers, where related acquisitions increase wages faster than unrelated acquisitions due to increased efficiency in labour usage. Alternatively, managers may become more entrenched after mergers, having more control rights. Cronqvist *et al.* (2009) show that managers with more control pay their workers more. While wage cuts are expected after hostile takeovers involving management turnover, it is reasonable to expect wage growth after friendly takeovers. The reason is that managers may prefer a 'quiet life', as discussed in Pagano and Volpin (2005a) and Pendleton (2009). Previously Bertrand and Mullainathan

(1999, 2003) showed that when the takeover threat is weak, managers pay high wages. Mergers enlarge firms, making them less vulnerable to takeover threats. As a result managers of such firms become more entrenched and start paying higher wages. Pendleton (2009) also suggests that the high visibility of publicly listed companies may encourage managers to adopt a more labour friendly management style in such companies.

A growing number of empirical studies provide evidence showing that takeovers are value enhancing transactions, benefiting both shareholders and employees. Some of the value enhancements come in the form of economies of scale through decline in labour demand. The Conyon *et al.* (2002a, 2004) and Gugler and Yurtoglu (2004) results indicate that during the first two post-takeover years labour demand declines by about 12-20%. This decline in labour demand is interpreted as evidence of efficiency improvement and significant rationalisations in labour use. Bertrand and Mullainathan (2003) report that after adopting anti-takeover laws, the total factor of productivity and profitability declines. At the same time, worker wages, especially wages of ‘white-collar’ workers rise after the adoption of anti-takeover rules. Therefore the authors conclude that takeovers do not involve rent transfer to shareholders, but improve economic performance through management disciplining. On the basis of this discussion, the following hypotheses will be tested:

*Q3-H5: Acquiring firm shareholders’ long-run abnormal returns are positively associated with post-takeover workforce changes.*

*Q3-H6: Acquiring firm shareholders’ long-run abnormal returns are positively associated with post-takeover wage growth.*

## **7.3 Data and methods**

### **7.3.1 Econometric modelling**

To test hypotheses Q2-H1 and Q2-H3, we estimate the following model:

$$\Delta X = \alpha + \beta_1 CAR^T + BControl + \varepsilon \quad (26)$$

where  $\Delta X$  is either the change in the logarithm of number of employees from t-1 to t+3 in the employment equation or the change in the logarithm of average wages per employee per annum in the wage equation. The number of employees represents the average number of both

full- and part-time employees during the relevant year. Wages represent annual staff costs paid to all employees and directors of the firms<sup>75</sup>, scaled by the number of employees. It includes wages and salaries, social security costs and other pension costs<sup>76</sup>.  $CAR^T$  is the target firm shareholders' short-run abnormal returns around takeover announcement, and  $\varepsilon$  is the error term. *Control* variables include:

- *Change in acquirers' operating performance*, measured as change in the ratio of EBITDA to Total Assets (hereafter ROA);

- *Change in control firm workforce* (in the employment equation), where the control firm is selected on the basis of industry, size and pre-event performance criteria, as recommended by Barber and Lyon (1996)<sup>77</sup>;

- *Change in industry average wage* (in the wage equation), calculated as the change in industry-median wage rate;

- *Relative size*, which is the ratio of acquiring firm size to the transaction value (target firm size). Previous research shows that larger firms pay higher wages, because they hire higher quality workers (Brown and Medoff, 1989). Lichtenberg and Siegel (1990) and McGuckin and Nguyen (1995a) confirm that the effect of mergers is different for small and large firms: in small firms wages rise more quickly than wage rise in large acquirers;

- *Leverage*, which is the debt-to-equity ratio at the end of the takeover completion year;

- *Board ownership*; prior research argues that Board ownership reduces agency problems and induces managers to make shareholder value maximizing decisions (Cosh *et al.*, 2006).

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<sup>75</sup> The most direct test of the rent transfer hypothesis should be undertaken on the basis of the analysis of individual worker wages in both target and acquiring firms, using employee-employer linked data. However, we do not have such a dataset and therefore we use information on firm level staff costs, obtained from *Datastream*. Firm level staff cost data represents wages paid to all employees and officers of the firm. It also includes other employee benefits such as insurance and contributions to pension plans.

<sup>76</sup> These variables have been collected for the period of three years before and three years after the takeover completion year, taking into consideration the fiscal year end of the sample firms.

<sup>77</sup> For each acquired and acquiring firm we select a matching firm at the end of year t-1 on the basis of the methodology recommended by Barber and Lyon (1996): first, we filter all firms in the same industry with the sample firm; second, we select all firms within the 25% to 200% size interval of the sample firm's size, size being measured by total assets; third, we select the non-acquiring firm with the closest operating performance measure (EBITDA scaled by total assets) to the matching firm. In addition to this, the matched firm should not be involved in major mergers or acquisitions two years before the sample takeover year and three years after the sample takeover year.

Lewellen *et al.*(1985) conclude that takeovers initiated by directors with small ownership are more likely to have negative bidder stock returns;

- *Relatedness* dummy regressor, which takes 1 if both target and acquiring firms are in the same industry and 0 otherwise. Prior research suggests that the scope for synergy, and subsequent value created by mergers, differs depending on the relatedness of merging businesses. In related mergers there are more opportunities for achieving a greater level of cost savings by eliminating duplicative activities (Rumelt, 1974);

- *Hostility* dummy regressor, which takes 1 if the management of the target company rejects the initial offer made by any acquirer and 0 otherwise; Shleifer and Summers (1988) argue that the rent transfer hypothesis is especially true in the case of hostile takeovers.

- *Cash paid* dummy regressor, which takes 1 if all payments are made with cash and 0 otherwise; Franks *et al.* (1988) show that premiums are higher in cash acquisitions than in equity acquisitions. At the same time, the payment means provides the market with some information about the quality of the mergers: prior research shows that in cash acquisitions shareholders' long-term abnormal gains do not differ from zero, while in equity acquisitions shareholders incur significant abnormal losses (Franks *et al.*, 1988; Bhagat *et al.*, 1990).

To test hypotheses Q2-H2 and Q2-H4, we estimate the following model:

$$\Delta X = \alpha + \beta_1 \text{Premium} + \text{BControl} + \varepsilon \quad (27)$$

where *Premium* is the excess of bid price over share price one month prior to takeover announcement, and other variables are as explained above.

To test hypotheses Q2-H5 and Q2-H6, we estimate the following model:

$$\Delta X = \alpha + \beta_1 \text{BHAR} + \text{BControl} + \varepsilon \quad (28)$$

where *BHAR* is long-run share price abnormal returns for acquiring firm shareholders, and other variables are as explained above.

### **7.3.2 Data and measuring post-merger changes in workforce and wages**

This chapter uses the same sample and data as described in Chapter 5. Similarly, post-merger changes in the workforce and wages are measured using the same technique as described in Chapter 5.

### **7.3.3 Measuring shareholders' short- and long-run abnormal returns**

To measure target firm shareholders' gains, we use two measures: takeover premium and target firm shareholders' abnormal share price returns around takeover announcement dates. A one-month premium is usually used to control for the rumours about takeovers and to determine the true size of the premium. As in other studies, this variable is defined as the difference between the purchase price and the 30 day pre-takeover price divided by the 30 day pre-takeover price.

We use daily stock price return data to calculate short-term abnormal returns and monthly stock price return data to calculate long-term abnormal returns. Daily stock returns are calculated using Stock Returns Index data, downloaded from *Datastream*. For this purpose, for both targets and bidders, 300 daily Stock Return Indexes for both target and buyer firms have been downloaded around the takeover announcement date: 294 days before the announcement date and 5 days after the announcement date. Similarly, FTSE All-Share Index figures for 300 days have been downloaded for each takeover's announcement dates. Consistent with the previous research, daily stock returns from -300 days to -60 days have been used to estimate market model parameters and to calculate the variance for abnormal returns.

To calculate long-term abnormal returns, for each acquirer the monthly stock return index for the period of 37 months following the takeover completion month has been downloaded from *Datastream*. Similarly, for each matching firm (selected on the basis of industry, size and performance) the corresponding 37 monthly return index figures have been downloaded.

We estimate short-run stock price abnormal returns using CAR calculation methodology, and long-run abnormal returns using BHAR methodology, described in Chapter 4.

## 7.4 Results

### 7.4.1 Univariate analysis of post-takeover changes in workforce and wages

Table 7.1 reports the percentage changes in workforce and wages during post-takeover years relative to the pre-takeover year, controlling for the workforce and wage changes in the matched firms, using the Brown and Medoff (1988) regression methodology. We ran separate regressions for each dummy regressor (all takeovers, hostile, related, cash-paid and employee layoff-making takeovers). The table only provides the coefficients of the relevant dummy variables, without reporting the coefficients of pre-takeover wage and employment variables.

Panel A reports the *employment* effect of takeovers. During the transaction completion year *all takeovers* reduce the workforce by 12% and by 3.2% one year after mergers. However, in the second and third post-takeover years the change in employment levels is not significantly different from the employment growth in non-merging control firms. Both *related* and *unrelated* acquisition show a 12% decline during the merger year and related mergers result in a 4.1% lower workforce growth in comparison to non-merging firms during the first post-takeover year. In contrast, the results show that *hostile* takeovers reduce employment levels more than *friendly* takeovers do. During the merger year hostile takeovers reduce employment by about 15%, while friendly mergers reduce employment by 12%. Furthermore, *hostile* acquisitions reduce employment by 6% during the first post-takeover year. Conyon *et al.* (2001) suggest that this steep decline in employment levels should not lead to the view that hostile takeovers destroy jobs, as their results show that, after controlling for the pre-takeover wage, employment and output variables, this distinctive effect of takeovers disappears. This indicates that the significant decline in employment in the case of hostile takeovers is the result of output decline, possibly due to high levels of divestments after such takeovers. The results show that the employment effect of *cash-financed* takeovers does not differ from the employment effect of *non-cash-financed* takeovers.

**Table 7.1 Post-takeover percentage change in workforce and wages**

Post-takeover years	t=0	t+1	t+2	t+3
<b>Panel A: Change in employment relative to the pre-takeover level</b>				
All takeovers	- 0.123***	- 0.032*	- 0.013	- 0.009
Related takeovers	- 0.122***	- 0.041*	- 0.007	0.027
Unrelated takeovers	- 0.124***	- 0.025	- 0.05	- 0.078
Hostile takeovers	- 0.153***	- 0.062*	- 0.06	0.036
Friendly takeovers	- 0.119***	- 0.026	- 0.006	- 0.013
Cash financed takeovers	- 0.124***	- 0.056	- 0.027	0.024
Non-cash financed takeovers	- 0.122***	- 0.026	- 0.012	- 0.026
<b>Panel B: Change in wage rate relative to the pre-takeover level</b>				
All takeovers	- 0.006	- 0.012	0.019*	0.033**
Related takeovers	- 0.01	0.002	0.014	0.032*
Unrelated takeovers	- 0.005	0.033***	0.031**	0.039**
Hostile takeovers	- 0.027*	0.044**	0.029	0.047*
Friendly takeovers	- 0.001	0.005	0.018	0.031**
Cash financed takeovers	0.031***	0.001	0.008	0.028
Non-cash financed takeovers	- 0.018**	0.019*	0.025*	0.035**

The above mean percentage changes were calculated on the basis of Brown and Medoff (1988), which estimates percentage changes, controlling for the lagged variables, on the basis of the following equation:

$$X_{t+j} = \sum_{k=t-3}^{t-1} \alpha_{jk} E_k + \sum_{k=t-3}^{t-1} \beta_{jk} W_k + \delta_j D + \varepsilon, \quad (29)$$

where  $X$  indicates the logarithm of average wages per employee per annum in the merging firms and control firms in the wage equation and the logarithm of number of employees in the merging and control firms in the employment equation;  $t$  is the takeover completion year;  $j=\{1, 2, 3\}$ , i.e. post-takeover years,  $W$  indicates the logarithm of average wages per employee per annum,  $E$  indicates the logarithm of number of workers;  $k=\{t-1, t-2, t-3\}$ , i.e. pre-takeover years;  $D$  is a merger dummy variable, which takes 1 for merging firms and 0 for control firms. In this regression the dummy variable coefficient indicates the mean wage (or employment) growth for merging firms, comparing the wage (employment) growth in merging firms with the wage (employment) growth in non-merging control firms. Models also include year and industry dummies in addition to pre-takeover levels of employment and wage. The estimation method is the Ordinary Least Square estimation method. In these regressions a newspaper information-based layoff dummy variable is used.

Panel B reports the *wage* effects of takeovers. The results show that takeovers lead to higher levels of wage growth than is the case in non-merging firms. For the full sample, the results indicate that wages rise by 1.9% after two years and 3.3% after three years, indicating that employees in the merged firms earn higher wages on average than in the case of no merger. *Unrelated* acquisitions cause higher wage growth than *related* mergers: although the signs of the related merger coefficients are positive for all three years, the increase is only significant in the third year, while for unrelated mergers they are significant in all three years. After unrelated mergers employees earn about 3-4% higher wages on average than if mergers did not occur. After *hostile* takeovers employees earn about 4-5% higher wages than they would earn in the case of no merger, while *friendly* mergers cause 3% wage growth during the third

post-takeover year. The results show that during post-takeover years *non-cash-financed* acquisitions increased wages 2-3.5% faster than non-merging firms, while wages after *cash-financed* acquisitions do not differ from wages in non-merging firms.

The above simple percentage change in workforce and wages during post-takeover years shows no support for the rent transfer hypothesis: post-takeover employment growth does not differ much from workforce growth in control firms, while wage growth is higher in acquiring firms in comparison to wage growth in control firms. Although the results of the above regressions are informative, these models do not control for the effect of output changes and other relevant variables. It is still possible that there may be a negative relationship between shareholder gains and employee wealth concessions. Specifically, higher shareholder gains may be associated with lower growth in wages and employment, after controlling for other relevant variables. The next section investigates this association.

#### **7.4.2 Evidence on the rent transfer hypothesis**

##### *Univariate analysis of shareholders' short-run abnormal returns*

To investigate the association between shareholder gains and employee wealth concessions, first we calculate CARs for 11 days (5 days before the announcement date and 5 days after the announcement date), for 3 days (1 day before the announcement date and 1 day after the announcement date) and for the announcement date alone. Table 7.2 reports the mean CARs for both acquiring and acquired firms and associated t-statistics for the full sample as well as for the WFR and WFG sub-samples.

Panel A reports the market model estimates. In the full sample target firm shareholders gain significant abnormal returns, whereas acquiring firm shareholders' wealth does not change significantly. On the takeover announcement date target shareholders gain on average 17%, which increases up to 25% within the 11 days surrounding takeover announcement. On the takeover announcement date acquirers gain small negative abnormal returns, which are significant at 10% level only. Both the magnitude and significance of the CARs are generally consistent with the previous research: for example, Franks *et al.* (1991) report a 23.3% total abnormal return for the announcement month.

The results show that although target firm shareholders in both WFR and WFG sub-samples earn positive significant abnormal returns, in the former case their gains are 3-5% lower than

in the latter case. In contrast, the WFG acquirers earn very small and insignificant positive abnormal returns, while the WFR sub-sample acquirers earn significantly negative CARs during the 3-day and 1-day event windows<sup>78</sup>.

Panel B reports the market-adjusted model estimates of CARs, which are very similar to the above discussed market model estimates. Under both models, acquisitions involving layoffs produce negative short-run abnormal returns for acquirer shareholders. Market efficiency implies that news regarding a firm's earnings should quickly reflect in its share price. Ball and Brown (1968) show that an unexpected change in future expected earnings causes rapid changes in share prices. Employee layoff announcements may also provide new information to the market about the expected changes in earnings. In this respect, announcement of layoffs involving takeovers may reveal a decline in earnings and therefore markets will negatively adjust prices to take account of this new information. Consistent with this, the results show that workforce reducing acquirers earn negative short-run abnormal returns on takeover announcement.

Several points emerge from this analysis. First, these results do not support *the value-redistribution* theory of takeovers: according to this theory shareholders should have earned higher abnormal returns after acquisitions that involve employee layoffs than after acquisitions that do not. The above results show the opposite of this prediction: in acquisitions involving layoffs, both target and bidder shareholders earn lower gains than in acquisitions that do not.

Secondly, the results suggest that markets correctly forecast employee layoffs for certain types of acquisitions, and negatively react to the announcement of such events. Previous research shows that on takeover announcement acquirers' wealth does not change (Andrade and Stafford, 2004). The results of this chapter not only confirm this conclusion, but also show that firms making layoffs earn significant negative abnormal returns at the time of the takeover announcement. These results suggest that on announcement of a takeover markets distinguish layoff-making acquisitions from those acquisitions that do not make employee layoffs. Thus,

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<sup>78</sup> The results are similar when we divide the full sample into workforce growth and workforce reduction sub-samples using the employment change during a 1-year period after takeovers.

the results support the market efficiency hypothesis, given the fact that employee layoffs may occur well after takeovers<sup>79</sup>.

**Table 7.2 Shareholders short-run abnormal returns around takeover announcements**

	Event Windows					
	Day 0		Days (-1;+1)		Days (-5;+5)	
	CARs	t-stat	CARs	t-stat	CARs	t-stat
<b>Panel A: Market Model</b>						
Full sample						
Target firms mean CARs	0.1652	11.37	0.2158	14.32	0.2519	15.59
Bidder firms mean CARs	-0.0043	-1.39	-0.0044	-0.94	0.0106	0.96
The WFG sub-sample						
Target firms mean CARs	0.2009	8.26	0.2401	10.09	0.2784	12.01
Bidder firms mean CARs	0.0006	0.10	0.0064	0.79	0.0090	0.92
The WFR sub-sample						
Target firms mean CARs	0.1578	7.95	0.2096	9.78	0.2442	9.69
Bidder firms mean CARs	-0.0088	-2.11	-0.0127	-1.95	0.0171	0.80
<b>Panel B: Market Adjusted Model</b>						
Full sample						
Target firms mean CARs	0.1647	11.36	0.2145	14.12	0.2485	15.32
Bidder firms mean CARs	-0.0048	-1.54	-0.0056	-1.22	0.0074	0.67
The WFG sub-sample						
Target firms mean CARs	0.2003	8.29	0.2374	9.94	0.2726	11.72
Bidder firms mean CARs	0.0001	0.01	0.0037	0.46	0.0032	0.35
The WFR sub-sample						
Target firms mean CARs	0.1576	7.92	0.2092	9.65	0.2408	9.55
Bidder firms mean CARs	-0.0090	-2.17	-0.0129	-1.99	0.0141	0.65

*Notes:* This table reports the mean values of CARs and relevant t-statistics. There are 140 observations in the WFR sub-sample and 95 observations in the WFG sub-sample.

Finally, prior research shows that the short-run market reaction to layoff announcements is negative in general, as markets consider such events as reactions to poor operating performance (Hillier *et al.*, 2007). However, prior research also suggests that market reactions to employee layoffs should depend on the underlying reasons for such events, the information provided to investors and pre-layoff performance: layoffs undertaken to respond to adverse market effects should generate a negative market reaction, while layoffs undertaken to

<sup>79</sup> Some takeover announcements include information about future expected redundancies. However, it is in managers' interests to minimise such information about negative labour effects of mergers.

improve efficiency should cause a positive market reaction (Elayan *et al.*, 1998). Chen *et al.* (2001) also show that markets react negatively to layoffs caused by product demand decline, but react positively to efficiency improvement layoffs. The Hillier *et al.* (2007) results indicate that layoffs following poor operating performance generate more negative market reaction than layoffs caused by restructuring or cost cutting. In this regard, negative market reactions to layoff-involving acquisitions suggest that markets consider such acquisitions as reactions to adverse market conditions.

### *Multivariate regression analysis*

Managers may cut costs not only by dismissing employees, but also by reducing wages or slowing wage growth. Therefore we use two variables as the dependent variables in the multiple regressions: change in workforce and wages<sup>80</sup>. Prior theoretical research suggests that wages and employment growth may be different in related versus unrelated, hostile versus friendly and cash-financed versus non-cash-financed mergers. Therefore we also use relatedness, hostility, cash-financed and employee layoff dummy regressors and their interactions with CARs and the premium.

Table 7.3 reports the regression results for the employment equations. The sign of the first main variable of interest – CARs – is positive and it becomes significant in the model which includes dummy regressors and their interactions with the CARs. One unit increase in CARs would cause 0.34% higher employment growth in unrelated (friendly and non-cash) acquisitions. In contrast, in related acquisitions, one unit increase in CARs would cause 0.02% [= 0.336 – 0.357] lower employment growth.

While the premium is not associated with post-takeover workforce change, its interaction with the relatedness dummy variable is significant and negative, implying that in related acquisitions a one percentage point increase in the premium would cause a 0.1% [= 0.177 – 0.273] reduction in employment growth. This is consistent with the view that acquirers pay a higher premium for the targets that create more synergy (for example, in the form of steeper

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<sup>80</sup> However, we do not use the wage change variable as the explanatory variable in the employment equation and the employment change variable in the wage equation. The reason is that when we included employment change in the wage equations, the results showed that there was a significant negative relationship between wage growth and employment growth. However, the regression diagnostics indicate that there may be some specification error with that model, as the F-value for the RESET test is very high and the p-value is low. Therefore in wage equations we report the models excluding the employment change variable and in the employment equations we report the models that exclude the wage change variable.

decline in labour demand). The Ravenscraft and Scherer (1987) and McGuckin and Nguyen (2001) results show that firms acquire better-performing firms, which may require a high premium<sup>81</sup>. The interactions of other dummies with the premium are not significant, suggesting that the effect of paying a high premium on employment is the same in hostile versus friendly and cash-paid versus non-cash acquisitions.

**Table 7.3 OLS regressions of post-merger workforce change on target shareholders' gains**

<b>Independent variables</b>	<b>model1</b>	<b>model2</b>	<b>model3</b>	<b>model4</b>
Target CAR	0.146	0.336**		
Change in acquirers' operating performance	0.025	0.065	0.028	- 0.031
Change in control firm workforce	0.128***	0.105***	0.129***	0.113***
Relative size	- 0.034**	- 0.037*	- 0.043***	- 0.044**
Leverage	- 0.602***	- 0.678***	- 0.644***	- 0.612***
Board ownership	0.008***	0.007***	0.007***	0.005**
Relatedness		0.205**		0.273***
Hostility		- 0.025		0.123
Cash paid		- 0.123		- 0.212**
Relatedness · CAR		- 0.357*		
Hostility · CAR		0.158		
Cash paid · CAR		0.067		
Premium			- 0.010	0.177
Relatedness · Premium				- 0.273*
Hostility · Premium				- 0.190
Cash paid · Premium				0.254
Constant	0.138	0.082	0.187**	0.034
F -statistic	12.84	8.01	11.10	5.79
Adjusted R-square	0.19	0.22	0.18	0.18
Number of observations	182	180	187	183

*Notes:* The dependent variable is post-takeover workforce change. The estimation method is OLS, using heteroscedasticity-robust standard errors (White, 1980). Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

The sign of the relative size variable is negative. This suggests that the acquirers that buy large firms slow down further firm size growth during post-takeover years. Similarly, high leverage inversely affects workforce growth. The results imply that 1% point higher leverage causes 0.6% lower employment growth. The Board ownership variable has a positive coefficient, which is significant at the 0.01% level. These results suggest that higher ownership by boards lead to faster employment growth, possibly due to business growth resulting from better strategic management: one percentage point higher board ownership causes 0.8% higher

<sup>81</sup> If post-merger business growth opportunities are high, providing high expected cash flows, then it is reasonable to assume that some of the cash flows should accrue to target firm shareholders, enabling them to earn a high takeover announcement gain.

employment growth during the post-takeover years. Finally, as expected, control firm workforce change is positively associated with acquirers' workforce growth.

The estimation results of the wage equations are given in Table 7.4. Model 1 shows that targets' CARs do not explain post-takeover wage change. However, model 2 indicates a negative and significant slope coefficient for the cash-paid dummy and the CAR interaction term<sup>82</sup>. This indicates that, consistent with the rent transfer argument, in cash acquisitions a one unit increase in CARs would result in 0.13% [= 0.013 – 0.138] lower wage growth<sup>83</sup>. In non-cash acquisitions CARs do not explain post-takeover wage growth. At the same time there is no significant difference in the association between CARs and wage growth in related versus unrelated acquisitions and hostile versus friendly acquisitions.

Model 3 shows that the second variable of interest – premium – does not explain post-takeover wage growth. However, when the model includes dummy regressors and their interactions with the premium, the main effect of the premium variable becomes significant, indicating that in friendly (unrelated and non-cash) acquisitions a higher premium is associated with higher wage growth. Specifically, a one percentage point increase in premium leads to 0.07% higher wage growth in such acquisitions. At the same time, the slope coefficient of the interaction term between hostility dummy and premium is negative, meaning that in hostile acquisitions a one percentage point increase in premium would lead to 0.05% [0.071 – 0.120] lower wages. Other interaction terms indicate no differential effect of the CARs on wages in related versus unrelated and cash-paid versus non-cash acquisitions.

The control variables behave as expected. Wage growth in acquiring firms is strongly related to the industry-wide wage changes. The greater the acquired company size relative to the size of the acquiring company, the higher the wage growth, which is consistent with previous research that suggests that larger firms pay higher wages (Brown and Medoff, 1989). Moreover, high leverage inversely affects wage growth, as indicated by the negative coefficient. The results on the association between Board ownership and wages confirm the

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<sup>82</sup> In the models that include interaction terms we do not interpret the lower level variable coefficients, because they only provide limited information. For example, in model 2, a significant cash-paid dummy variable would indicate that wage growth is 5.5% higher in cash-paid acquisitions than in non-cash acquisitions, but only when CARs are equal to zero. However, in reality CARs are rarely equal to zero. Therefore we only interpret the coefficients of the interaction terms.

<sup>83</sup> The effect of this variable is calculated taking into consideration the main effect and the interaction term effect.

Pagano and Volpin (2005a) model predictions: higher ownership by Boards lead to lower levels of wage growth<sup>84</sup>.

**Table 7.4 OLS regressions of post-takeover wage growth on target firm shareholders' gains**

<b>Independent variables</b>	<b>model1</b>	<b>model2</b>	<b>model3</b>	<b>model4</b>
Target CAR	0.017	0.013		
Change in acquirers' operating performance	0.065	0.037	0.062	0.069
Change in industry average wage	0.173***	0.174***	0.174***	0.176***
Relative size	0.012*	0.012*	0.012*	0.013*
Leverage	- 0.060	- 0.043	- 0.059	- 0.038
Board ownership	- 0.002**	- 0.002**	- 0.002***	- 0.002***
Relatedness		- 0.048*		- 0.009
Hostility		0.024		0.067**
Cash paid		0.058*		0.048
Relatedness · CAR		0.112*		
Hostility · CAR		- 0.036		
Cash paid · CAR		- 0.138**		
Premium			0.008	0.071**
Relatedness · Premium				- 0.033
Hostility · Premium				- 0.120**
Cash paid · Premium				- 0.079
Constant	0.124***	0.117***	0.123***	0.096***
F -statistic	3.76	2.61	3.77	3.43
Adjusted R-square	0.09	0.09	0.09	0.10
Number of observations	182	182	182	181

*Notes:* The dependent variable is post-takeover wage change. The estimation method is OLS, using heteroscedasticity-robust standard errors (White, 1980). Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

In sum, the results in general do not support the predictions of *the value-redistribution* hypothesis, except on the following points, which provide partial support for this hypothesis. First, higher CARs are associated with wage cuts, when acquisitions are made with cash payments. Secondly, a higher premium is associated with wage cuts, when acquisitions are hostile in nature. Thus, the effect of hostile takeovers on wage growth is distinguishable from the effect of friendly takeovers, as predicted with the rent transfer argument. This evidence shows that in hostile takeovers where a high premium is paid the rent allocated to labour (in the form of lower wages) is less favourable than in the case of friendly takeovers.

At the same time, higher CARs and premiums are associated with slower workforce growth in related acquisitions. However, we argue that this evidence does not suggest rent transfer. Specifically, slower workforce growth in related acquisitions does not necessarily show job

<sup>84</sup> When the model is in log – level form (i.e. the dependent variable in the logarithm form and the independent variable in the level form (could be in percentage or proportions), the coefficient of the log transformed independent variable indicates that one unit change in the independent variable leads to a percentage change in the dependent variable, where the direction and magnitude of the change is shown by the coefficient of the independent variable. For example, the CAR variable is entered into the model in decimal form. The Board of ownership is entered in percentage form.

losses, but indicates higher levels of synergy realization after such acquisitions. For other types of acquisitions (friendly or non-cash-paid) there is a positive association which contradicts the predictions of the rent transfer hypothesis.

#### *Quantile (median) regression analysis*

In addition to the OLS regressions, we also investigate the relationship between employee wealth change and shareholder wealth change post-merger using quantile regressions. However, as 25<sup>th</sup> percentile and 75<sup>th</sup> percentile regression results are similar to the median regression results, we only report these median regression results. The median regression is an important type of quantile regressions, which enables to control for the effect of outliers. Similar to OLS regression, median regression represent the relationship between the central location of the dependent variable and a set of independent variables. However, the advantage of the median regression is that when the conditional distribution is highly skewed, the mean may not be representative to characterise whole distribution, while the median is still informative. Table 7.5 shows the results of the median quantile regressions, explaining post-merger workforce change (Panel A) and post-merger wage change (Panel B) by the target firm CARs and premium paid to target firm shareholders.

Consistent with the OLS results reported in table 7.3, Panel A shows that the target firm CARs are positively associated with post-merger workforce change: the higher the target firm shareholder returns, the higher the workforce growth post-merger. This contradicts with the rent transfer arguments. Similarly, these regressions also show that high premium is not significantly associated with workforce reductions. Furthermore, the significance and magnitude of other variables, such as relative size, leverage, board ownership and relatedness, are exactly the same as in OLS regressions, except change in control firm workforce variable. The negative sign of the relative size variable indicates that the higher the relative size (the ratio of transaction value to acquirers size) the lower the post-merger workforce growth. In other words, when large firms are acquired, then the subsequent workforce growth is slower. Similarly, a higher level of leverage leads to a lower workforce growth. The positive sign of the board ownership variable indicates, that the higher the board ownership the higher the workforce growth.

**Table 7.5 Median regressions of post-takeover workforce and wage growth on shareholders' short-run abnormal returns and premium**

<b>Panel A: 0.50 Quantile regressions explaining post-merger workforce change</b>				
<b>Independent variables</b>	<b>model1</b>	<b>model2</b>	<b>model3</b>	<b>model4</b>
Target CAR	0.211*	0.474**		
Change in acquirers' operating performance	0.068	0.062	0.115	0.079
Change in control firm workforce	0.064	0.057	0.073	0.060
Relative size	- 0.042**	- 0.043*	- 0.054***	- 0.058**
Leverage	- 0.488**	- 0.577***	- 0.443**	- 0.532**
Board ownership	0.009**	0.007*	0.008***	0.009***
Relatedness		0.221**		0.149
Hostility		0.008		0.027
Cash paid		- 0.069		- 0.174
Relatedness · CAR		- 0.500*		
Hostility · CAR		- 0.054		
Cash paid · CAR		0.045		
Premium			0.047	0.010
Relatedness · Premium				- 0.099
Hostility · Premium				- 0.069
Cash paid · Premium				0.288
Constant	0.003	- 0.046	0.009	0.021
<b>Panel B: 0.50 Quantile regressions explaining wage change</b>				
<b>Independent variables</b>	<b>model1</b>	<b>model2</b>	<b>model3</b>	<b>model4</b>
Target CAR	0.036	0.051		
Change in acquirers' operating performance	0.078	0.052	0.075	0.047
Change in industry average wage	0.175**	0.184	0.165*	0.250***
Relative size	0.013	0.017	0.014	0.009
Leverage	- 0.124*	- 0.121	- 0.104*	- 0.069
Board ownership	- 0.002	- 0.002*	- 0.002	- 0.002
Relatedness		- 0.042		- 0.002
Hostility		0.032		0.098*
Cash paid		0.058*		- 0.015
Relatedness · CAR		0.1		
Hostility · CAR		- 0.031		
Cash paid · CAR		- 0.172*		
Premium			0.022	0.067**
Relatedness · Premium				- 0.043
Hostility · Premium				- 0.153
Cash paid · Premium				- 0.004
Constant	0.153***	0.153***	0.143***	0.103**
Number of observations	206	206	206	206

*Notes:* The dependent variables are post-takeover workforce change and post-takeover wage change. The estimation method is Quantile regression method. Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

Similar to the OLS regressions results, Panel B also shows that target firm CARs is positively associated with post-merger wage growth. However, the coefficients are not significant. But, the second measure of value transfer – premium variable – is significantly positively associated with post-merger wage growth (model 4), contradicting with the rent transfer argument. The effect of industry average wage on post-merger wage growth is positive and significant. However, some differences emerge between the OLS and median regression results, especially in terms of the relative size, leverage and board ownership variables. For example, the quantile regressions show that the relative size variable does not explain post-merger wage change. In contrast, in these regressions leverage variable becomes significant, while they are insignificant in the OLS regressions. Although the magnitude of the Board ownership is exactly the same in the OLS and median regression, this variable is significant only in one specification (model 2). Both OLS and median regressions show that wage growth is higher after cash paid acquisitions.

In sum, the results do not support the rent transfer argument: in most cases targets' CARs and labour rent are positively related. In the next section, we investigate the validity of the rent sharing argument by investigating the association between long-run shareholder gains and post-takeover wage and employment growth.

### **7.4.3 Evidence on the rent sharing hypothesis**

#### *Univariate analysis of acquiring firm shareholders' long-run abnormal returns*

This section investigates whether shareholders' long-run abnormal returns are different in the WFR and WFG sub-samples. Table 7.6 reports the long-term share price performance of acquiring firms. The long-run stock price abnormal returns are computed on the basis of BHAR methodology using industry, size and pre-takeover performance-matched firms<sup>85</sup>.

Consistent with previous research, the results indicate that during the post-takeover 12 months acquiring firms earn 6% less than their matching firms and this underperformance increases to 24% in a 36-month period. Thus, the full sample results indicate that an average acquirer shareholder's wealth significantly declines during post-takeover years. The results of this

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<sup>85</sup> The results of the Calendar Time Abnormal Returns (CTAR) approach are given in the Appendix 7.

analysis confirm the ‘under-performance’ puzzle, documented by the existing empirical research (Agrawal and Jaffe, 2003). For example, on the basis of the BHAR approach using size and B/M matched firms, Conn *et al.* (2005) report that in the period of 36 post-takeover months domestic public firm acquisitions result in significantly negative returns of 20 %.

**Table 7.6 Long-run shareholder wealth effect of takeovers**

	Event Windows					
	12 months		24 months		36 months	
	BHAR	t-stat	BHAR	t-stat	BHAR	t-stat
Full sample acquirers' BHAR	-0.0616	-1.84	-0.1970	-3.41	-0.2361	-2.42
The WFG sub-sample acquirers' BHAR	-0.0182	-0.31	-0.0174	-0.20	0.0488	0.32
The WFR sub-sample acquirers' BHAR	-0.0798	-1.69	-0.2269	-2.81	-0.2938	-2.19

*Notes:* This table reports the mean values of BHARs and relevant t-statistics. There are 140 observations in the WFR sub-sample and 95 observations in the WFG sub-sample.

Further analysis reveals that there is a clear difference in the long-run stock price performance of the WFG and WFR sub-sample acquirers, indicating that much of the underperformance could be linked to the employee layoff-making acquirers. The WFG acquirers’ performance does not significantly differ from the non-merging firms’ performance. In contrast, the WFR acquirers earn 8% less after 12 months, 22% less after 24 months and 29% less after 36 months in comparison to the non-merging firms.

Thus post-takeover employee workforce reductions could be suggested as one explanation for the acquiring firms’ long-run ‘under-performance’ puzzle. On the one hand, these results imply that those acquirers who make excessive employee layoffs earn significant negative abnormal returns, because such layoffs may destroy human resource capital of acquired firms. On the other hand, the results suggest that acquirers may layoff employees after performance deterioration. Although there is a large body of literature on the market reaction to employee layoff announcements, only a few studies have analysed long-run abnormal returns after employee layoffs. Chen *et al.* (2001) report that although layoff-making firms’ prior performance is poor, during the post-layoff period their share price returns are not different from market returns. In contrast, Hillier *et al.* (2007) report significant long-run share price underperformance for employee layoff-making firms.

### *Multivariate regression analysis*

Both short and long-run univariate analyses indicate that the WFR acquirers' wealth declines significantly, while the WFG acquirers' wealth does not change much. This section investigates whether these variations in acquirers' abnormal returns explain changes in workforce and wages, using the multiple regression analysis that controls for other relevant variables.

The OLS regression results are given in Table 7.7. The results show a strong positive association between workforce changes and long-run abnormal returns<sup>86</sup>. This positive association implies that the lower the shareholders' long-run abnormal returns, the greater the employment reductions. For example, model 1 shows that a one point lower BHAR causes a 0.10% higher employment reduction. Model 2 indicates that in cash-paid acquisitions the regression slope is significantly smaller than the regression slope for the non-cash acquisitions. In cash-paid acquisitions, a one percentage point increase in BHAR would lead to 0.003% [= 0.116 – 0.113] higher employment growth.

Both relative size and leverage is inversely related to employment growth. Acquiring larger firms slows down further workforce growth during the three years after takeovers. Similarly, high levels of debt negatively affect firm growth. In contrast to this, higher ownership by Boards leads to accelerated growth, possibly due to the better operating performance of management.

These results are consistent with the previous research. For example, Cascio *et al.* (1997) report a significant positive association between stock returns and employment change, interpreting this as evidence that firms with employment growth produce higher abnormal returns during the three years after the workforce adjustment.

Model 3 shows that wage growth is positively associated with acquirers' long-run stock price abnormal returns, implying that a one point increase in BHARs leads to 0.02% higher wage growth. Acquiring firms' wage growth is positively associated with industry wage growth. Acquiring larger firms also leads to faster wage growth. This is consistent with the previous

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<sup>86</sup> As there is a high correlation between the layoff dummy variable and the employment change variable, these models exclude the layoff dummy variable.

research which shows that larger firms pay higher wages. Board ownership is inversely related to wage growth.

**Table 7.7 OLS regressions of post-takeover workforce and wage change on shareholders' long-run abnormal returns**

Dependent variable Independent variables	Employment change		Wage change	
	model1	model2	model3	model4
BHAR	0.099***	0.116***	0.022***	0.032**
Change in control firm workforce	0.172***	0.130***		
Change in industry average wage			0.237***	0.209***
Relative size	- 0.041***	- 0.057***	0.011*	0.010
Leverage	- 0.645***	- 0.769***	- 0.055	- 0.083
Board ownership	0.008***	0.009***	- 0.002**	- 0.001
Relatedness		0.059		- 0.014
Hostility		- 0.022		0.005
Cash paid		- 0.089*		0.007
Relatedness · BHAR		0.024		- 0.010
Hostility · BHAR		0.020		0.003
Cash paid · BHAR		- 0.113***		- 0.009
Constant	0.194**	0.205***	0.116***	0.114***
F -statistic	17.45	9.61	10.19	3.69
Adjusted R-square	0.29	0.36	0.16	0.13
Number of observations	180	176	183	183

*Notes:* The dependent variables are post-takeover workforce change and wage change. The estimation method is OLS, using heteroscedasticity-robust standard errors (White, 1980). Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

Model 4 reports the differential wage growth effect of different types of takeovers. The significant main coefficient for BHAR and non-significant coefficients for its interactions with the related, hostile and cash-paid dummies indicate that this variable is positively associated with wage growth in the absence of such conditions.

#### *Quantile (median) regression analysis*

Table 7.8 report median regressions of post-merger workforce and wage changes on shareholders' long-run abnormal returns. Similar to the OLS regression results, these regressions show strong positive association between long-run abnormal share price returns of acquiring firms and post-merger workforce growth (models 1 and 2) and long-run abnormal share price returns of acquiring firms and wage growth variables (models 3 and 4). This positive association implies that the higher the shareholders' long-run abnormal returns, the greater the employment growth and wage growth, suggesting that if takeovers create value for shareholder, they also benefit workers. In these median regressions the coefficients and signs

of other control variables are very similar to the coefficients and signs of the variables in the OLS regressions.

In these median regressions control variables behave exactly as in the OLS regressions, although in some cases the significance levels are weaker.

In brief, the results show that there is a significant positive relationship between acquirers' long-run abnormal returns and changes in both workforce and wage growth. This suggests that takeovers which benefit shareholders also benefit employees: employees can have higher rent from improved performance. This strong relationship between post-takeover wage growth and long-run shareholder abnormal returns is consistent with the rent sharing between different stakeholders. Thus, in the case of successful mergers, the resulting efficiency improvements benefit both major groups of stakeholders: employees and shareholders.

**Table 7.8 Median regressions of post-takeover workforce and wage change on shareholders' long-run abnormal returns**

Dependent variable Independent variables	Employment change		Wage change	
	model1	model2	model3	model4
BHAR	0.065**	0.050	0.021***	0.034*
Change in control firm workforce	0.092	0.099**		
Change in industry average wage			0.242***	0.214**
Relative size	- 0.056***	- 0.055**	0.014	0.014
Leverage	- 0.487**	- 0.586**	- 0.089	- 0.121*
Board ownership	0.012***	0.011***	- 0.002***	- 0.001
Relatedness		0.066		- 0.023
Hostility		- 0.030		0.036
Cash paid		- 0.023		- 0.008
Relatedness · BHAR		0.042		- 0.014
Hostility · BHAR		0.051		0.000
Cash paid · BHAR		- 0.042		- 0.017
Constant	0.045	0.079	0.137***	0.151***
Number of observations	206	206	206	206

*Notes:* The dependent variables are post-takeover workforce change and post-takeover wage change. The estimation method is Quantile regression. Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

In brief, the results show that there is a significant positive relationship between acquirers' long-run abnormal returns and changes in both workforce and wage growth. This suggests that

takeovers which benefit shareholders also benefit employees: employees can have higher rent from improved performance. This strong relationship between post-takeover wage growth and long-run shareholder abnormal returns is consistent with the rent sharing between different stakeholders. Thus, in the case of successful mergers, the resulting efficiency improvements benefit both major groups of stakeholders: employees and shareholders.

## 7.5 Discussion

Two points form the basis for the rejection of the hypotheses that acquired firm shareholders' gains (CARs and premium) negatively affect post-takeover employment (Q3-H1 and Q3-H2). First, the WFG sub-sample firms gain higher takeover announcement abnormal returns than the WFR sub-sample firms. Second, the regressions show that target firm shareholders' CARs are positively associated with post-takeover workforce change, while the premium is positively associated with wage growth.

Similarly, the results reject the hypotheses that acquired firm shareholders' gains (CARs and premium) are negatively associated with post-takeover wage growth (Q3-H3 and Q3-H4) in friendly mergers. In contrast to the predictions, target firm shareholders' gains (both CARs and premium) do not explain post-takeover wage change. First, wage growth in the merging firms is higher than in non-merging firms. Second, the regressions show no significant (negative) association between target firm shareholder gains and wage growth. In sum, an analysis of short-run shareholder wealth shows that, although there is some support for the rent transfer hypothesis in hostile and cash-financed acquisitions, the evidence is more consistent with the argument for rent sharing between shareholders and employees in friendly mergers.

However, we fail to reject the hypotheses that acquirers' long-run abnormal returns are positively associated with post-takeover workforce and wage growth (Q3-H5 and Q3-H6). In the long run the WFG sub-sample acquirers earn zero abnormal returns, while the WFR sub-sample acquirers underperform. The regressions show a strong positive association between acquirers' long-run abnormal returns and post-takeover workforce and wage changes. Thus, better performing firms do not make employee layoffs, while firm performance deterioration may lead to workforce reduction. This is consistent with the view that firm under-performance is one of the main factors that may lead to employee layoffs (Hillier *et al.*, 2007). These results

imply that if takeovers benefit shareholders, labour also gains from such transactions; if shareholders suffer from a takeover, labour also suffers from such transactions.

We conclude that the evidence contradicts the rent transfer hypothesis, but it is consistent with an alternative explanation: takeovers affect both shareholders and employees in the same direction. We argue that employment growth and wage growth depend on the success of the mergers, measured by the long-run abnormal returns of acquiring firms. If BHAR is negative, then the employment change is negative, if BHAR is positive then the employment change is also positive. Thus, managers may act for the success of the companies, not only for the best interests of shareholders as discussed in Pendleton (2009). The results of this chapter imply that in LMEs the MCC does not negatively affect labour and therefore does not discourage long-run firm-specific human capital investments.

One of the limitations of using long-term analysis in assessing the effect of takeovers on shareholders and employment is that many other events may occur during this period, such as asset divestment and other acquisitions. Although we control for multiple acquisitions, it was not possible to analyse the effect of divestments. Another possibility is that there may be reverse causality between share price changes and workforce changes. For example, Hillier *et al.* (2007) report that firms experience significant negative abnormal returns (-0.81%) after employee layoffs. However, it makes more sense to think that economic factors drive share prices, not that share prices lead to changes in economic factors. Thus, we assume that poor operating performance leads to stock price decline and then acquirers undertake employee layoffs to arrest further performance deterioration.

## **7.6 Conclusions**

It has been suggested that takeovers may be motivated by the objective of wealth redistribution from employees to shareholders. Specifically, Shleifer and Summers (1988) argue that a considerable part of merger-related shareholder gains comes at the expense of employees, especially in hostile takeovers. Alternatively, post-takeover workforce and wage growth could be determined by the success of mergers. This chapter empirically investigates these competing views. In brief, the results support the view that managers act for the success of the company, balancing the interests of shareholders and other stakeholders.

The univariate regressions show that mergers and acquisitions do not change employment levels in the long run, although the immediate effect is negative, with steep job losses. The results also show that wages grow faster in merging firms than in non-merging firms.

Next, the WFR sub-sample shareholder gains are smaller than the WFG sub-sample shareholder gains, which contradicts value-redistribution theory predictions. In particular, the WFR sub-group acquirers earn significantly negative abnormal returns, while the WFG sub-group acquirers' wealth does not change much. This suggests that the market can distinguish acquisitions of bad targets, which may involve employee layoffs, from the acquisitions of good businesses with growth opportunities.

To directly investigate *the value-redistribution theory* we regress target firm shareholders' short-run abnormal returns and premium on post-takeover workforce and wage changes, controlling for other relevant variables. The results do not show that high shareholder gains (CARs and premium) cause subsequent workforce reductions and wage cuts. Instead, while a high premium is associated with faster pay rises, higher CARs are associated with employment growth. However, the results also show some evidence supporting the wealth transfer hypothesis: in cash acquisitions high CARs are associated with lower wage growth, while in hostile takeovers a high premium is associated with lower wage growth. At the same time, in related acquisitions a high premium leads to slower employment growth.

The WFG sub-sample acquirers' long-run share price performance does not differ from the non-merging firms' performance, while the WFR sub-sample acquirers significantly underperform their non-merging matching counterparts. The regression results indicate a significant positive relationship between BHARs and post-takeover workforce changes as well as between BHARs and wage changes. This means that post-takeover workforce and wage changes depend on acquirers' performance: if shareholders' long-run abnormal returns are low, workforce growth and wage growth are low. Thus, wage growth does not depend on the rent expropriating behaviour of shareholders, but depends on how managers promote the success of their company. This means that if shareholders gain from takeovers, then employees earn higher salaries; if shareholders suffer from the acquisitions, then employees also suffer from them.

## **8 LABOUR DEMAND AND WAGE EFFECTS OF TAKEOVERS THAT INVOLVE EMPLOYEE LAYOFFS**

### **8.1 Introduction**

#### **8.1.1 Research motivation**

The issue of whether mergers and acquisitions lead to economic efficiency is divisive, as is confirmed by mixed empirical evidence. There is no general agreement on the dominating motive for such transactions. Consequently, the sources of takeover gains are unknown. Synergy realisation and management disciplining have been suggested as the main driving forces of efficiency improvements. However, it is not well understood how such factors may create value. One suggestion is that better labour management and more efficient labour usage reduces demand for labour during post-takeover years (Conyon *et al.*, 2002a). Profit maximising managers may undertake workforce reductions to realise the synergetic and better labour management gains created by mergers. However, any workforce reduction should be undertaken on the basis of the level of decline in labour demand. This implies that decline in labour demand should be steeper in mergers that involve employee layoffs than in mergers that do not.

To contribute to the growing body of literature on the employment effect of takeovers, this chapter empirically investigates the following three interrelated questions. First, recent empirical studies show that mergers significantly reduce labour demand (Conyon *et al.*, 2002a; Gugler and Yurtoglu, 2004). A related question in this case is: what factors lead to this decline in labour demand? Labour demand could be decreased through elimination of duplicative facilities (synergy) and/or better labour management (discipline). There is some empirical support for both synergetic and disciplining sources of efficiency improvement. Lichtenberg and Siegel (1987) argue that the main reason for efficiency improvement is management disciplining, as targets were poorly-performing plants and their performance is improved significantly after mergers. McGuckin and Nguyen (1995b) conclude that one of the important motives of mergers could be synergy, as acquired plants were well-performing companies before acquisition and they further improved their performance after acquisition. Conyon *et al.* (2002a) report that related and hostile acquisitions increase efficiency post-merger, as such

acquisitions cause large falls in labour demand, in comparison to unrelated and friendly acquisitions, respectively.

To contribute to this literature the chapter investigates whether post-merger demand for labour to produce the combined output is lower in merging businesses than in non-merging businesses. We analyse the effect of mergers on labour demand, holding output and wages constant as well as controlling for firm-specific fixed effects and industry-wide changes. We assess synergy and the disciplining role of takeovers by investigating the labour demand effect of related versus unrelated and hostile versus friendly mergers. We also investigate whether merger-related employee layoffs can be linked to the fall in labour demand arising from efficiency improvement.

As a main question of interest, this chapter examines whether there is any relationship between decline in labour demand and reductions in the *absolute* number of workers post-merger. In other words, we are interested in understanding whether managers undertake employee layoffs on the basis of decline in labour demand. If decline in labour demand is the major factor in this decision-making process, then mergers that involve employee layoffs should lead to a different level of decline in labour demand from that in mergers that do not.

Finally, a related question is: what is the wage growth effect of mergers that involve employee layoffs? Efficiency enhancement relating to labour usage should significantly improve firm profitability, as suggested by the positive feedback mechanism of labour demand (Victorisz and Harrison, 1973). In turn, improved firm profitability may also benefit employees, among other stakeholders, through increased wages and better work conditions. Therefore takeovers should benefit employees by proportionately increasing their share of the rent (assuming that there is a fair bargaining mechanism within the businesses). Thus, increased labour productivity and firm profitability should eventually benefit employees through wage increases, better work places and pension schemes. In this regard, the chapter investigates whether wage growth in merging firms is different from wage growth in non-merging firms. Mergers may lead to efficiency improvement in labour usage, which could be achieved through synergies (for instance, elimination of duplicative activities) or by instituting better labour management. Thus, mergers may also affect wages by improving employee profitability resulting from decline in labour demand. Decline in labour demand should also benefit employees in the long-run.

To empirically examine these questions we divide the full sample into two sub-samples depending on whether an acquisition involves employee layoffs, on the basis of employee layoff information reported in newspapers: the ‘layoff’ sub-sample (hereafter ‘layoff’ acquisitions), which includes acquisitions that involve merger-related employee layoffs during two post-takeover years, as reported by newspapers, and the ‘non-layoff’ sub-sample (hereafter ‘non-layoff’ acquisitions), which includes acquisitions that do not involve employee layoffs. Data on the merger-related employee layoffs is collected by screening major national newspapers. On the basis of this data, we use a ‘layoff’ dummy to investigate the difference in the labour demand and wage effects of ‘layoff’ and ‘non-layoff’ acquisitions.

In sum, understanding the issues of whether there is a merger-related shift in labour demand is the key factor in understanding the motivations behind corporate takeovers. However, there is very little empirical evidence on this issue. An innovation of this chapter is that it attempts to link decline in labour demand with the reduction in the absolute number of workers. With this evidence the chapter also contributes to a better understanding of the objectives of the decision-makers in undertaking these transactions.

## **8.2 Related literature and hypotheses development**

### **8.2.1 The effect of ownership change on labour demand**

Although both theoretical and empirical research on mergers and acquisitions are well established, there is no widely accepted theory that explains the labour market outcome of such corporate transactions. Merger theories are inconclusive on the link between ownership change and labour market outcome. *The value-creation* theory of takeovers predicts that takeovers will negatively affect jobs in the short run, although the long-run effect depends on the complementarities of the merging businesses and success of the merging business. In contrast, *the value-destruction theory* predicts that takeovers should not negatively affect employment levels in the short run, but in the long run such takeovers could destroy jobs, as businesses eventually decline due to bad management. *The value-redistribution theory* predicts that takeovers will negatively affect employment by causing the implicit contracts to be breached (Shleifer and Summers, 1988).

As discussed above, one of the main motives of mergers and acquisitions is to achieve efficiency improvement through economies of scale and scope. Economies of scale could be

achieved through altering the input – output relationship in the production process. One of the main inputs that can easily be altered to extract more synergetic gains is the labour input. As summarised by Conyon *et al.* (2002a), if merged businesses require a different optimal employment level from that produced by simply combining the individual workforces, then any profit-maximising firm will need to adjust its employment levels during the post-merger period. Recent empirical results indicate that mergers cause significant rationalisation in the use of labour and the authors interpret this as being consistent with the value-creating theory of takeovers (Conyon *et al.*, 2002, 2004; Gugler and Yurtoglu, 2004).

In contrast, efficiency improvement and better asset performance under the new ownership may create new jobs and lead to better work conditions (Holmstrom, 1988). Using plant level data from the US food industry, McGuckin *et al.* (1998) show significantly higher employment growth (16%) for an average acquired plant in comparison to an average non-acquired plant. However, when firm level data is used this difference between acquired and non-acquired firm employment becomes insignificant. Using the OLS method, McGuckin and Nguyen (2001) report that ownership-changing plants increase their workforce 19% (3.3% when the IV estimation method is used) faster than plants having no ownership change. However, there is a size effect: non-ownership-changing larger plants (plants in the top 15 percentile of the size distribution) increase their labour force faster than larger ownership-changing plants.

Post-merger workforce adjustment does not need to occur instantaneously and the speed of movement to the new equilibrium depends on the costs of this adjustment. In addition, the type of workforce adjustment (increase or decrease) depends on the returns to scale of the production technology of the combined firms. If the production technology exhibits constant returns to scale, then mergers should not change output and employment levels. If the production technology exhibits increasing returns to scale, then the merged firm should be able to use a smaller amount of combined labour to produce the output amount equal to the combined individual outputs of the merging firms. However, the merged firms may not achieve this synergy instantaneously and labour adjustments may take several years to achieve the new equilibrium, meaning that the effect of takeovers on labour and the labour output relationship could be dynamic. We test the following hypothesis:

Q4-H1. *Takeovers reduce demand for labour, as merged businesses gradually achieve synergy and improve labour management.*

Early studies consider employment and wage growth in merging firms relative to non-merging firms and conclude that mergers improve labour productivity (Lichtenberg and Siegel, 1990; McGuckin and Nguyen, 2001). However, one limitation of these studies is that they do not investigate the factors that may lead to such efficiency improvements. Furthermore, these studies consider all ownership change as homogenous. More recent studies suggest that synergy or management disciplining may improve labour efficiency and therefore they investigate the labour demand effect of related versus unrelated, and hostile versus friendly mergers (Conyon *et al.*, 2002a; Gugler and Yurtoglu, 2004).

The scope of synergy, and the subsequent value created by takeovers, differs depending on the relatedness of the merging businesses. If related businesses merge, then there are more opportunities for achieving synergies and a greater level of cost savings by eliminating duplicative activities. Consequently, related takeovers lead to a higher increase in productivity than unrelated takeovers (Rumelt, 1974). Therefore it is reasonable to expect that related acquisitions may lead to a higher level of decline in labour demand and a subsequent higher level of workforce reductions, as confirmed by recent empirical research (Conyon *et al.*, 2002a; Gugler and Yurtoglu, 2004).

As there is more scope for synergy in related acquisitions than in unrelated acquisitions, it is possible to achieve higher levels of labour demand reduction in the former than in the latter. Therefore the labour demand effect of takeovers should be more pronounced in related acquisitions than in unrelated acquisitions. Hence we classify mergers in terms of relatedness (related versus unrelated) to test the following hypothesis:

Q4-H2. *Decline in labour demand is greater in related acquisitions than in unrelated acquisitions.*

Similarly, the management disciplining theory also predicts staff downsizing, possibly in the auxiliary establishments and among white-collar staff. Lichtenberg and Siegel (1990) distinguish between the effects of takeovers on auxiliary establishment employees and production establishment employees. In ownership-changing auxiliary establishments employment declines by 16.7%, while in production establishments this reduction is only

4.5%. As hostile takeovers are associated with management disciplining, it is reasonable to expect that such takeovers improve efficiency more than friendly takeovers do. Similarly, we expect labour productivity to be higher after acquisitions involving employee layoffs than acquisitions not involving workforce reductions.

Recent studies distinguish between related and unrelated takeovers as well as between hostile and friendly takeovers. The Conyon *et al.* (2002a) results indicate that related mergers cause significantly higher labour usage rationalisations than unrelated mergers. Rejecting the popular proposition that hostile takeovers lead to job destruction and wage cuts, Conyon *et al.* (2001) report that both hostile and friendly takeovers reduce demand for labour at the same level (7.5%). However, the reduction in the *absolute* number of employees is significantly higher after hostile takeovers than after friendly takeovers, as such takeovers are followed by substantial falls in output as a result of divestments and other types of asset re-sale, as reported by Haynes *et al.* (2000). In addition to this, Gugler and Yurtoglu (2004) report that mergers reduce employment even after controlling for divestments and these authors confirm the US versus UK differences described above in the employment effect of mergers: in the US mergers do not adversely affect employment, while in Europe employment declines by 10% and in the UK in particular employment declines by 12% during the merger year<sup>87</sup>. Therefore we test the following hypothesis:

Q4-H3. *Decline in labour demand is greater in hostile acquisitions than in friendly mergers.*

### **8.2.2 The association between decline in labour demand and workforce reduction**

Cappelli (2000) argues that one of main reasons for post-merger workforce reduction is the decrease in labour demand. According to this argument, there should be a link between decline in labour demand and reductions in *absolute* number of employees post-merger. In other words, decrease in labour demand should be greater after ‘layoff’ acquisitions than after ‘non-layoff’ acquisitions. However, no study has compared the labour demand and wage effects of these two types of acquisitions.

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<sup>87</sup> Gugler and Yurtoglu (2004) suggest that such a differential effect of mergers is the result of ‘sclerotic’ and rigid labour markets in the EU countries. In the EU, labour markets are regulated more strictly than in the US and therefore firms have higher labour adjustment costs in the EU than in the US. Different labour adjustment costs in the EU and US imply that mergers and acquisitions have different effects on labour demand in these economies. Specifically, mergers result in higher levels of employee layoffs in the EU than in the US, as in the US firms can continuously make labour adjustments to optimal levels and do not need to use mergers and acquisitions for this purpose.

Briefly, in contrast to the view that a substantial proportion of takeover gains comes from labour restructuring, such as employee layoffs and wage cuts, the recent research shows that mergers cause labour productivity improvement. However, it is unclear whether merger-related employee layoffs lead to labour productivity improvement. For example, McGuckin and Nguyen (1995a) report that ownership-changing plants experience improvement in labour productivity, measured as relative labour productivity (RLP), where this improvement is not necessarily related to the employment reduction<sup>88</sup>. Using the same sample with plant level data, McGuckin *et al.* (1998) provide evidence indicating that employment increases by 16% and labour productivity increases by 16% in a typical acquired plant.

Under an active market for corporate control, synergy or better labour management should reduce post-merger labour demand. Acquirers should undertake employee layoffs depending on the changes in labour demand. We investigate whether decline in labour demand is greater in acquisitions with employee layoffs than in acquisitions that do not involve layoffs. We also investigate the differences in employee profitability and the wage effect of takeovers in the ‘layoff’ and ‘non-layoff’ sub-samples.

Q4-H4. *Decline in labour demand is greater in the ‘layoff’ acquisitions than in the ‘non-layoff’ acquisitions.*

### **8.2.3 The effect of ownership change on wage growth**

A related issue is whether this improvement in shareholders’ wealth (high profitability) is at the expense of other stakeholders, for example, employees. In their seminal paper Shleifer and Summers (1988) argue that mergers may reduce wage growth by eliminating extra-marginal wage payments through layoffs of older workers. Several empirical studies provide evidence supporting this argument. Lichtenberg and Siegel (1990) find that wage growth in ownership-changing auxiliary establishments is 9.2% lower, while in production establishments wage growth is 2.1% lower than in non-ownership-changing production establishments. Thus, these authors conclude that ownership change diminishes wage growth, although the relative wage decline in production establishments is only about one third of that in auxiliary establishments.

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<sup>88</sup> In the literature labour productivity is defined as the ratio of output to the number of employees, output being measured as either value-added in the production process or value of shipments (sales value). As the value-added measure is not always available, usually in practice sales value is used to proxy for output. However, price differentials among different firms and inflation over time do not allow reliable comparison of labour productivity among different firms. Therefore some studies use the Relative Labour Productivity (RLP) measure, defined as the ratio of an individual firm’s labour productivity to average industry labour productivity.

In contrast to this, McGuckin *et al.* (1998) find that a typical acquired plant increases its workers' wages 12% faster than a non-acquired plant in the US food industry. McGuckin and Nguyen (2001) report that for the entire US manufacturing sector ownership change causes a 4.2% faster increase in wages for workers at a plant of average size. But there is an inverse relationship in the case of larger plants: wages increase faster in large plants that undergo ownership change. Ownership change in bigger plants negatively affects wage growth: a typical worker in bigger acquired plants has lower wage growth in comparison to other workers in non-acquired plants. Thus, even if the wage effect of takeovers is positive for a worker of an average size typical plant, its effect may not be positive for a typical worker, as most people work in large plants. More recently, Gugler and Yurtoglu (2004) have provided evidence showing that tender-based takeovers reduce employment by about 8% in the US, while mergers do not change employment. These authors interpret this as being consistent with the 'breach of trust' hypothesis.

However, in contrast to this, it can be argued that improvements in firm-level efficiency should also benefit employees, among other stakeholders. As a result of elimination of duplicative activities and better labour management, mergers may cause efficiency gains, which should be manifested in firm performance improvement. Both synergy and management disciplining theories postulate that mergers should improve firm performance. Both decline in labour demand and increase in labour productivity may lead to a higher level of profitability per employee. For example, Conyon *et al.* (2004) suggest that post-merger labour efficiency causes change in firm profitability (measured as the profit per worker). In the UK Conyon *et al.* (2004) report that the *ceteris paribus* impact of acquisitions on wages is positive: mergers increase wages by 11% within two years after mergers. Thus, these authors argue that merger-related restructurings boost employees' share in the business rent as well.

On the basis of this discussion, we predict that, along with the owners, the employees of merged firms will also be able to benefit from the overall performance improvement in the form of better wage and work conditions. Firms with an increasing market share and improving labour productivity may achieve higher levels of profitability. Strong unions may be able to increase the employees' share of the rent through higher levels of wages. As Conyon *et al.* (2004) suggested, wages may increase due to increased profits, even if the wage formation process does not change. Thus there may be two possible sources of wage change in merged firms. Mergers may change firm profitability, which in turn leads to the change in

wages. Alternatively, mergers may simply cause a change in the wage formation process. Thus, we test the following hypotheses regarding the wage effect of mergers:

Q4-H5. *Wage growth is higher in merged firms than in non-merging firms.*

Q4-H6. *Wage growth is higher in related acquisitions than in unrelated acquisitions.*

Q4-H7. *Wage growth is higher in hostile acquisitions than in friendly mergers.*

Q4-H8. *Wage growth is higher in ‘layoff’ acquisitions than in ‘non-layoff’ acquisitions.*

## 8.3 Data and methods

### 8.3.1 Econometric modelling

In modelling the labour demand effect of takeovers, we follow the strategy adopted by previous research (Conyon *et al.*, 2002, 2004; Gugler and Yurtoglu, 2004), which uses a model developed on the basis of the Cobb-Douglas production function. Specifically, to test hypotheses Q4-H1, Q4-H2, Q4-H3 and Q4-H4, the following model will be estimated:

$$l_{it} = \beta_1 l_{it-1} + \beta_2 w_{it} + \beta_3 w_{it-1} + \beta_4 q_{it} + \beta_5 q_{it-1} + \beta_6 D_{it} + f_i + v_{it} \quad (30)$$

where  $l_{it}$  is the logarithm of employment,  $w_{it}$  is the logarithm of real wage relative to user cost of capital<sup>89</sup>,  $q_{it}$  is the logarithm of real output of firm  $i$  in time  $t$ ,  $D_{it}$  is a dummy variable, taking one of the following four dummies: merger, relatedness, hostility and employee layoffs. The merger dummy takes 1 if firm  $i$  is involved in a merger at time  $t$  and 0 otherwise, the relatedness dummy takes 1 if both target and acquiring firms are in the same industry and 0 otherwise, the hostility dummy takes 1 if the management of the target company rejects the initial offer made by an acquirer and 0 otherwise, and finally the layoff dummy takes 1 if acquisitions involve employee layoffs and 0 otherwise;  $f_i$  indicates time constant firm-specific unobservable variables, that will be removed after first differentiation using panel data<sup>90</sup>;  $v_{it}$  is the usual error term.

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<sup>89</sup> User cost of capital is assumed to be equal to one to provide comparability across firms.

<sup>90</sup> In econometrics the above model is called an autoregressive distributed lag model, the estimation methods of which are discussed in the methodology chapter of this thesis.

The above equation only indicates the contemporaneous impact of mergers on labour demand. To investigate the long-run effect of mergers on labour demand we include lagged levels of the dummy variable. For example,  $D_{it-1}$  takes 1 if firm  $i$  was involved in a merger at time  $t-1$  and 0 otherwise and  $D_{it-2}$  takes 1 if firm  $i$  was involved in a merger at time  $t-2$  and 0 otherwise.

To test the above hypotheses we use four types of dummy regressors in different estimations. First, we use a *Merger* dummy that differentiates merged firms from control firms. Second, we use *Related* and *Unrelated* merger dummies that differentiate post-takeover changes in the performance of these types of merger from the changes in the non-merging control firms. Related mergers are classified as those mergers where both acquired and acquiring firms are in the same industry, while unrelated mergers indicate those transactions that involve firms in different industries. Third, we use *Hostile* and *Friendly* merger dummies. Hostile takeovers indicate those takeovers where the initial bid was rejected by the incumbent managers. Finally, we use *Layoff* and *Non-layoff* dummy variables, where the Layoff dummy indicates those acquisitions involving layoffs of more than 1% of the combined workforce within two years after completion of transactions, as reported by the newspapers<sup>91</sup>.

The basic issue underlying equation (30) is whether changes in takeovers have a significant effect on employment, controlling for changes in wages and output. Bresson *et al.* (1996) derive the optimal level of employment conditional on the changes in expected output and the wage to capital ratio. In this regard, to isolate mergers' effect on labour demand the model includes both one period lagged level and contemporaneous sales and wage variables, as the labour demand changes could occur due to the changes in these variables. Wages should be relative to user cost of capital and it is common in the relevant literature to assume that the cost of capital remains constant over time and therefore to be equal to one for all companies. As discussed above, labour demand adjustment may not be instantaneous, but may occur gradually, meaning that there may be a time lag between the merger event and labour demand adjustment. Labour demand may also depend on lagged output and wages. Therefore it is customary to include lagged variables, also called initial variables: last year's variables are the most important predictors of current year variables. By including the lagged variables we

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<sup>91</sup>Data on the post-merger employee layoffs are explained in detail in 8.3.2 section.

control for the full history of the right-hand size variables, so any new shock in the dependent variable comes from the takeover event.

In equation (30) the main interest is the coefficient of the dummy variable  $\beta_6$ , which indicates the contemporaneous effect of mergers on labour demand. Where lagged dummies are used, the merger dummies indicate the effect of mergers on employment after one and two years respectively. To support the above hypotheses, we expect negative coefficients for these merger dummies.

This estimation directly tests whether the changes in profitability are caused by the increased labour productivity and reduced labour demand. This can be linked to the basic discussion of the economic role of mergers in improving efficiency.

To test hypotheses Q4-H4, Q4-H5, Q4-H6 and Q4-H7, the following model will be estimated:

$$w_{it} = \beta_1 w_{it-1} + \beta_2 iw_{it} + \beta_3 l_{it-1} + \beta_4 k_{it-1} + \beta_5 p_{it} + \beta_6 D_{it} + f_i + v_{it} \quad (31)$$

where  $w_{it}$  is the logarithm of wage rate per worker in firm  $i$  in time  $t$ ,  $iw_{it}$  is the logarithm of firm  $i$  average industry wage in time  $t$ ,  $l_{it}$  is the logarithm of employment,  $k_{it}$  is the logarithm of capital per employee in firm  $i$  at time  $t$ ,  $p_{it}$  is the logarithm of profit per employee,  $M_{it}$  is the post-merger dummy variable that takes 1 in all three post-merger years,  $D_{it}$  is a dummy variable (as explained above),  $f_i$  indicates time constant firm-specific unobservable variables, that will be removed after first differentiation using panel data. To investigate the long-run effect of mergers on labour demand up to three period lagged dummy variables will be included in the above equation.

As a result of post-takeover operating performance rationalisation, elimination of duplicative activities and cost savings, mergers may cause efficiency improvement, which should be manifested in a performance improvement. As discussed above, *the value creation* theory of takeovers (synergy and management disciplining) postulates that mergers improve firm performance. Both the decline in labour demand and increase in labour productivity may lead to a higher level of profitability per employee. For example, Conyon *et al.* (2004) suggest that post-merger labour usage efficiency causes change in firm profitability (measured as the profit

per worker). In the models we include profitability per employee a measure of firm performance.

As the change in wages may be conditional on the alternative wages, we include an industry average wage to the model. Wages may change due to changes in employee profitability. Therefore we include employee profitability as well as interaction of this variable with the merger dummy. Conyon *et al.* (2004) show that wage changes in merging firms are strongly associated with profitability changes. Victorisz and Harrison (1973) discuss the positive feedback theory of the labour market, which postulates that high wages cause adoption of labour-saving innovations, that lead to high productivity and a further increase in wages. On the other hand, low wages cause the persistence of more labour-intensive techniques that lead to low labour productivity and wage stagnation. This contrasts with the negative feedback theory of labour markets, which predicts that high wages will lead to the adoption of capital intensive techniques, reducing labour demand and wages. Arai (2003) reports that wages are positively correlated with both profits and capital intensity after controlling for a number of other variables. Therefore we also control for capital intensity. Finally, the dummy variables indicate the contemporaneous effect of mergers (also classified as relatedness, hostility and employee layoffs) on wages. To analyse the long-term effect of mergers we also include lagged levels of the dummy variables.

The above models are autoregressive lag models, which include the lagged level of the dependent variable (employment and wage) and therefore the error term may be correlated with the explanatory variables. The model includes the lagged dependent variable, because the employment and wage effect of mergers may not be instantaneous, but may follow a dynamic adjustment process. One of the main characteristics of the above autoregressive distributed lag models is that some or all explanatory variables may be correlated with the error term due to the presence of the lagged dependent variable and unobservable variables, which may affect both the dependent variable and the explanatory variables. Examples of unobserved firm-specific heterogeneity in this research context could be such variables as firm  $i$  management performance, its overall workforce quality or unique customer relations. Such unobservable variables are usually time-invariant and allow for heterogeneity in the dependent variables across observations. For example, the management quality unobserved variable is negatively correlated with other inputs in the above models and positively correlated with the output variable, since a high quality management will probably result in more efficient use of inputs

and achieve a higher level of output. Another reason for the correlation of explanatory variables with the error term is that the relationship between dependent variable and independent variable could be simultaneous: the output may explain the employment level but, at the same time, employment levels may explain output. The third reason is that there may be some measurement error in the variables used<sup>92</sup>.

When explanatory variables are correlated with the disturbance term OLS estimates are inconsistent. In this case pooled OLS is subject to the same omitted variable bias as OLS in the single cross-section. First differencing eliminates unobservable firm-specific fixed effects, but it introduces another problem: the first-differenced lagged dependent variable may be correlated with the differenced disturbance term. Therefore, following Anderson and Hsiao (1982) and Arellano and Bond (1991), we use Instrumental Variables estimation, using lagged levels and lagged differences of all explanatory variables as instruments. As our dataset includes more than three time periods, the efficiency of the estimates could be improved by using two or more periods lagged variables as instrumental variables. Thus, we use a systems GMM technique to estimate the above models, using both two and more periods lagged levels and lagged first differences of all available periods as instruments, as suggested by Arellano and Bover (1995) and Blundell and Bond (2000). Harris *et al.* (2005) use the systems GMM approach to analyse the effect of management buyouts on economic efficiency.

All three variables in the model - employment, wage and output - are considered as endogenous variables, as they are determined in the system. Efficient firms with good labour organisation use lower levels of employment and achieve higher levels of sales. The previous literature indicates that wages are different even within industries: wages may be historically high in some firms. For example, Krueger and Summers (1988) report that unexplained wage

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<sup>92</sup> In addition to the above, there may be simultaneity in the model: the merger dummy may be correlated with the error term: prior performance of merging firms may determine the occurrence of a takeover event. McGuckin and Nguyen (2001) argue that plant productivity and ownership change positively correlated, whereas Lichtenberg and Siegel (1990) argue that plant productivity and ownership change are negatively correlated. In addition to this, the merger event may itself negatively affect the employee work attitude and this may start to negatively affect performance. The pre-merger productivity measure and wage levels may also influence the probability of the merger event itself, and it is possible that the merger indicator itself may be endogenous. For example, the McGuckin and Nguyen (1995b) results indicate that plants with high productivity were the most likely to experience ownership change, Therefore previous research also uses estimated probabilities of merger events as an instrumental variable to proxy the merger dummy variable, estimated on the basis of a panel probit model. However, the results of using both merger dummy and probability of merger event are qualitatively the same. Because of data limitations, we use only the merger dummy variable.

differences exist among firms even within the same industries with similar financial indicators. Therefore we use lagged levels and lagged differences of these variables as instrumental variables, as suggested by the Arellano and Bover (1995) and Blundell and Bond (2000) systems GMM estimation methodology<sup>93</sup>. The one-step systems GMM estimation method uses two-year and earlier lagged levels as well as lagged differences as instruments for the endogenous variables. This estimation method corrects for simultaneity and allows us to control for firm-specific fixed effects by first differencing, and then it instruments the differenced variables with their own two or more period lagged levels and lagged differences. One of the main assumptions of using the instrumental variables estimation method is that there should be first order serial correlation between the error terms, but not second order serial correlation. These assumptions are tested using Arellano–Bond tests for the first AR(1) and second AR(2) order serial correlations in first differences. In addition, the validity of instrumental variables is tested using the Hansen test of over-identification restrictions<sup>94</sup>. We also control for changes in macro-economic factors by including time-dummies and for industry wide differences by including industry dummies<sup>95</sup>.

### 8.3.2 Data

This chapter uses the same sample and data as that described in Chapter 5. In addition to this we collected data from national newspapers on merger-related employee layoffs in order to more precisely measure the employment effect of mergers, following the methodology adopted by prior research (Hillier *et al.*, 2007; Krishnan *et al.*, 2007). In particular, we collected data on takeover related workforce layoffs undertaken during the two-year period after takeovers, as reported in the public media. To collect this data we screened all major national and regional newspapers, downloaded through *Nexis*<sup>®</sup>.

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<sup>93</sup> In addition to the one-step systems GMM, we also experiment with the two-step systems GMM estimation methods, because this method corrects for small sample bias. In this case the coefficients are smaller. However, Windmeijer (2005) argues that two-step systems GMM estimates can be invalid due to small sample biases. Therefore we base our discussions on the one-step systems GMM estimation results. In the latter case, the coefficients are smaller.

<sup>94</sup> The Sargan test usually over-rejects, when it is used with the heteroscedasticity robust option. Therefore we use the Hansen test.

<sup>95</sup> McGuckin and Nguyen (2001) suggest considering the merger dummy as an endogenous variable, as the profitability of firms may affect the occurrence of a merger. Therefore they estimate the probability of a merger event by a probit regression methodology using several explanatory variables. However, as we do not have enough data to calculate this probability, we treat the merger as an exogenous dummy.

To be considered as a layoff acquirer, an acquiring firm should lay off at least 1% of the combined workforce during the two-year period after the takeover completion date. If no layoffs are reported in the press, then we assume that none has occurred. Out of 235 sample acquirers 101 (43%) acquirers made merger-related employee layoffs, on average dismissing about 7.5% of the combined workforce. Using this data we classify acquiring firms into ‘layoff’ and ‘non-layoff’ sub-samples. The mean number may be biased downwards, because companies may not disclose all layoffs or reported data in the newspapers may be incomplete. Alternatively, acquiring firms can be classified into ‘layoff’ and ‘non-layoff’ firms, on the basis of merger-related layoff information, collected from newspapers, as in Krishnan *et al.* (2007) and Hillier *et al.* (2007). In this regard, we collect data from newspapers on merger-related layoffs undertaken during the two-year period after takeovers, by screening all major national and regional newspapers, downloaded through *Nexis*®. We find a strong positive correlation between newspaper-reported layoffs and year-to-year workforce change, reported by *Datastream* (34%). However, the size of workforce reductions reported in the press is smaller than the *Datastream* reported size. One explanation could be the fact that managers are reluctant to publicise the true scale of workforce reductions, as this may affect the market value of their company. Both Krishnan *et al.* (2007) and Hillier *et al.* (2007) suggest that the measure of layoffs reported by the press is more precise than year-to-year changes in employment levels reported by databases as the latter may include the effect of divestments or asset disposals. However, although layoffs reported in the newspapers are more relevant, they do not give the full picture of workforce changes. All workforce reductions may not be reported in the newspapers or all announced layoffs may not actually materialize, providing a measurement bias, as suggested by Shah (2007).

Appendix 5 explains the full procedure of data collection on post-merger employee layoffs.

### **8.3.3 Description of the variables**

This chapter uses two employment-related variables. The first variable is the number of employees, which represents the average number of both full- and part-time employees during the accounting year, taking into consideration seasonal workers. The second variable is staff

cost, which represents wages paid to the employees and directors of the firms<sup>96</sup>. It includes wages and salaries, social security costs and other pension costs.

For *output* we use total sales. Following Conyon *et al.* (2004), *employee profitability* is computed by dividing annual profits by the annual average number of employees<sup>97</sup>. As the measure of profit we use EBITDA. *Capital intensity* is computed as the ratio of net book value of fixed assets to the average annual number of employees. Similarly, *average industry wage* for each industry is computed on the basis of *Datastream* information. For this purpose, for each industry we compute the median performance, including all contemporaneously listed UK firms in the same industry, defined on the basis of *Datastream* Industrial Classification Level Four.

For the control group we selected 470 matched firms (one for each acquired and acquiring firm). These firms were selected on the basis of the methodology proposed by Barber and Lyon (1996), matching on the basis of the same industry, size and pre-takeover performance measures. For each sample firm we selected a matching firm at the end of year t-1 on the basis of the following criteria: first, we filtered all firms in the same industry with the sample firm; second, we selected all firms within the 25% to 200% size interval of the sample firm's size, size being measured with total assets; third, we selected the non-acquiring firm with the closest EBITDA scaled total assets to those of the matching firm.

To distinguish the difference in performance between acquiring and non-acquiring firms, the matched firms should not have undertaken any significant acquisition around the sample takeover event which is being investigated<sup>98</sup>. Therefore we selected only those matching firms which had neither been acquired nor had made any significant acquisitions during the two years before takeovers or the three years after takeovers. To construct the non-merging firms'

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<sup>96</sup> The most direct test of 'the wealth transfer' hypotheses should be on the basis of the analysis of individual workers' wages in both target and acquiring firms, using employee – employer linked data. However, we do not have such a dataset and therefore we concentrate on aggregate wages at the firm level.

<sup>97</sup> Ideally productivity should be measured by Total Factor Productivity, which is defined as the ratio of total output to total input. However, we do not have data on total input, such as materials and cost of capital. Alternatively, productivity can be measured for each individual input: for example, labour productivity can be defined as the ratio of output to the number of employees. Thus, labour productivity could be measured using the ratio of value-added to number of employees, where value added could be measured as the difference between sales and material inputs. However, it is not always possible to collect an accurate measure of output and therefore sales are used instead.

<sup>98</sup> However, it is unclear whether the previous studies select non-acquiring firms as matching firms (Ghosh, 2001, Powell and Stark, 2005).

sample, we selected as matching firms only non-acquiring firms that had not been involved in any acquisitions during the five-year period from t-2 to t+3.

Table 8.1 provides descriptive statistics for a number of variables, including mean and median, for merging and matching firms at the end of the last pre-takeover financial year. The descriptive statistics show that variables come from a non-normal distribution and are highly positively skewed. Therefore in the regression analysis we use log transformations of these variables. As the employment variable shows, acquiring firms are nearly 4 times larger than acquired firms<sup>99</sup>.

**Table 8.1 Employment, wage, sales, profit and fixed assets per worker at the end of t-1**

		<b>Acquiring firms</b>	<b>Matched acquiring firms</b>	<b>Acquired firms</b>	<b>Matched acquired firms</b>
<b>Number of employees</b>	Mean	13,088	9,214	3,313	2,088
	Median	2,975	2,661	770	706
<b>Annual wage per worker</b>	Mean	23.04	23.12	23.33	25.30
	Median	22.11	22.60	21.58	22.80
<b>Sales per worker</b>	Mean	133.85	145.82	147.05	153.30
	Median	97.86	94.00	94.89	94.00
<b>Profit per worker</b>	Mean	26.17	23.60	22.41	20.85
	Median	12.29	11.84	9.30	10.17
<b>Fixed assets per worker</b>	Mean	126.04	87.55	97.02	99.26
	Median	23.57	24.88	21.26	21.86

*Notes:* All financial figures are in real terms (2003 currency) and in £'000. Number of employees represents the number of both full- and part-time employees of the company. Profit is defined as earnings before interest, taxes and depreciation and amortization (EBITDA). Annual wage per worker is computed by dividing the employment cost by the number of employees. Employment cost represents wages paid to employees and officers of the company.

### 8.3.4 Measuring changes in the variables

To measure the changes in the above variables, we compute a pro-forma pre-takeover variable by combining the target and buyer firms. For example, pro-forma combined values of employment and sales are calculated by combining respective values for acquired and acquiring firms.

<sup>99</sup> Other variables - sales, fixed assets and profits - also show that the acquired firms are 3-4 times smaller than the acquiring firms.

The average pre-takeover wage is calculated by dividing the combined staff costs of acquired and acquiring firms by their combined number of employees as follows:

$$W_{ii}^{pre} = \frac{W_{Tii} + W_{Bii}}{N_{Tii} + N_{Bii}} \quad (32)$$

where  $W_{ii}^{pre}$  is pre-takeover pro-forma wage rate per employee,  $W_{Tii}$  is  $i^{\text{th}}$  acquired firm's staff cost in year  $t$ ;  $W_{Bii}$  is  $i^{\text{th}}$  acquiring firm's staff cost in year  $t$ ;  $N_{Tii}$  is total number of workers employed by  $i^{\text{th}}$  acquired firm at the end of year  $t$ ,  $N_{Bii}$  is total number of workers employed by  $i^{\text{th}}$  acquiring firm at the end of year  $t$ .

Similarly, pro-forma pre-takeover values of other variables, such as profitability per employee and capital per employee are calculated in the same manner. Table 8.2 provides percentage changes in the employment, wages, output and employee profitability variables during the post-takeover years relative to the pre-takeover year ( $t-1$ ). These percentage changes have been computed on the basis of the Brown and Medoff (1988) regression methodology, that includes both time and industry dummies. These results show that mergers reduce employment levels significantly during the merger year, but not during the post-takeover years. However, when the sample is split into layoff and non-layoff sub-samples, then the results show that layoff-making acquirers significantly reduce employment levels during all three post-takeover years, while non-layoff-making acquirers increase their employment levels relative to the pre-takeover period.

These preliminary univariate results also show that mergers cause faster wage growth relative to non-merging firms: wages grow 7% faster in merging firms in comparison to non-merging firms during the three post-takeover years. Unrelated, friendly and layoff- involving mergers cause higher levels of wage growth in comparison to non-merging firms, whereas related, hostile and non-layoff mergers do not cause different wage growth.

The results also show that in the full sample, output levels do not change during post-takeover years. However, after acquisitions that involve layoffs, output levels significantly decline every year during the three post-takeover years, while after acquisitions that do not involve layoffs, output levels increase every year during the three post-takeover years. These

preliminary results indicate that employment levels decline due to the decline in output levels, while employment growth is a function of the output growth.

**Table 8.2 Post-takeover changes in employment, wage, output and profit per worker**

Post-takeover years	t=0	t+1	t+2	t+3
<b>Panel A: Change in employment relative to the pre-takeover level (t-1)</b>				
All takeovers	- 0.123***	- 0.032*	- 0.013	- 0.009
Related takeovers	- 0.122***	- 0.041*	- 0.007	0.027
Unrelated takeovers	- 0.124***	- 0.025	- 0.05	- 0.078
Hostile takeovers	- 0.153***	- 0.062*	- 0.06	0.036
Friendly takeovers	- 0.119***	- 0.026	- 0.006	- 0.013
Cash financed takeovers	- 0.124***	- 0.056	- 0.027	0.024
Non-cash financed takeovers	- 0.122***	- 0.026	- 0.012	- 0.026
Layoff involving takeovers	- 0.181***	- 0.164***	- 0.176***	- 0.192***
Non-layoff involving takeovers	- 0.069***	- 0.064***	- 0.099***	0.135***
<b>Panel B: Change in wage rate relative to the pre-takeover level (t-1)</b>				
All takeovers	- 0.006	- 0.012	0.019*	0.033**
Related takeovers	- 0.01	0.002	0.014	0.032*
Unrelated takeovers	- 0.005	0.033***	0.031**	0.039**
Hostile takeovers	- 0.027*	0.044**	0.029	0.047*
Friendly takeovers	- 0.001	0.005	0.018	0.031**
Cash financed takeovers	0.031***	0.001	0.008	0.028
Non-cash financed takeovers	- 0.018**	0.019*	0.025*	0.035**
Layoff involving takeovers	0.008	0.037***	0.030*	0.052***
Non-layoff involving takeovers	- 0.015*	- 0.006	0.011	0.016
<b>Panel C: Change in output (sales) relative to the pre-takeover level (t-1)</b>				
All takeovers	- 0.098***	- 0.001	0.03	0.008
Related takeovers	- 0.089***	0.011	0.026	0.036
Unrelated takeovers	- 0.128***	- 0.026	0.011	- 0.066
Hostile takeovers	- 0.141***	0.018	0.009	0.071
Friendly takeovers	- 0.102***	0.006	0.032	- 0.009
Layoff involving takeovers	- 0.188***	- 0.115***	- 0.144***	- 0.133***
Non-layoff involving takeovers	- 0.051***	0.083***	0.131***	0.067*
<b>Panel D: Change in employee profitability relative to the pre-takeover level (t-1)</b>				
All takeovers	0.064***	0.080**	0.084**	0.065
Related takeovers	0.096***	0.114***	0.161***	0.068
Unrelated takeovers	- 0.015	0.009	- 0.017	0.067
Hostile takeovers	0.061*	0.039	0.073	0.137*
Friendly takeovers	0.062**	0.083**	0.084*	0.058
Layoff involving takeovers	0.092***	0.128***	0.124**	0.161***
Non-layoff involving takeovers	0.048*	0.036	0.067	0.012

*Notes:* The percentage mean change in the employment, wages, output and employee profitability variables have been computed using the Brown and Medoff (1988) regression methodology. The estimates are obtained using OLS regression. The omitted group is the control group of non-merging firms. The regressions include year and industry dummies. The table reports only the coefficients of the relevant dummy variables.

Finally, analysis of employee profitability indicates that mergers cause 13% faster growth in comparison to non-merging firms, which is significant at the 10% significance level. In this process, related mergers cause a 21% improvement in employee profitability relative to the pre-takeover levels, controlling for changes in the non-merging control firms. The employee profitability change after hostile takeovers is also 21%, which is significant at the 10% significance level only. In contrast to this, employee profitability changes in layoff and non-layoff sub-samples are not different from those in the non-merging firms.

## **8.4 Results**

### **8.4.1 Short-run impact of mergers on labour demand**

As the descriptive statistics given in Table 8.2 show, mergers do not cause significant changes in employment levels during the post-takeover years. However, as a result of materialising synergies or instituting better labour management during the post-merger period, labour productivity may change in a positive direction. For example, after some mergers output may increase much faster than employment growth or, alternatively, job cuts may happen much faster than output decline. This disproportionate change in output and labour input may subsequently cause change in labour productivity during the post-takeover years.

To empirically investigate this relationship, we estimate equation (30). Table 8.3 reports the results of the estimation using all four dummy variables. The estimates of control variables – lagged employment, wages and sales – are consistent with the predictions of the dynamic labour theory. The current year employment levels should be positively related to the previous year employment levels, as confirmed by positive and significant coefficients of the lagged level employment, which indicates the existence of inertia in the employment levels. Next, according to the dynamic theory of labour, the direction of the change in the employment levels should be inversely related to the employment cost, meaning that the higher the required compensation for labour, the lower the use of labour. Consistent with this, the wage variable coefficient is negative and significant. The next control variable - output - is positively related to the employment levels: increasing output levels require higher levels of labour input.

Turning to the estimates of the main variables of interest, dummy variables, the negative coefficients of merger dummies indicate that acquiring firms reduce their labour demand in

comparison to non-acquiring firms, depending on output and wages. The merger dummy variable indicates that the immediate effect of mergers on employment is to reduce the demand for labour by about 8.5% during the event year in merging firms in comparison to other non-merging firms. Although these results are consistent with the previous research findings, the size of the derived decline in labour demand is smaller: both Conyon *et al.* (2002a) and Gugler and Yurtoglu (2004) report that UK public takeovers reduce labour demand by about 12% during the merger year.

**Table 8.3 Short-run labour demand effect of mergers**

<b>Dependent variable: Employment</b>				
Independent variables	model1	model2	model3	model4
Employment (t-1)	0.677***	0.677***	0.843***	0.678***
Wages (t)	- 0.273**	- 0.270**	- 0.071	- 0.273**
Wages (t-1)	0.166*	0.164*	- 0.002	0.167*
Output (t)	0.774***	0.774***	0.517***	0.772***
Output (t-1)	- 0.417***	- 0.418***	- 0.371***	- 0.416***
Merger (t)	- 0.085***			
Related (t)		- 0.098***		
Unrelated (t)		- 0.068*		
Hostile (t)			- 0.081*	
Friendly (t)			- 0.082***	
Layoff (t)				- 0.113**
Non-layoff (t)				- 0.065**
Interaction of Year and Industry dummies	Yes	Yes	Yes	Yes
Constant	- 1.483***	- 1.483***	- 0.288	- 1.480***
AR(1)	0.00	0.00	0.00	0.00
AR(2)	0.86	0.88	0.98	0.87
Sargan test p-value	0.00	0.00	0.00	0.00
Hansen test p-value	0.33	0.21	0.65	0.40
No. of observations	4127	4127	4127	4127
No. of firms	705	705	705	705

*Notes:* The dependent variable is employment. The estimation method is the one step SYSTEM GMM, using heteroscedasticity-robust standard errors. Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

Due to the existence of synergy and cost savings opportunities arising as a result of related mergers, these mergers should reduce labour demand more than unrelated mergers. Consistent with this prediction, the results indicate that the decline in labour demand is higher in related acquisitions (9.8%) than in unrelated acquisitions (6.8%). Conyon *et al.* (2002a) and Gugler and Yurtoglu (2004) show that related mergers reduce employment by more than unrelated mergers. However, Amess *et al.* (2008) report that the magnitude of the labour demand

reduction is the same for both related and unrelated mergers: related mergers reduce employment by 15.8% and unrelated merger reduce employment by 15.5%.

Hostile takeovers may also result in a larger decrease in labour demand, because management disciplining may lead to efficiency improvement in labour usage. However, the results indicate that the magnitude of the labour demand reduction in hostile and friendly acquisitions is almost the same: hostile takeovers cause an 8.2% drop in labour usage in comparison to non-merging control firms, while friendly mergers cause an 8.1% drop in labour demand. This could be due to the small number of hostile takeovers in the sample.

Finally, we investigate whether there is a differential effect on labour demand of the acquisitions that involve employee layoffs and acquisitions that do not involve employee layoffs. Empirical evidence on this issue is important in understanding the reasons for employee layoffs: whether managers cut employment costs to cover takeover premiums or to eliminate duplicative activities that arise due to business combinations. As the results show, the employee layoff-involving acquisitions reduce labour demand by nearly twice (11.3%) as much as those acquisitions that do not involve employee layoffs (6.5%).

#### **8.4.2 The long-run labour demand impact of mergers**

Consistent with the dynamic labour demand theory, labour demand adjustments may take up to several years to materialise. As reported in Table 8.4, the results show that mergers reduce labour demand by 8.7% two years after mergers. However, the long-run coefficients of related versus unrelated and hostile versus friendly dummy variables are insignificant, although in some cases they are negative and very large. In contrast to this, layoff-involving acquisitions continue to adjust their employment levels in the long run by reducing labour demand by another 17.8% after two years following acquisitions, while the non-layoff sub-sample mergers' long-run employment effect is insignificant.

These results are consistent with prior research. For example, the results of Conyon *et al.* (2004) show that mergers reduce labour demand by about 2% during the second year after mergers. Conyon *et al.* (2002a) report that related mergers reduce derived labour demand every year by 6.8% for two years after mergers, while the effect of unrelated mergers is insignificant.

**Table 8.4 Long-run labour demand effect of mergers**

<b>Dependent variable: Employment</b>				
<b>Independent variables</b>	<b>model1</b>	<b>model2</b>	<b>model3</b>	<b>model4</b>
Employment (t-1)	0.854***	0.861***	0.854***	0.855***
Wages (t)	-0.060	-0.053	-0.066	-0.040
Wages (t-1)	0.010	-0.009	0.010	-0.009
Output (t)	0.467***	0.463***	0.455***	0.463***
Output (t-1)	-0.325***	-0.330***	-0.312***	-0.328***
Merger (t)	-0.099***			
Merger (t-1)	0.008			
Merger (t-2)	-0.087***			
Related (t)		-0.116***		
Related (t-1)		0.006		
Related (t-2)		-0.02		
Unrelated (t)		-0.072*		
Unrelated (t-1)		0.015		
Unrelated (t-2)		-0.174		
Hostile (t)			-0.106**	
Hostile (t-1)			0.145	
Hostile (t-2)			-0.017	
Friendly (t)			-0.100***	
Friendly (t-1)			-0.035	
Friendly (t-2)			-0.110	
Layoff (t)				-0.134***
Layoff (t-1)				-0.057
Layoff (t-2)				-0.178*
Non-layoff (t)				-0.061**
Non-layoff (t-1)				0.070
Non-layoff (t-2)				0.005
Interaction of Year and Industry dummies	Yes	Yes	Yes	Yes
Constant	-0.373	-0.315	-0.398	-0.322
AR(1)	0.00	0.00	0.00	0.00
AR(2)	0.44	0.43	0.43	0.39
Sargan test p-value	0.00	0.00	0.00	0.00
Hansen test p-value	0.87	0.88	0.81	0.89
No. of observations	3469	3469	3469	3469
No. of firms	705	705	705	705

*Notes:* The dependent variable is employment. The estimation method is the one step SYSTEM GMM, using heteroscedasticity-robust standard errors. Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

### 8.4.3 Labour demand effect of mergers by firm size

Previous research shows that there is significant variation in the firm performance effect of mergers depending on firm size: the effect of mergers is less pronounced in large firms than in small firms (McGuckin and Nguyen, 2001; Conyon *et al.*, 2002a).

To analyse the role of the size factor in the labour demand effect of mergers, we divide the overall sample into two sub-groups according to the firm size distribution: large firm and small firm sub-groups. We use median employment to divide the sample into two sub-samples. Table 8.5 reports the results of estimating the equation (30) separately for the two firm size sub-samples to investigate the short-run employment effect of mergers. Consistent with the Conyon *et al.* (2002a) findings, the results show that smaller firms derive higher levels of efficiency improvement in labour usage than large firms. In the large firms sub-sample the merger dummy coefficient is not significant, while in the small firms sub-sample the results indicate that mergers reduce labour demand by 12.6%. Thus mergers lead to a higher level of efficiency improvement in small firms than in larger firms.

The same picture emerges with related and unrelated acquisitions – the effect of mergers on labour demand is stronger in small firms than in large firms. In this case only related acquisitions cause lower labour demand. The size distribution effect is insignificant in the case of hostile takeovers, possibly due to the small number of hostile takeovers in the sample. The size distribution of friendly takeovers also indicates a differential effect of mergers, which is consistent with the general picture described above.

When mergers are classified into layoff and non-layoff acquisitions, both the layoff and non-layoff dummies indicate that small firms reduce labour demand during the merger year, but not in the long run. Small acquisitions involving employee layoffs reduce labour demand three times more than large acquisitions involving employee layoffs. In comparison to this the effect of non-layoff acquisitions is approximately the same for the two size distributions and neither small nor large acquirers adjust labour usage in the long run.

In sum, the reported results of mergers' effect on labour demand are similar to those presented by Conyon *et al.* (2002a), Gugler and Yurtoglu (2004) and Amess *et al.* (2008), although the size of the employment decline is different. This could be due to the difference in sample or the use of different estimation methods in different samples. For example, Conyon *et al.*

(2002a) use Generalized Instrumental Variable Estimation after first differencing (GIVE), while Gugler and Yurtoglu (2004) use the one step difference GMM. The contemporaneous effect of mergers indicates that there is synergy between the operations of merging firms. The long-run labour demand reductions indicate that it takes some time to materialize merger-related synergy.

**Table 8.5 Short-run labour demand effect by firm size distribution**

Dependent variable: Employment								
Independent variables	Large firms (upper half)				Small firms (lower half)			
	model1	model2	model3	model4	model5	model6	model7	model8
Employment (t-1)	0.971***	0.971***	0.974***	0.982***	0.820***	0.823***	0.821***	0.821***
Wages (t)	- 0.703***	- 0.702***	- 0.699***	- 0.680***	- 0.063	- 0.067	- 0.061	- 0.063
Wages (t-1)	0.662***	0.662***	0.660***	0.652***	0.060	0.063	0.059	0.061
Output (t)	0.911***	0.912***	0.903***	0.886***	0.421***	0.421***	0.419***	0.410***
Output (t-1)	- 0.882***	- 0.883***	- 0.877***	- 0.867***	- 0.283**	- 0.286**	- 0.283**	- 0.273**
Merger (t)	- 0.017				- 0.126***			
Related (t)		- 0.017				- 0.174***		
Unrelated (t)		- 0.017				- 0.038		
Hostile (t)			- 0.019				- 0.108	
Friendly (t)			- 0.018				- 0.129***	
Layoff (t)				- 0.025				- 0.183**
Non-layoff (t)				- 0.015				- 0.103**
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	- 0.009	- 0.01	- 0.007	- 0.01	- 0.465	- 0.447	- 0.458	- 0.469
AR(1)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2)	0.76	0.75	0.76	0.76	0.87	0.83	0.84	0.87
Sargan test p-value	0.03	0.03	0.03	0.03	0.00	0.00	0.00	0.00
Hansen test p-value	0.38	0.38	0.37	0.36	0.36	0.34	0.35	0.35
No. of observations	2065	2065	2065	2065	2062	2062	2062	2062
No. of firms	353	353	353	353	352	352	352	352

*Notes:* The dependent variable is employment. The estimation method is the one step SYSTEM GMM, using heteroscedasticity-robust standard errors. Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

#### 8.4.4 Wage effects of mergers

We analysed two possible sources of wage change after mergers: mergers' *ceteris paribus* effect on wages due to changes in the wage formation process and the possibility of wage increase due to improvement in employee profitability, as suggested by Conyon *et al.* (2004). First, mergers may immediately alter the wage formation process by introducing structural changes in rent sharing among different stakeholders. The underlying source of this immediate impact of mergers could also be the fact that mergers may induce immediate efficiency improvement in labour usage, resulting from elimination of duplicative activities. This effect

of mergers is confirmed by the labour demand analysis (discussed above): in the short run mergers significantly reduce labour demand.

The second source of wage change depends on the long-term profitability change in merging firms, resulting from long-run organisational restructuring and operating performance rationalisations. The Conyon *et al.* (2004) results show that mergers improve employee profitability. As a result of improved profitability, employees should be able to increase their share in the enhanced profit. If mergers cause profit enhancement that only benefit shareholders, leaving the employee share unchanged, then this supports one form of Shleifer and Summers' (1988) 'breach of trust' argument: employees work harder after mergers, but receive the same wages as before mergers. We test the contemporaneous effect of mergers and improved employee profitability on wages by estimating equation (31), which includes both employee profitability and merger dummies. The results are given in Table 8.6.

The lagged dependent variable – wage is positive and highly significant. As expected, wage growth is strongly positively associated with average industry wage growth. Similarly, employee profitability is positively associated with the wage change: the higher the employee profitability, the higher the increase in wages. However, the effect of the second source of mergers is not clear: there is no evidence indicating that wages grow faster in merging firms due to increased profit per employee, as indicated by the insignificant interaction of the profitability variable with the post-merger dummy. Although the interaction term between profitability and merger dummy is positive, it is not significant.

The results indicate the clear impact of mergers on wage formation through structural changes: mergers on average increase wages by 4.9% two years after mergers and 9.8% three years after mergers, when they are considered as homogenous. However, when year and industry dummies are included these coefficients become insignificant. Both relatedness and hostility dummy variables indicate that there is no significant difference in wage growth. Wage growth is higher in 'non-layoff' sub-sample acquisitions than in 'layoff' sub-sample acquisitions. This could be explained by the fact that layoff sub-sample firms are underperforming firms and therefore wage growth is lower than the wage growth in 'non-layoff' sub-sample firms, which are assumed to be highly profitable both before and after acquisitions.

**Table 8.6 Wage effects of mergers**

<b>Dependent variable: Wage</b>								
Independent variables	model1	model2	model3	model4	model5	model6	model7	model8
Wage (t-1)	0.490**	0.832***	0.793***	0.796***	0.481**	0.824***	0.780***	0.785***
Industry average wage (t)	0.380*	0.145*	0.150**	0.157**	0.525**	0.214**	0.229***	0.246***
Employment (t-1)	- 0.021**	- 0.009*	0.008	0.005	- 0.018**	- 0.007	0.035	0.033
Capital per employee (t-1)	- 0.020**	- 0.017***	- 0.022**	- 0.020***	- 0.003	- 0.012	- 0.020*	- 0.015
Profit per employee (t)	0.094***	0.052***	0.066***	0.061***	0.095***	0.055***	0.078***	0.073***
Merger (t-1)	0.036				0.023			
Merger (t-2)	0.049*				0.023			
Merger (t-3)	0.098**				0.083			
Related (t-1)		- 0.224				- 0.253		
Related (t-2)		0.001				- 0.026		
Related (t-3)		- 0.003				- 0.026		
Unrelated (t-1)		0.368				0.379		
Unrelated (t-2)		0.060				0.026		
Unrelated (t-3)		0.128				0.079		
Merger (t-1)			0.047				0.006	
Merger (t-2)			0.194				0.311	
Merger (t-3)			- 0.028				- 0.072	
Friendly (t-1)			0.018				0.008	
Friendly (t-2)			- 0.019				- 0.081	
Friendly (t-3)			0.086				0.076	
Layoff (t-1)				- 0.082				- 0.110
Layoff (t-2)				0.024				- 0.015
Layoff (t-3)				- 0.043				- 0.070
Non-layoff (t-1)				0.129*				0.115*
Non-layoff (t-2)				0.059				0.046
Non-layoff (t-3)				0.138**				0.112*
Interaction of Year and Industry dum.	No	No	No	No	Yes	Yes	Yes	Yes
Constant	0.396	0.083	0.036	0.031	- 0.029	0.015	- 0.448	- 0.451
ar1p	0.000	0.037	0.008	0.008	0.000	0.030	0.006	0.006
ar2p	0.685	0.994	0.292	0.895	0.641	0.953	0.423	0.939
sarganp	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
hansenp	0.092	0.212	0.300	0.271	0.074	0.451	0.539	0.631
N	2485	2485	2485	2485	2485	2485	2485	2485
N_g	695	695	695	695	695	695	695	695

Notes: The dependent variable is wage. The estimation method is the one step SYSTEM GMM, using heteroscedasticity-robust standard errors. Significance levels: \*p<0.1, \*\*p<0.05; \*\*\*p<0.01. Appendix 2 provides the definitions of the variables.

## 8.5 Conclusions

*The value-creation* theory suggests that most takeovers are motivated by the desire to gain synergies resulting from the combination of two businesses, or to discipline underperforming management. According to this theory, mergers should reduce the derived labour demand, controlling for wages and output. Also employee profitability should be improved, enabling employees to earn higher salaries after mergers. Decline in labour demand should be greater in acquisitions that involve layoffs than in acquisitions that do not.

The results of this analysis show that mergers significantly reduce the derived labour demand during the merger year. In the merger year merging firms experience 8.5% decline in labour

demand. Furthermore, the results reveal that mergers cause long-run adjustment in the use of labour input: mergers reduce labour demand by another 8.7% two years after completion of such transactions. The difference between the performance of related versus unrelated mergers indicates the existence of a wider scope for synergy in the former: during the merger year decrease in labour demand is larger in related acquisitions than in unrelated acquisitions, while in the long run neither related nor unrelated acquisitions change labour demand. However, both hostile and friendly mergers lead to approximately the same size of labour demand reduction in both the short and the long run. Thus we conclude that merger-related synergy is one of the main sources of decline in labour demand.

One of the main contributions of this chapter is that it provides further evidence showing that employee layoffs are motivated by merger-related efficiency improvements in labour usage. The results show that the derived decline in labour demand is greater in ‘layoff’ acquisitions than in ‘non-layoff’ acquisitions: short-run decline in labour demand is greater in the former case than in the latter, while in the long run only ‘layoff’ acquisitions cause lower labour demand, while ‘non-layoff’ acquisitions do not change labour demand. Overall, these results indicate that layoffs were undertaken at least to arrest further deterioration in firm performance.

Furthermore, the results show that mergers accelerate wage growth: wage growth in merging firms is higher by 5% two years after the merger completion year and 10% three years after the merger completion year. Neither the relatedness nor the hostility classification reveals any difference in wage growth, but classification of mergers into ‘layoff’ and ‘non-layoff’ sub-samples reveals a significant difference between the wage growths in these two sub-samples. ‘Non-layoff’ acquirers’ wage growth is significantly higher than the wage growth in non-merging firms, while ‘layoff’ acquirers’ wage growth is not different from the wage growth in non-merging firms. This confirms the view that employee layoffs are undertaken in firms with financial and operational difficulties.

Overall, the results of this chapter do not show a significant adverse effect of mergers on employees, taking into consideration both long-run employment and wage growth after mergers. The absolute number of employees does not fall, but acquiring firms achieve efficiency in labour usage. At the same time, mergers benefit employees by accelerating their wage growth.

## 9 CONCLUSIONS

### 9.1 Introduction

This thesis has investigated the effects of takeovers on labour: what factors prompt post-merger workforce adjustments and whether labour suffers from takeovers. The results of this thesis contribute to advancing our understanding of whether post-merger labour management decisions are influenced by market mechanisms of corporate governance or whether they are made for efficiency enhancement purposes, balancing the interests of shareholders and workers.

The shareholder-value oriented corporate governance system is concerned with protecting dispersed and ‘weak’ shareholders from ‘entrenched’ managers. Within this system management disciplining is undertaken by means of market mechanisms, primarily through the ‘exit’ strategy, which may lead to replacement of poorly performing management. However, critics of this governance model argue that it favours shareholders’ interests over those of other stakeholders and excessively pressurise managers to adopt those strategies that create short-term shareholder returns.

One of the main corporate governance mechanisms – corporate takeovers – performs a vital external disciplining function, by appropriately punishing managers who do not act in the best interests of shareholders. However, at the same time, it is suggested that this governance mechanism enables shareholders to gain power vis-à-vis employees and to press managers to create shareholder value at the expense of workers. Specifically, the MCC may facilitate wealth transfer from employees to shareholders. If this claim is true, then several types of inefficiencies would arise: (1) *ex-ante* employees may be discouraged from making long-term firm-specific investments and entering into implicit contracts with shareholders, because employees expect that they will be dismissed by new owners; (2) *ex-post* dismissed employees’ firm-specific investments may be wasted, as they may not be able to use them in other work contexts. Furthermore, a strong MCC may encourage managers to favour those projects that bring short-term returns for shareholders, rejecting those projects that may be vital for the businesses’ long-term sustainability. In this regard, within the current corporate governance debate a key question is how managers behave under the pressure of the MCC transactions, occasionally observed in LMEs (Pendleton, 2009).

Therefore a better understanding of the effects of takeovers on labour would make an important contribution to the knowledge on governance systems in LMEs. The extant empirical evidence on this issue is mixed: some commentators argue that takeovers are a wealth re-distributive exercise (Shleifer and Summers, 1988), while other commentators argue that takeovers promote efficiency enhancement in labour utilisation (Conyon *et al.*, 2002a). To contribute to this debate four empirical chapters of this thesis have investigated causes and consequences of merger-related workforce adjustments. The first empirical chapter has explored the factors underlying post-merger employee layoffs (general management perspective). The second empirical chapter has examined decline in post-merger operating performance as a factor leading to workforce adjustments, and the performance consequences of such workforce adjustments (accounting perspective). The third empirical chapter has investigated ‘breach of trust’ as a main reason for employee layoffs and has analysed the association between post-merger shareholder wealth change and employee wealth concessions (finance perspective). The fourth empirical chapter has examined the decline in labour demand as a main factor leading to post-merger employee layoffs (industrial economics perspective). It also analyses wage growth after mergers. The unifying theme for all of these four chapters is the effect of restructuring for shareholder value on labour.

## **9.2 Summary of findings and contributions**

### **9.2.1 Causes of post-takeover workforce adjustments**

Prior research suggests several reasons for post-takeover workforce reductions. While some authors argue that managers undertake workforce reductions to improve labour efficiency and to derive operating synergy (Conyon *et al.*, 2002a), other authors argue that managers undertake workforce reductions to cover high premiums paid to target firm shareholders, that may negatively affect operating performance (Krishnan *et al.*, 2007). On the basis of this, chapter 5 has considered the role of four factors in explaining post-takeover workforce adjustments – the need for performance improvement, the need to discipline inefficient management, the requirement to synergy realisation and the need to cover high premiums paid for targets.

Univariate analysis of merging firms’ pre-takeover performance shows that employee layoffs are undertaken in under-performing firms: the WFR sub-sample targets’ performance deteriorates immediately before takeovers, whereas the WFG sub-sample targets outperform

their matched firms during that period. Furthermore, regressions show that acquired firms' prior performance explains both post-takeover workforce reductions and workforce growth, while acquirers' prior performance only explains workforce growth. In the WFR sub-sample, acquired firm performance is inversely associated with greater workforce reductions, meaning that low performance leads to workforce reductions. In contrast, in the WFG sub-sample, acquired firm performance is positively associated with faster workforce growth. Regressions also show that acquirers' pre-takeover performance only explains workforce growth.

Although the coefficients for hostile takeover dummies are negative, they are not significant. This means that after controlling for pre-takeover performance and other factors, hostility in acquisitions does not explain post-merger employee layoffs. The full sample results indicate that related acquisitions cause greater workforce change than unrelated acquisitions.

However, in contrast to prior evidence, the results show that higher premiums are associated with smaller workforce reductions. This association implies that acquirers do not pay high premiums for targets that may subsequently require major corporate restructuring, which may involve workforce downsizing. Instead, high premiums are associated with slower workforce growth. This claim is supported by the evidence of a negative association between high premiums and workforce growth. Therefore it can be concluded that acquirers pay high premiums for the businesses that generate higher levels of synergy, which may require lower levels of labour input during post-takeover years. The finding that low, not high, premiums are associated with large workforce reductions does not support the notion that managers favour shareholders' interests over those of labour. In other words, high premiums do not induce excessive employee layoffs. Altogether, these results suggest that managers undertake employee layoffs when there is a need for efficiency improvement, not to create shareholder value at the expense of labour.

The findings discussed above contribute to the literature by clarifying the underlying factors in post-takeover workforce adjustments. It can be concluded on the basis of these findings that the optimal employment levels are determined taking into consideration the pre-takeover performance of acquired firms: the lower the acquired firms' performance, the greater the reduction in the workforce; the higher the performance of the acquired firm, the higher the workforce growth post-merger. Thus workforce reductions are made in underperforming acquired firms. Synergy (relatedness) leads to greater workforce adjustments, but also slower

workforce growth. The results do not support the view that high premiums lead to excessive job losses. In contrast, workforce growth is slower after acquisitions involving high premiums. In sum, these results imply that managers undertake post-takeover employee layoffs to promote the success for their companies and not to create shareholder value or to cover high premiums at the expense of labour.

### **9.2.2 Cause and effect relationship between post-takeover operating performance change and workforce adjustment**

Chapter 6 has explored the role of post-takeover performance decline in explaining workforce adjustments and the operating performance consequences of such workforce adjustments. It is well documented that acquisitions may negatively affect firm performance. However, the association between performance decline and workforce reductions has not been well researched. Regarding the performance consequences of such workforce reductions, there are two contradicting hypotheses: (1) layoffs at least arrest further performance deterioration (Chen *et al.*, 2001, Hillier *et al.*, 2007); (2) merger-related employee layoffs destroy human resources in acquired firms and lead to organisational performance decline (Krishnan *et al.*, 2007). Such outcomes of workforce reductions could be linked to the motives of corporate downsizing within the mergers and acquisitions context: if employee layoffs are undertaken to cover high premiums through labour cost cuts, then we would expect the consequences of such layoffs to be negative; alternatively, if employee layoffs are undertaken to stop further performance deterioration or to materialise operational synergy, then we would expect the performance consequences of such layoffs to be positive.

The univariate analysis indicates that the performance of the WFR sub-sample firms declines significantly relative to pre-takeover levels during the first two post-takeover years, while the performance of the WFG sub-sample firms does not change relative to pre-takeover levels during these years. This decline in performance, together with low pre-takeover operating performance of acquired firms, necessitates cost cuts. The univariate analysis also reveals that in the third post-takeover year performance decline is more severe in the WFG sub-sample, while in the WFR sub-sample performance does not differ significantly from the pre-takeover level.

First we investigate whether post-takeover decline in operating performance leads to workforce reductions. The regressions show that performance decline has significant power in

explaining workforce reductions: performance change is positively associated with workforce change. This implies that if performance declines post-merger, then acquirers undertake workforce reductions.

Next we explore whether post-takeover workforce adjustments alter operating performance. The results show that there is an inverse relationship between workforce growth and operating performance growth. The full sample results show that there is an inverse relationship between workforce adjustments and performance *change*. In particular, the inverse relationship between workforce growth and performance *change* in the WFG sub-sample implies that higher workforce growth leads to more negative performance change. In contrast, the positive relationship between workforce reduction and performance change in the WFR sub-sample implies that greater workforce reduction leads to more positive performance change. On the basis of this, we conclude that post-takeover workforce reductions at least arrest further performance deterioration. These results do not support the conclusions of the prior research which argue that mergers destroy human capital in acquired firms.

Thus in the mergers and acquisitions context, the results are consistent with the conclusions of the general research on employee layoffs: workforce reductions positively contribute to performance change. This contradicts prior research results which suggest that merger-related employee layoffs destroy human capital in acquired firms and negatively affect firm performance.

A key finding of this chapter is that post-merger performance decline may induce workforce reductions. Furthermore, this chapter contributes to the literature by clarifying the long-run operating performance consequences of post-takeover workforce adjustments. In this regard, another key finding of this chapter is that workforce change is inversely related to operating performance *change*: workforce reductions cause more positive performance change, while accelerated workforce growth causes more negative performance change. Thus merger-related workforce reductions positively affect firm performance by arresting further performance deterioration. This contradicts the theory that mergers destroy human capital in acquired firms.

### **9.2.3 Shareholders and employees: rent transfer or rent sharing in corporate takeovers**

As discussed above, one of the key questions in contemporary corporate governance is concerned with the issue of how takeover events affect managerial behaviour: to what extent

these events push managers to create shareholder value at the expense of labour (Pendleton, 2009). The ‘shareholder primacy’ view suggests that under market pressure managers put shareholders’ interests above labour’s interests. In takeover cases managers may pay high premiums to target firm shareholders, expecting to recover this with some of the quasi-rents being paid to target employees. According to *the value-redistribution* theory, takeovers facilitate rent transfer from employees to shareholders, by causing the breach of implicit contracts between them. Specifically, Shleifer and Summers (1988) and Pagano and Volpin (2005) argue that a considerable part of takeover announcement shareholder gains come at the expense of employees, especially in hostile takeovers. According to this theory, post-takeover workforce and wage changes should depend on target shareholders’ takeover announcement gains. In other words, post-takeover workforce and wage changes are predicted to be an inverse function of the shareholder gains at takeover announcement. On the other hand, corporate laws require managers to promote the success of the company (Deakin, 2005; Pendleton, 2009) and managers should undertake takeovers to promote the success of their companies. This complies with *the value-creation* theory of takeovers, according to which takeovers benefit both shareholders and employees through operational synergy or by disciplining inefficient management. In this case post-takeover workforce and wage growth should depend on the success of mergers, measured by the long-run abnormal returns of acquiring firms.

Chapter 7 has examined the role of these two competing theories in explaining post-takeover employee wealth concessions. The results show that the CARs in the WFR sub-sample are smaller than the CARs in the WFG sub-sample, which contradicts the predictions of the rent transfer hypothesis. In particular, acquiring firm shareholders in the WFR sub-group earn significantly negative abnormal returns, while in the WFG sub-group acquiring firm shareholders’ wealth does not change much. This suggests that the market can distinguish the acquisitions of bad targets, which may involve employee layoffs, from the acquisitions of good businesses with growth opportunities.

To further test *the value-redistribution* theory we regress target firm shareholders’ short-run abnormal returns and premiums on post-takeover employment and wage changes, controlling for other relevant variables. The results do not show that shareholder gains in the form of CARs and premiums cause subsequent wage cuts and employment reductions. Instead, a high premium is associated with faster pay rises and employment growth. However, the results also

show some evidence supporting the wealth transfer hypothesis: in cash acquisitions high CARs are associated with lower wage growth, while in hostile takeovers a high premium is associated with lower wage growth. At the same time, in related acquisitions a high premium leads to slower employment growth.

Thus, the results show that around takeover announcement the workforce-reducing sub-sample shareholders earn lower abnormal returns than the workforce growth sub-sample shareholders. This contradicts the predictions of *the value-redistribution* theory. Furthermore, the regressions show a positive association between target firm shareholders' abnormal returns and workforce growth, while the premium is also positively associated with wage growth. Only in cash-financed acquisitions higher abnormal returns are associated with lower wage growth, while in hostile takeovers a higher premium is associated with lower wage growth.

Similarly, in the long run the workforce-reducing sub-sample acquirers earn significant negative abnormal returns, while the workforce growth sub-sample acquirers' performance does not differ from non-merging firms' performance. The WFG sub-sample acquirers long-run share price performance does not differ from the non-merging firms' performance. In contrast, the WFR sub-sample acquirers significantly underperform their non-merging counterparts. Furthermore, the regressions show that there is a significant positive association between acquirers' long-run abnormal returns and both post-takeover workforce and wage changes.

Overall, the results show that takeovers do not necessarily involve rent transfer from workers to shareholders, as post-takeover labour wealth concessions do not depend on short-run takeover announcement shareholder abnormal returns. Instead, post-takeover labour welfare depends on the long-run performance of acquiring firms, suggesting that managers balance the interests of both shareholders and employees. Thus we conclude that post-takeover employee wealth concessions do not depend on rent-expropriating behaviour on the part of owners, but on value created by takeovers: if shareholders gain from takeovers, then employees also benefit from such transactions; if shareholders lose from takeovers, then employees also suffer from them. This implies that managers are not passive victims of corporate governance practices, but make corporate decisions balancing the interests of shareholders with the interests of other stakeholders, including employees. Therefore using different research

approaches, we come to the same conclusions as Conyon *et al.* (2002a), who argue that the view that takeovers facilitate wealth transfer is a partial one.

#### **9.2.4 Labour demand and wage effects of takeovers that involve employee layoffs**

Recent research suggests that mergers reduce labour demand, which means that merged firms may produce a combined output with less labour as a result of better labour management or synergy realisation. This decline in labour demand may cause merger-related employee layoffs. If this is the case, then labour demand decline should be greater in layoff-involving acquisitions than in acquisitions that do not involve employee layoffs. Similarly, the wage effect of layoff-involving mergers may be different from the wage effect of acquisitions that do not involve employee layoffs. Chapter 8 has empirically examined this issue.

In this chapter we follow the research methodology applied in the prior research, which estimates the dynamic labour demand effect of takeovers, controlling for initial conditions of employment, wage and output (Conyon *et al.*, 2002a). As the labour demand effect of takeovers may follow a process of gradual adjustment, the econometric model includes a lagged dependent variable, which is correlated with the error term. Furthermore, due to unobservable variables, some important factors may be omitted. As these omitted variables may be correlated with explanatory variables, there may be some endogeneity problem in the model. To control for the endogeneity issue, we apply the panel data based GMM estimation method (Arellano and Bond, 1991; Blundell and Bond, 2000).

The results show that in the short run (during the merger event year) mergers significantly reduce the derived labour demand. In the merger year merged firms' labour demand declines by 8.5%. Related acquisitions lead to greater decline in labour demand (9.8%) than unrelated acquisitions do (6.8%), while both hostile and friendly mergers lead to approximately the same size of labour demand reduction (8%). The difference between the performances of the related versus unrelated mergers indicates the existence of synergy.

Recent research shows that one of the main reasons for employee layoffs is the decrease in labour demand. To test this argument we examine whether the decrease in labour demand is greater after acquisitions that involve employee layoffs than after acquisitions that do not. As an important contribution this chapter shows that, in fact, decline in derived labour demand is greater in acquisitions that involve employee layoffs than in acquisitions that do not. The

regressions show that layoff-involving acquisitions reduce labour demand by about 11.3%, while non-layoff acquisitions reduce labour demand by 6.5%. Furthermore, the results show that ‘layoff’ acquisitions continue to reduce labour demand two years after the merger completion year, while ‘non-layoff’ acquisitions do not alter employment in the long run. Finally, the results show that decline in labour demand is stronger in the small firms sub-sample than in the large firms sub-sample.

The results also show that mergers cause faster wage rises: the wage rise is 5% higher after two years and 10% higher after three years in merging firms in comparison to non-merging firms. While the results show that there is no difference in wage growth between related versus unrelated and hostile versus friendly acquisitions, wage growth after ‘non-layoff’ acquisitions is higher than wage growth after ‘layoff’ acquisitions. For example, wage growth in ‘layoff’ acquirers is significantly higher relative to wage growth in non-merging control firms, whereas wage growth in ‘non-layoff’ acquirers does not differ from wage growth in non-merging control firms. This also confirms the view that layoffs are undertaken in firms with financial difficulties.

This chapter contributes to prior research with new evidence on the positive association between post-merger decline in labour demand and reductions in the *absolute* number of employees. The results show that decline in labour demand is greater in layoff-involving acquisitions than in acquisitions that do not involve employee layoffs. This greater decrease in labour demand in the ‘layoff’ sub-sample may justify workforce reductions. In contrast, wage growth is higher in non-layoff acquisitions than in layoff acquisitions. Overall, these results confirm that merger-related layoffs are undertaken to improve efficiency and to safeguard the financial position of the firms.

### **9.3 Summary of overall findings**

This thesis contributes to the growing body of literature on the employment effects of takeovers by providing new empirical evidence on this issue from several different perspectives. The general conclusion of this thesis is that labour does not always suffer from takeovers, but instead may gain from such transactions in the long run. Although there are some job losses in the short run, value-enhancing acquisitions should benefit employees in the long run by providing better jobs and accelerated wage growth. The following main findings form the basis for this conclusion: (1) workforce reductions are undertaken for efficiency

improvement purposes; (2) workforce reductions positively contribute to post-takeover operating performance change; (3) not all takeovers involve wealth transfer from employees to shareholders, although there are some evidence of wealth transfer in hostile takeovers and cash-financed acquisitions; (4) labour demand decline is one of the main reasons for employee layoffs and wage growth is higher in merging firms than in non-merging firms.

These empirical results are more consistent with the conclusions of an emerging body of literature on labour management practices in LMEs (Armour *et al.*, 2003; Gospel and Pendleton, 2003). For example, reviewing the literature, Pendleton (2009) concludes that the market model of corporate governance ‘needs to be revised, though not entirely rejected’, as the existing evidence does not support these predictions. In contrast, labour management practices are more employee-friendly in public companies within LMEs. He discusses several points that may differentiate current ownership and governance systems from the prescriptions of the market model: (1) dispersed ownership gives more power and discretion to managers; (2) corporate law requires managers to promote the success of the company, balancing the interests of all involved stakeholders; (3) managers may pursue a ‘quiet life’ by adopting labour-friendly management, and (4) the public visibility of listed companies encourages managers to adopt employee-friendly practices. These factors contribute to the adoption of more labour-friendly management.

Finally, the overall findings of the thesis also contribute to assessing the appropriateness of the shareholder-oriented corporate governance practices. The results are not completely consistent with the view that shareholder-value oriented corporate governance prioritises shareholders’ interests over those of labour. Therefore it can be concluded that such a governance system is less institutionalised than is often assumed, as suggested by Armour *et al.* (2003).

#### **9.4 Policy implications**

The findings of this research could be used in a number of policy-making areas. First, on the basis of empirical findings, some inference could be made on the role of the MCC in LMEs: do policy-makers need to encourage the MCC transactions to allow efficient re-allocation of assets or do they need to limit such transactions in order to protect employee rights? If the MCC transactions facilitate ‘breach of trust’, then workers do not have enough incentives to make firm-specific human capital investment and they do not enter into long-term contracts,

which may diminish efficiency in the long run. Therefore there is an ongoing debate on the long-term efficiency implications of the MCC transactions.

For example, more recently there have been strong calls to reform some aspects of corporate takeover rules. Critics argue that contemporary takeover rules allow shareholders to sell perfectly viable and profitable businesses for high premiums despite opposition from other stakeholders. The hostile takeover of Cadbury by Kraft for a premium of about 50% has strengthened such arguments. Even the UK Takeover Panel has criticized Kraft when they announced that they would close a Cadbury plant which, during the takeover negotiation process, they had promised to keep open (Takeover Panel 2010/14 Statement). On 01.06.2010 the Code Committee of the Takeover Panel published a public consultation paper reviewing certain aspects of the regulation of takeover bids (Takeover Panel public consultation paper - PCP 2010/2). In addition to this, some are calling for the creation of a new takeover framework – the ‘Cadbury Law’ – that would make it more difficult for ‘opportunistic’ takeovers, allowing only disciplinary takeovers. However, the question is what aspects of takeover rules should be revised and whether mergers and acquisitions activity should be restricted on the grounds of its negative employment effect. The results of this research would contribute to the discussion by providing new evidence that not all mergers and acquisitions have a negative effect, but some types of takeovers, such as hostile and cash paid acquisitions, should be regulated more rigorously.

Furthermore, the results could be used to assess the appropriateness of the shareholder value maximisation principle as well as to assess the activities of managers: whether they behave in compliance with their fiduciary responsibilities, defined in the company laws. In particular, the empirical results provide policy-makers with evidence showing that restructuring for shareholder value through mergers and acquisitions does not necessarily negatively affect jobs and wages. On the contrary, such transactions enhance efficiency in the use of labour, which may be vital for the business sustainability and, therefore, should benefit both shareholders and employees in the long run. Thus managers’ behaviour could be considered as in compliance with their fiduciary duties: they promote the success of their companies and balancing the interests of both shareholders and employees in making decisions related to such transactions.

## 9.5 Limitations of the thesis

There are a number of data-related factors that limit the scope of this empirical work. First, although we control for multiple acquisitions in order to limit the effects of subsequent acquisitions on employment growth, the empirical work does not take into consideration post-takeover asset divestments. As asset divestments may also affect employment decline, some of the employment reductions, reported by *Datastream*, could be due to such sell-offs.

Secondly, there are some data limitations related to the sample period and sample size. As the data was hand-collected, we had to limit the sample period. Furthermore, due to the strict requirement on data availability for both acquired and acquiring firms and the restriction of multiple acquisition activity, the sample size became smaller.

The effect of acquisitions on firm performance would be better understood if data on acquired units' post-merger performance was used, instead of on consolidated firm performance. However, after acquisitions, companies report consolidated annual statements and therefore acquiring and acquired firm data is combined. Therefore it was not possible to collect data on acquired firms' post-merger performance. Furthermore, *the value-distribution* theory of takeovers would be best tested by using data on wages of individual workers and also data on employee ages. However, it was not possible to collect such data using data sources to which we have access.

Finally, data on post-merger employee layoffs has also been hand-collected from the public press. Although there is a high correlation between this employee layoff data and workforce reductions reported by *Datastream*, there is some risk that not all layoffs may be announced or some announced layoffs may not materialize. Therefore the availability of databases on merger-related employee layoffs would improve the quality of this research.

## 9.6 Future research

Future research could analyse the performance consequences of workforce adjustments using panel data estimation methods. As in this research several variables (such as premiums) are observed only once, it was not possible to use panel data estimation methods.

Future research could also consider the interactions of takeovers with other governance mechanisms, such as the functioning of boards. The recent literature suggests that corporate

governance is concerned with the power relationships among three main stakeholders of the firm: owners, managers and employees. Therefore empirical examination of the interactions of these three main stakeholders within the MCC context and related workforce downsizing is one of the key areas of research. For example, exploring the role of the Board of Directors in promoting both shareholders' and employees' interests within the mergers and acquisitions framework would provide interesting clarification on the effectiveness of corporate governance practices in LMEs. The results of this thesis have shown that Board composition affects firm performance and Board ownership affects employment growth. Such associations between board characteristics and firm performance could further be investigated using panel data based estimation methods. In addition to this, the role of large shareholders in management disciplining through market mechanisms or through relationship-based governance mechanisms could also be examined. Such a study would require a complete set of data on board structure, inside ownership and large shareholdings. Furthermore, as discussed above, employee share ownership is one of the most important takeover defence measures. Depending on the availability of data, the effect of using employee share ownership plans as a takeover defence could be tested.

The endogeneity issue is one of the main problems of a cross-sectional regression analysis. There may be measurement error and simultaneous association between the dependent and independent variables. At the same time, the merger event itself may be endogenous: acquirers may select targets with better performance and high growth (Ravenscraft and Scherer, 1987; McGuckin and Nguyen, 2001). Reverse causality is another source of endogeneity. To control for the endogeneity problem, future research could apply more advanced dynamic panel data estimation methods in analysing the performance consequences of workforce adjustments.

## APPENDICES

### Appendix 1 Stock market mis-valuation theory of takeovers

Pre-takeover stock market valuation of both target and bidder shares may motivate takeovers. Specifically, the literature considers two types of mis-valuation: targets undervaluation and acquirers overvaluation. In this relation two different theories attempt to relate valuation discrepancies to the takeover intensity over industries and over time. The first mis-valuation theory - the neoclassical theory - states that economic disturbances increase the asset valuation variance, by changing the business environment (Gort, 1969; Mitchell and Mulherin, 1996). Economic disturbances, such as technological, regulatory and environmental changes, increase the likelihood that an outside management team gives higher value for an asset than the incumbent management. According to this theory the main source of increase in valuation variance resulting from the economic shocks facilitates the efficient asset re-allocation through takeovers.

The second mis-valuation theory - the behavioural market theory - states that overall stock market overvaluation creates conditions for intense merger activity. For example, according to Shleifer and Vishny (2003) irrational investors behaviour and managers' rational timing of stock valuation create conditions for stock-financed takeovers. Similarly Rhodes-Kropf and Viswanathan (2004) and Rhodes-Kropf *et al.* (2005) argue that rational managerial use overvalued stocks to acquire relatively undervalued firms. When overall market valuation is high, overvalued stocks buy relatively less overvalued stocks, providing abnormal returns for the target shareholders. The argument of stock market mis-valuation is different from the target undervaluation argument, as such the latter argues that changes in business environment economic disturbances and regulatory or technological shocks create conditions for takeovers. In other words, takeover gains may arise as a result of re-valuation of previously undervalued assets. If targets are undervalued we should observe significant deviation from intrinsic values and increased net present value for the acquiring companies.

In terms of stock market mis-valuation hypothesis, Ang and Cheng (2006) show that overvalued firms are more likely to acquire with stock and that acquirers' overvaluation is greater than their target's premium-adjusted valuation. Dong *et al.* (2006) show that bidders have significantly higher valuation than targets' valuation, providing lower takeover gains for

higher valued bidders and higher gains for lower valued targets. In contrast, Harford (2005) empirically compares both neoclassical and behavioural explanation and based on this comparison concludes that economic shocks facilitate efficient re-allocation of assets. Harford (2005) show that overvaluation does not explain the post-takeover long-run abnormal returns, as the empirical evidence shows that there is no difference between takeover wave and non-wave bidder's long-run returns. This contradicts with the main prediction of the stock market mis-valuation theory, which postulates that the long-run returns of bidders after takeover waves should be significantly lower than non-wave bidders' long-run returns.

So far in the UK only one study, a study by Bild *et al.* (2005), analyses the pre-takeover valuation of bidder and target firm. They investigate (1) whether the market values of target and bidding firm fairly reflect their fundamental values and (2) whether takeovers are positive net present value projects for the acquiring company shareholders. These authors argue that fundamental value analysis has distinct advantages over share price and accounting studies, as it takes into account the paid premium, the timing and discounted value of post-takeover expected earnings. Bild *et al.* (2005) compares fundamental value of acquiring company before acquisition with the fundamental valuation after acquisition, in addition to the analysing the profitability and share price performance of acquiring companies. This study finds significantly negative long run share returns, but significant improvement in profitability and insignificant positive effect on fundamental value. However, using discounted valuation models in assessing acquirers' performance has its drawbacks: how to correctly determine the discount factor, taking into consideration the changes in the operations and business environment after mergers.

## Appendix 2 Definitions of the variables

Variables	Definition	Source
Panel A: Labour data		
Employment	Employment is measured with the number of employees, which represents the annual average number of both full and part time employees of the company.	<i>Datastream</i> and Company Annual Reports
Wages	Wages represent annual staff costs divided by average annual number of employees. Staff costs is defined as the total wages paid to all employees and officers of the company, including all employee benefits such as health insurance and contributions to pension plans, divided by the number of employees.	<i>Datastream</i> and Company Annual Reports
Employee layoffs	Employee layoffs represent post-merger layoffs reported by a newspaper within 2 years period after takeovers. This variable is measured as the percentage reduction in the number of employees relative to the pro-forma combined number of employees of acquired and acquiring firms at the end of $t-1$ .	<i>Nexis</i> <sup>®</sup>
Layoff dummy	Layoff dummy is created on the basis of data collected from public press (newspapers). Layoff dummy regressor takes 1 if the acquirer laid off at least 1% of the combined workforce based on the newspapers and 0 otherwise.	<i>Nexis</i> <sup>®</sup>
Panel B: Transaction related data		
Hostility dummy	Dummy variable takes 1 if the initial offer was rejected and 0 otherwise.	<i>Acquisitions Monthly</i>
Relatedness dummy	Relatedness dummy takes 1 if both target and acquiring firms are in the same industry and 0 otherwise. Industry relatedness of acquiring and acquired companies in accordance with the <i>Datastream</i> industry code.	<i>Datastream</i>
Payment dummy	Payment dummy takes 1 if payment is 100% cash and 0 if the payment is stock swap or mix of cash and stock.	<i>Acquisitions Monthly</i>
Premium	One month premium is defined as the difference between the purchase price and the price 30 days before takeover, divided by the price 30 days before takeover.	<i>Acquisitions Monthly</i>
Panel B: Performance-related data		
Return on Assets (ROA)	ROA is measured as the ratio of Earnings Before Interest, Taxes and Depreciation (EBITDA) for the year $t$ to the Total Assets (TA) at the beginning of year $t$ . EBITDA represent the earnings of a company before interest expense, income taxes and depreciation. It is calculated by taking the pretax income and adding back interest expense on debt and depreciation, depletion and amortization and subtracting interest capitalized.	Computed based on <i>Datastream</i> data
Acquirers' pre-takeover ROA	Acquiring firms industry adjusted EBITDA for the year $t$ divided by TA at the beginning of $t-1$ .	<i>Datastream</i>
Acquired firms' pre-takeover ROA	Acquired firms industry adjusted EBITDA for the year $t$ divided by TA at the beginning of $t-1$ .	<i>Datastream</i>
Output	Output is measured with annual sales value.	<i>Datastream</i>
Panel A: Share price variables		
Cumulative Abnormal Returns (CAR)	CAR is calculated based on the share price change 5 days before the announcement date and 5 days after the announcement date, using the daily Return Index. Return Index for each company is the growth in value of shares, assuming that dividends are re-invested.	Computed based on <i>Datastream</i> Return Index
Buy-And-Hold-Abnormal Returns (BHARs)	BHAR is the return on a buy-and-hold investment in the acquiring firms less the return on a buy-and-hold in an asset/portfolio with an appropriate expected return.	Computed based on <i>Datastream</i> Return Index

Panel E: Control variables		
Acquirer size	Acquirer size is the market value at the end of the fiscal year prior to acquisition completion year. Market value is defined as share price multiplied by the number of ordinary shares in issue.	<i>Datastream</i>
Relative size	Relative size is the transaction value (obtained from the <i>Acquisitions Monthly</i> ) divided by acquirers' size.	<i>Datastream</i>
Leverage	The ratio of Total Debt at the end of year $t$ to TA at the end of year $t$ .	<i>Datastream</i>
Board composition	Board composition is defined as the ratio of the number of non-executive directors to the total number of directors in the board.	<i>Hemmington-Scott Corporate Registers</i>
Board ownership	Board ownership indicates percentage of shares owned by all Board members, including CEO, executive and non-executive directors of the acquiring firms at the last accounting year-end prior to takeover.	<i>Hemmington-Scott Corporate Registers</i>
Industry average wage	Industry median wage per employee	Computed based on <i>Datastream</i>
Capital intensity	Capital intensity is computed as the ratio of net book value of fixed assets to the average annual number of employees.	Computed based on <i>Datastream</i>
Profit per Employee	Employee profitability is computed by dividing annual profits for the year $t$ by the number of average workers employed during this year. Profit is measured by EBITDA, defined as above.	Computed based on <i>Datastream</i>

### Appendix 3 Correlation table

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	
<u>1</u>	1																
<u>2</u>	-0.2983*	1															
<u>3</u>	0.3629*	0.0417	1														
<u>4</u>	-0.0835	0.0873	0.1377*	1													
<u>5</u>	0.0707	-0.0771	-0.0775	-0.0019	1												
<u>6</u>	-0.0653	-0.0176	0.0905	0.0215	0.0313	1											
<u>7</u>	0.0102	-0.0231	-0.0248	0.2185*	0.0914	0.0232	1										
<u>8</u>	-0.0319	0.1794*	-0.001	0.0967	0.0953	0.1166	-0.1026	1									
<u>9</u>	0.1403*	0.0352	-0.1119	-0.1326*	0.0141	-0.1053	0.054	-0.0717	1								
<u>10</u>	0.0146	0.0085	-0.0918	-0.0669	0.0498	-0.056	-0.005	0.0252	-0.0004	1							
<u>11</u>	0.7872*	0.0861	-0.3503*	0.0501	0.1187	-0.0505	-0.0014	0.2280*	0.1477*	0.0933	1						
<u>12</u>	0.0753	-0.0022	-0.0062	-0.0069	0.0188	0.103	0.5229*	-0.0575	0.0801	-0.0043	0.0523	1					
<u>13</u>	0.2049*	0.1852*	0.0036	0.0615	0.1062	0.0727	-0.0653	0.1018	0.057	-0.1969*	0.2330*	0.015	1				
<u>14</u>	-0.1247	0.0978	0.1996*	0.1056	-0.0583	-0.4343*	-0.1002	0.0174	0.0112	0.0835	-0.0859	-0.1440*	-0.0404	1			
<u>15</u>	-0.2157*	-0.1903*	0.2163*	0.069	0.1444*	-0.0264	-0.0582	0.0064	0.0439	-0.0225	-0.2642*	-0.0453	-0.0267	0.0669	1		
<u>16</u>	-0.0467	0.0151	-0.0456	0.064	0.0853	0.0028	0.0143	-0.0522	-0.0114	-0.0359	-0.0311	-0.051	-0.0163	0.0288	0.0015	1	
<u>17</u>	0.1212	-0.047	-0.2598*	-0.0201	0.0016	-0.0957	0.0059	0.0014	0.01	0.072	0.0952	-0.0433	-0.0978	0.1672*	-0.1414*	-0.1539	1

Notes: 1 – Employment change from t-1 to t+3; 2 – Wage change from t-1 to t+3; 3 – Layoff dummy; 4 – Hostility dummy; 5 – Relatedness dummy; 6 – Cash payment dummy; 7 – Premium; 8 – ROA change from t-1 to t+3; 9 – Acquired firm pre-takeover ROA; 10 – Acquiring firm pre-takeover ROA; 11 – Output change from t-1 to t+3; 12 – Acquired firm CARs; 13 – BHARs; 14 – Relative size; 15 – Leverage; 16 – Board composition; 17 – Board ownership;

\* – indicates that the correlation coefficient is significant at the 5% level or better.

#### **Appendix 4 Selection of industry, size and performance matched firms**

To apply ‘industry-, size- and performance-matched firm’ benchmark, for each target and buyer firm a matched firm has been selected, on the basis of the following procedure recommended by Loughran and Ritter (1997):

Using all *Datastream* firms, including the official lists of dead UK public firms from “DEADUK1” to “DEADUK7” and the list of currently operating firms “FBRIT”, contemporaneously “live” firms have been selected for every sample period year  $t$ , i.e. all firms included to the pool of potential matching firms should have operating performance indicators during the period from year  $t-3$  to year  $t+3$ .

ROA of all ‘contemporaneously’ live firms have been calculated for the end of year  $t-1$  as explained above. Next, the pool of the potential matched firms is filtered by industry to select all firms in the same industry, for which a matched firm is being selected (*industry filter*).

Then among these same industry firms those firms with the market value of between 25% and 200% of the market value of the firm, for which a matched firm is being selected, have been determined (*size filter*).

Next, among those potential matching firms, which come through industry filter and size filter, the firm with closest operating cash flow return has been selected.

One of the main logic behind using ‘control firm’ approach is that to compare the performance of acquiring firms with the performance of non-acquiring firms to understand takeover effect on operating performance. In this relation, in the selection process those firms that have not undertaken any acquisitions should be selected as matching firms. Therefore, in the final step of the matching firm selection procedure, the selected firm has been checked if it had not undertaken any significant acquisition during the period 5 years before and 3 years after the sample takeover completion date.

As the first step, the selected matched firm name is analysed to see whether the company was functioning with its current name during the investigation period (from  $t-5$  to  $t+3$ ). The reason is that *Datastream* usually gives companies current name and searching *The Financial Times* with this name may not give full information about this company’s history.

Then a dataset prepared based on the information of *UK Public takeovers* section of *the Acquisitions Monthly* have been used to search for major acquisitions of the selected matching firms. However, as this source does not report acquisitions of local private companies or foreign companies by UK public companies, *the Financial Times* have been screened for the full acquisition performance of the matching firms. In particular, in this process the using the following three main steps have been undertaken to investigate the acquisition performance of the firms being selected:

1. UK Public acquisitions section has been searched for the period 5 years before and 3 years after takeover completion date;
2. ‘Mergers and Acquisitions Publications’ section of the *Nexis*<sup>®</sup> have been searched using ‘Company name’ search criteria;
3. *The Financial Times* headlines were screened using the following search criteria: ‘Company name and Headline (merger or merged or acquire or acquired or takeover or buy or expand)’;

If these three search steps do not show any significant acquisition of the firm being selected then this firm has been selected as a matched firm<sup>100</sup>. If the firm acquired another UK public firm(s) (based on *the Acquisition Monthly*) and/or significant local private or foreign acquisitions (based on *the Financial Times* screening), then another firm with the next closest operating cash flow return was selected as a matching firm.

In addition to the above, following Conyon *et al.* (2002) the matched firms’ annual total assets growth rates have been analysed. If a matched firm’s total assets grew more than 100% in any one of the observation period (5 years before and 3 years after takeover) then this firm is replaced with another matching firm, which meets the above explained criteria.

As stated above all data for the merging firms are collected taking into consideration fiscal year-end dates of both acquired and acquiring firms. However, for the matched firms data has been collected for three consecutive years before and three consecutive years after takeover completion year (excluding the takeover completion year). Similarly, the size of the potential

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<sup>100</sup> In most cases the above three searches gives a clear picture – it is possible to select a ‘non-acquiring’ matched firm. But in case of large companies, it is difficult to find a matched firm that had not undertaken any acquisition during consecutive 8 years. All large companies do some type of acquisition (public, private or foreign firm) during such as long time period. Therefore some small acquisitions of large companies have been ignored, as the transaction values of these acquisitions were very small in comparison to the contemporaneous market value of matching firms.

matching firms is measured at the end of the calendar year immediately prior to takeover completion year. As Zao (2002) investigates the effect of using calendar year-end dates instead of fiscal year-end dates in downloading data for the sample of UK takeovers and concludes that this does not alter the empirical analysis results.

A limitation of the literature in the area is that previous studies either do not take into consideration the acquisition performance of the matching firms or the authors do not clearly describe the non-acquiring firm selection procedure. Some previous researchers who investigate takeovers long-run operating performance do not clarify whether they take into consideration the acquisition performance of the matching firms in the selection process, although they clearly state that they use industry, size and pre-takeover performance criteria in this process. For example, both Ghosh, (2001) and Powel and Stark (2005) do not clarify whether they select only non-merging firms as matching firms or whether they do not take into account this criterion. Ghosh (2001) points that the main objective of the selection of matching firms based on industry, size and performance is to control for the superior pre-takeover performance of acquirers. If cash flow ratios for acquiring firms are unusually high during the pre-takeover performance, then the similar pre-takeover ratios and change rates in these ratios of the matched firms should be the same over time. So, according to Ghosh (2001) the main objective of using matched firm approach is to control for the superior pre-takeover performance, not to control for the acquisition performance of the matched firms. In contrast, Conn *et al.* (2005) and Cosh *et al.* (2006) select those firms in the same industry, similar size and performance that have not acquired within 5 years before and 5 years after takeovers.

As both post-takeover accounting performance and more importantly abnormal stock performance is assessed relative to matching firms' performance, these firms should be non-acquirers: i.e. matching firms should not have undertaken any significant mergers and acquisitions before and after the takeover completion year. As we do not have a full list of acquisitions (including public, private and foreign firm acquisitions) by UK public firms, the only currently available option is to screen *the Financial Times* for the acquisition performance of the firms being selected.

## Appendix 5 Collection of data on post-merger employee layoffs

Previous studies use two methods to collect data on employee redundancies. The first method is to collect unofficial data on employment layoffs through screening major newspapers. The second method is to collect official data from Regulatory News Services of the London Stock Exchange (LSE). In accordance with the transparency rules all companies need to inform LSE about any major corporate events that may cause change in share prices. Within the framework of this transparency rule, the listed firms need to issue an official announcement about the planned downsizing and employee layoffs. The data collected through the second method is more accurate and informative, as it is from official sources. However, not all companies make official layoff announcements and, therefore, this method provides less data (fewer number of announcements) than the first method, as not all companies make official announcements about their redundancies.

Both US and UK studies use unofficial data on layoff announcements, collected through newspapers. In the UK, screening major newspapers through *Nexis*<sup>®</sup> database Hillier *et al.* (2007) collect information about 322 layoffs occurred during 1990-2000. The authors report that managers most frequently report reorganisation as a reason of layoffs (42%), while cost cutting was mentioned in 13% cases and mergers and acquisitions were mentioned in only 4% cases as the main reason of layoffs. Krishnan *et al.* (2002) use workforce reductions undertaken during 1 year period after takeover completion date.

In this thesis data on post-takeover employee change in the acquiring firms have been collected from two sources. First, year-to-year change in the employment variables (numbers of workers and their salaries) in the acquiring firms were obtained from *Datastream* and *Annual Company accounts*<sup>101</sup>. Merger related year-to-year change in the combined workforce has been calculated by comparing the pre-takeover pro-forma combined workforce of the acquiring and acquired firms at the end of year  $t-1$  to the number of employees of the acquiring firms during post-takeover years.

Second, data on post-takeover employee layoffs in the acquired firms have been gathered through screening national and regional newspapers using *Nexis*<sup>®</sup> database. To be classified as an acquirer with significant post-takeover employee layoffs, the acquirer should had laid off at

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<sup>101</sup> As *Datastream* provides employment information starting from 1993, missing data on these variables for the years 1990-1993 has been collected from company annual reports, obtained from *Nexis*<sup>®</sup> database.

least 1 % of the combined workforce within 2 years period after takeover completion month. In the literature different papers choose different cut-off points to determine significance of employee layoffs. For example, Hillier *et al.* (2007) state that to be classified as a laying off firm, “the size of the layoff must account for at least 0.1% of the firm’s total employees at the end of the financial year preceding the layoff announcement”. In contrast, Ofek (1993) uses 10% cut-off point to classify firms as firms making significant layoffs.

*The Financial Times, Times & Sunday Times, Guardian, Daily Mail, Independent, Lloyd's List, Observer, Evening Standard* and other sources have been screened using the following search term:

“acquired or bid or buy or merger or takeover and layoff or redundancy or job loss or job cut or dismissal or axe or chop or sack or shed or and (target company name) and/or (acquiring company name)”

As several newspapers concurrently report major post-merger layoffs, it can be confirmed that the collected information consistent across newspapers and, therefore, it is possible to determine the exact number of job losses. However, there are uncertainties in this process: sometimes newspapers report redundancies as part of post-merger annual or semi-annual performance analysis, without giving the exact dates of the layoffs or sometimes newspapers report that acquirers incur ‘redundancy costs’ after mergers, without giving the exact number of workers laid off. At the same time, large companies undertake layoffs step by step.

As a result of screening national and regional newspapers, it was possible to find information about layoffs occurred in 101 acquiring firms, which consists 43% of sample firms. As several newspapers concurrently report major post-merger layoffs, the data on employee layoffs gathered from the newspapers can be considered as reliable data for this research purposes. However, in some cases it is difficult to determine the exact date of the layoffs, as sometimes newspapers report redundancies as part of the post-merger annual or semi-annual performance analysis, without giving the exact dates of the layoffs. In addition to the newspapers, occasionally some companies provide employee layoff announcements through Regulatory News Services (RNS) of the London Stock Exchange. However, through searching RNS reports, we were able to find only a few announcements given by the sample firms.

## Appendix 6 Collection of data on daily stock price returns

We use daily stock price return data for short-term abnormal returns and monthly stock price return data for long-term abnormal returns calculation. To estimate short-run abnormal gains, daily returns are calculated using stock Return Index (RI) data. For this purpose, for both targets and bidders 300 daily stock Return Indexes (RI) for both target and buyer firms have been downloaded around the takeover announcement date: 294 days before the announcement date and 5 days after the announcement date. Similarly, 300 days FTSE All-Share Index have been downloaded for each takeover's announcement dates. Consistent with the previous research daily stock returns from -300 days to -60 days have been used to estimate market model parameters and to calculate variance for abnormal returns.

The stock price daily returns for each target and buyer are calculated as follows:

$$R_{it} = \frac{P_{it} - P_{it-1} + D_{it}}{P_{it-1}}, \quad (\text{A-1})$$

where  $R_{it}$  is daily stock price return for stock  $i$  on day  $t$ ,  $P_{it}$  is price of stock  $i$  on day  $t$ ,  $P_{it-1}$  is price of stock  $i$  on day  $t-1$ ,  $D_{it}$  is dividend payment for stock  $i$  associated with day  $t$ .

The above formula can be re-written as follows:

$$R_{it} = \frac{P_{it} + D_{it}}{P_{it-1}} - \frac{P_{it-1}}{P_{it-1}} = \frac{P_{it} + D_{it}}{P_{it-1}} - 1, \quad (\text{A-2})$$

Datastream defines a stock Return Index as follows:

$$RI_{it} = RI_{it-1} * \frac{P_{it} + D_{it}}{P_{it-1}}, \quad (\text{A-3})$$

where  $RI_{it}$  is Return Index for a stock  $i$  at the date  $t$ .

Based on this definition of a stock Return Index, we can substitute  $\frac{P_{it} + D_{it}}{P_{it-1}}$  with  $\frac{RI_{it}}{RI_{it-1}}$ , for

which the required data to calculate a stock's price return is available. So, daily stock returns for each sample firm are determined as follows:

$$R_{it} = \frac{RI_{it}}{RI_{it-1}} - 1 = \frac{RI_{it} - RI_{it-1}}{RI_{it-1}}, \quad (\text{A-4})$$

where  $R_{it}$  is daily stock return for stock  $i$  on day  $t$ ,  $RI_{it}$  is Return Index for a stock  $i$  at the date  $t$ .

## Appendix 7 Calendar Time Abnormal Returns

To calculate 36 (24, 12) months CTARs, in each calendar month we form a portfolio of all sampled acquiring firms, which acquired another public firm during the last 36 (24, 12) months. Then we calculate the equally-weighted average return for that portfolio for each of 36 (24, 12) calendar months by dividing the total return for the portfolio to the number of acquirers included in the portfolio. Each month we rebalance the portfolio by including new acquiring firms and dropping the acquiring firms which undertook an acquisition more than 36 months ago. In total we form 166 calendar monthly portfolios for acquiring firms.

**Table 9.1 Construction of the calendar time portfolios**

Period	Number of Portfolios	Mean number of stocks in a portfolio	Minimum number of stock in a portfolio	Maximum number of stocks in a portfolio
12 months	142	20	2	45
24 months	154	38	2	75
36 months	166	52	2	100

In a similar way we also form portfolios of corresponding matching firms for each calendar month and calculate equally-weighted average return from holding these portfolios. Mean monthly calendar time abnormal returns are calculated as follows. First, we compute the difference between the return on every acquiring firm portfolio and the return on corresponding portfolio of matching firms for each calendar month:

$$CTAR_t = R_t^{ap} - R_t^{mat}, \quad (\text{A-5})$$

where, returns on acquiring and matching firms' portfolios are computed as follows:

$$R_t^{ap} = \sum_{i=1}^n R_i, \quad (\text{A-6})$$

where,  $R_t^{ap}$  is the return on acquiring firms portfolio on month  $t$ ,  $R_i$  is the stocks included in the  $t$  month calendar portfolio.

$$R_t^{mat} = \sum_{i=1}^n R_i, \quad (\text{A-7})$$

where,  $R_t^{mat}$  is the return on matching firms portfolio on month  $t$ ,  $R_i$  is the stocks included to the  $t$  month calendar portfolio.

Then mean CTAR ( $\overline{CTAR}$ ) is the time series average of monthly abnormal returns, i.e. the sum of all monthly abnormal returns divided by the number of calendar months (portfolios).

Following the conclusions of Lyon *et al.* (1999), who recommend using time series  $t$ -statistics to test the significance of mean monthly abnormal returns, we also calculate abnormal returns based on a calendar time portfolio approach. These authors show that a time series  $t$ -statistic is a well-specified test statistic in random samples, which can be determined as follows:

$$t(\overline{CTAR}) = \frac{\overline{CTAR}}{\sigma(CTAR_t) / \sqrt{T}}, \quad (\text{A-8})$$

where  $\overline{CTAR}$  is the mean monthly calendar time abnormal returns and  $T$  is the number of calendar months.

Table 9.2 reports shareholder wealth effect of takeovers, measured using the CTAR method. Consistent with the BHAR method, this method also shows underperformance of acquiring firms, although the magnitude of the underperformance in this method is smaller than the size of the underperformance, reported using buy-and-hold approach.

CTAR method indicates that on average acquirers earn -0.47% negative abnormal returns in every calendar month during 36 months, following takeover completion month. The magnitude of this result is very close to other researches results, which use different methods and different benchmarks. For example, using the CTAR method, Conn *et al.* (2005) report that acquirers exhibit average abnormal returns of -0.40% per month, which is significant at 5% significance level (t-statistics is -1.97). The difference in significance levels may be in the sample size: Conn *et al.* (2005) use 576 acquisitions occurred during 1984-1998.

**Table 9.2 Results based on Calendar Time Abnormal Returns approach**

	Event Windows					
	12 months		24 months		36 months	
	Abnormal returns	t-stat	Abnormal returns	t-stat	Abnormal returns	t-stat
Mean CTAR	-0.77%	-2.37	-0.65%	-2.44	-0.47%	-1.90

At the same time, the 36 months post-takeover abnormal returns (0.47% per calendar month) are very similar to those reported by Conn *et al.* (2005) (0.41% per calendar month), who use size and B/M matched control firms approach. Cosh *et al.* (2006) use only industry and performance matched control firms and report similar results.

## **Appendix 8 Panel data based regression methods**

This appendix first discusses static panel data models, which enable researchers to control for firm-specific heterogeneity. Next, this appendix discusses dynamic panel data methods, which enable to control for both the effect of unobservable variables and heterogeneity arising as a result of including lagged dependent variables to the model. These discussions are based on Baltagi (2001), Wooldridge (2002), Verbeek (2008) and other below referenced materials.

### *Static panel data estimation methods*

There are three main reasons that explanatory variables may be correlated with the errors. First, the most common reason is that the error term may include unobservable variables. Such unobserved variables may affect to both dependent variable and explanatory variables. Examples of unobserved firm-specific heterogeneity in this research context could be such variables as firm *i* management performance, its overall workforce quality or unique customer relations. Such unobservable variables are usually time-invariant – thus allows for heterogeneity in the dependent variables across observations. For example, management quality unobserved variable is negatively correlated with other inputs in the above models and positively correlated with the output variable, since a high quality management will probably result in a more efficient use of inputs and achieve a higher level of output.

The second reason of the correlation of explanatory variables with error terms is the relationship between dependent variable and independent variable could be simultaneous: the output may explain the employment level, but at the same time employment levels may explain output. Another example is that, while takeovers may alter operating performance of

firms, their pre-takeover performance may also determine merger event: McGuckin and Nguyen (1995b) argue that acquired plants are usually better performing plants. The third reason is that there may be some measurement error in the used variables.

There are three main panel data estimation methods in the static context: Pooled OLS regression model, Random effects model and Fixed effects model. Selection of a particular method depends on the assumptions regarding the relations between unobservable firm specific heterogeneity and other explanatory variables.

To discuss these methods one by one, we start with the explaining the error term and assumptions on the relationship between explanatory variable(s) and the error term. The error term of the above equations consists of two components as follows:

$$u_{it} = \eta_i + v_{it} \tag{A-9}$$

$\eta_i$  - denotes the unobservable individual firm specific effect (heterogeneity), which is time invariant;  $v_{it}$  - denotes the remainder disturbance.

First, we can ignore the individual heterogeneity and estimate the model with the pooled OLS estimator that minimises the sum of squared residuals. Under this estimation method the assumption is that there is neither significant firm nor time effect:  $\eta_i$  is the same as  $v_{it}$ . Two main fundamental assumptions of OLS are that (1) the average of the error term in the population to be zero and (2) the explanatory variables are uncorrelated with the error term (in this case explanatory variables are called exogenous variables):

$$E(u) = 0 \tag{A-10}$$

$$E(u | x) = 0 \tag{A-11}$$

These assumptions imply that the population expected value of the error term does not depend on the value of the explanatory variables. However, often the second assumption is violated and the explanatory variables are correlated with the error term, especially when the error term includes unobserved variables (in this case explanatory variables are called endogenous variables). Thus, pooled OLS is subject to the same omitted variable bias, as OLS in the single cross-section.

In the cross-sectional data context when the model includes endogenous variables, *Instrumental Variables* (IV) estimator can be used, which replaces the endogenous variable with another variable that are uncorrelated with the error term but are correlated with the explanatory variable to be replaced. Thus, if we find an instrumental variable, for example  $z$ , it should explain part of the variation in the endogenous variable to be replaced (i.e. it should be correlated with that variable) and should not be correlated with the error term:

$$E(u | z) = 0 \tag{A-12}$$

$$E(xz) \neq 0 \tag{A-13}$$

In the cross-sectional analysis context this instrumental variable could be used to obtain unbiased and consistent estimates using *Two Stage Least Squares* (2SLS) estimation method. However, in the panel data context the omitted variable problem can be solved with other estimation methods discussed below. Availability of panel data allows controlling for individual firm specific unobservable variables that are constant over time.

The main underlying assumption of the second panel data estimation method - Random effects model – is that it considers unobservable individual firms specific heterogeneity variables as random variable and includes it to the error term. Thus, under this assumption individual heterogeneity is not problematic and it could be dealt as usual error term, which is assumed to be random with the expected value of zero and independent of other explanatory variables. This method is valid estimation method under the assumption that unobservable variables are uncorrelated with other explanatory variables (i.e. if all observable variables are exogenous):

$$E(\eta_i) = 0 \tag{A-14}$$

$$E(\eta_i | x_{it}) = 0 \tag{A-15}$$

If the above assumptions are valid then simple OLS on the pooled data produce unbiased results, but not efficient estimates as the estimated standard errors are wrong, as it does not take into account the correlation among residuals of the same cross-sectional unit. Random effects estimator – *Generalised Least Square* (GLS) estimator takes this correlation into account and produce unbiased and efficient estimates. GLS requires that all explanatory

variables to be uncorrelated with the individual effects and uses quasi-demeaned transformation, estimated by OLS.

Sometimes unobserved individual specific effect can not be assumed to be random, but should be assumed as individual specific fixed effect, which correlated with other explanatory variables:

$$E(\eta_i | x_{it}) \neq 0 \tag{A-16}$$

In this case both pooled OLS and Random Effects (GLS) estimator produce biased results. In the levels equation OLS estimator is inconsistent, as such one of the main assumptions of this estimator is violated: explanatory variables should not be correlated with the error term.

If we have to assume unobservable variables as individual specific fixed effect then we need to use the third panel data estimation method - Fixed Effects models, which has three different versions: Least Square Dummy variable, Within group and First differencing. The assumption under this model is that the unobservable firm-specific effects are correlated with other observable variables; however they are constant over time. In other words, individual firm specific effects -  $\eta_i$  are assumed to be fixed parameters to be estimated. First, these parameters can be estimated by including time constant intercept for each observation by *Least Square Dummy Variable Estimation* method. This method addresses the individual firm specific heterogeneity effect by including an individual specific intercept in the model. The Second, *Within group* method uses the time series of panel data and provides internal instrument for the elimination of endogenous variables by taking the deviations of all variables included to the model from the means. Specifically, the method takes mean values of all variables for T-1 period and deducts these mean values from the values of variables at t. As the mean value of unobservable variable is constant over-time, the Within group method eliminates such variables from the model. The transformations of original variables (in the form of deviations from their means) are uncorrelated with firm specific unobservable variable, even if original variables are correlated with them. In this way this estimator eliminates the unobservable variable from the model as mean of this constant is equal to itself. Therefore, this estimator

only estimates the effects of variables that change over time, leaving the unobservable constant out of the model and it can be estimated by OLS<sup>102</sup>.

Third method *First differencing* estimator also eliminates unobservable variables that are assumed to be constant over time. By removing the unobservable variable this estimator mitigates the correlation between differenced explanatory variables and disturbance terms. Specifically, the method takes the first differences of all variables included to the model. However, while this estimator eliminates the individual fixed effects, it creates another problem of correlation, namely correlation between first differenced explanatory variables and first differenced error terms. These differences may be correlated because of endogeneity (the explanatory variable is correlated with the error terms) or the explanatory variables may be determined based on lagged errors, meaning that there is some feedback from the past error term to the explanatory variables.

In the Within group model the dependence of  $\Delta u_{it}$  on  $u_{it-1}$  implies that OLS estimator is inconsistent. However, if we have instrumental variables that are correlated with the dependent variables and uncorrelated with the error term, then using these instrumental variables instead of endogenous variables with the 2SLS estimator produces consistent estimates.

Thus, in selecting an estimation method in the panel data context, assumptions about the properties of initial conditions – whether it is fixed effects or random effects play an important role. Baltagi (2001) suggests that random effects estimation method is more appropriate if the sample includes  $N$  individuals randomly selected from a large population (such as household panel data), whereas fixed effects estimation method is an appropriate specification if the sample includes a specific set of firms or countries. In the former case inference is based on the population from which the sample was randomly drawn, in the later case the inference is based on the behaviour of the selected firms or countries. In some cases unobserved variables are firm specific and they can not be viewed as random variables, rather they should be viewed as fixed, meaning that they are correlated with other explanatory variables. Especially, in the dynamic panel data context it is more appropriate to assume that unobservable variables

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<sup>102</sup> This Fixed Effects estimator is also called as the Within group estimator and the estimates are exactly identical to the Least Square Dummy Variable estimates.

as fixed, as the set of explanatory variables include lagged dependent variable, which is correlated with unobservable by the model construction<sup>103</sup>.

#### *Dynamic panel data estimation methods*

In the dynamic panel data context the relationship between observable variables and unobserved firm specific heterogeneity should be considered as fixed effect rather than random effect. As individual heterogeneity is assumed to be constant over time and also time period of the study is short, it is appropriate to assume that firm specific heterogeneity is fixed effect. As discussed in Baltagi (2001) there are two sources of persistence over time in dynamic panel data models. First, the model includes the lagged dependent variable, which is correlated with the error term. Secondly, as above discussed, the explanatory variables may be correlated with the error term due to individual heterogeneity.

In many economic situations, current level of variables depends on the previous period level. By including lagged dependent variable, we could control for whole past information of the explanatory variables (Greene, 2008). However, even after first differencing the lagged dependent variable will be correlated with the error term. In this way we could estimate the effect of mergers on labour, firm productivity and wages, controlling for the effect of other variables. In the dynamic panel data context individual effects are treated as being stochastic, which means that they are necessarily correlated with the lagged dependent variables. As the dependent variable is a function of the individual firm specific effects, the lagged dependent variable used as the explanatory variable is also a function of the error term. In the dynamic panel data context the relationship between explanatory variables and disturbances could be in three different types: (1) Explanatory variables could be *endogenous*, if they are correlated with contemporaneous disturbances and earlier shocks, but they are not correlated with  $u_{it+1}$  and subsequent shocks; (2) Explanatory variables could be *pre-determined*, if they are uncorrelated with the disturbances, but they may still be correlated with  $u_{it-1}$  and earlier

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<sup>103</sup> Decision on the use of random effects and fixed effects estimation method should be based on Hausman test, which tests the null hypothesis of that random effects estimator would be consistent and efficient estimator against the alternative hypothesis that random effects estimator would be inconsistent. If unobserved heterogeneity is not correlated with the explanatory variables, then it can be considered as random variable, in which case both random effects and fixed effects estimators are consistent, but the random effects estimator is efficient. If the unobserved heterogeneity is correlated with the regressors, then only the fixed effects estimator is consistent. If we reject that  $h$  (Hausman) statistic comes from chi-square distribution based on low p-value, we select the fixed effects estimator as the preferred estimator.

shocks; (3) Explanatory variables could be *strictly exogenous*, if they are uncorrelated with all past, present and future disturbance terms.

To illustrate this correlation, we consider the following simple model which includes only one explanatory variable in addition to the lagged dependent variable. If we take the first difference of the above model, we have the following:

$$l_{it} - l_{it-1} = \alpha(l_{it-1} - l_{it-2}) + \beta(x_{it} - x_{it-1}) + (v_{it} - v_{it-1}) \quad (\text{A-17})$$

We use  $x_{it}$  as an example of explanatory variable<sup>104</sup>. In the dynamic panel data context, OLS estimates are biased because right hand side regressors are correlated with the error term. The Random effects GLS estimator is also biased because quasi-demeaned lagged dependent variable will be correlated with the error term. Next, the Within group (the Fixed effects estimator) eliminates the individual fixed effects, but demeaned lagged dependent variable will be correlated with the demeaned error terms.

Finally, the First differencing also eliminates the individual fixed effects and produces unbiased and consistent estimates when the model includes strictly exogenous variables. However, when the model includes predetermined explanatory variables (i.e. the variables that are correlated with one period lagged and earlier error terms), the First differencing creates another problem: differenced predetermined variables become endogenous, as they correlate with the differenced errors.

In the dynamic panel data context lagged dependent variable  $l_{it-1}$  is correlated with the individual firm specific effects and is not strictly exogenous. In this context, the only assumption is that dependent variable is uncorrelated with the subsequent disturbances. In this case the two lagged level dependent variable will be uncorrelated with  $\Delta v_{it}$ , which means that this variable can be used as the instrumental variable. As  $l_{it-1}$  is correlated with  $v_{it-1}$ , explanatory variable is correlated with the error term in this first differenced model. Therefore, in a model that includes first lag of the dependent variable, Anderson and Hsiao (1982)

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<sup>104</sup> In fact there may be many explanatory variables in this model. These contemporary variables may be correlated with the unobservable variable. For example, management efficiency is one of the unobservable firm specific variables. Efficient management may be correlated with both employment levels and sales volume: more efficient managers may use lower levels of labour (negative correlation) and achieve higher levels of sales (positive correlation).

suggest to instrument the endogenous differenced explanatory variable  $\Delta l_{i,t-1} = (l_{i,t-1} - l_{i,t-2})$  with the lagged difference  $\Delta l_{i,t-2} = (l_{i,t-2} - l_{i,t-3})$  or simply with the lagged level  $l_{i,t-2}$ . As long as the error terms are not serially correlated over time, these instrumental variables (one period earlier lagged difference and lagged values of the explanatory variables) will not be correlated with the differenced errors  $\Delta v_{i,t-1} = (v_{i,t-1} - v_{i,t-2})$  and therefore they can be used as instruments for the endogenous differences. In other words the correlation between these lagged levels and differenced error terms are assumed to be zero:

$$E(l_{i,t-2}(v_{it} - v_{i,t-1})) = 0 \tag{A-18}$$

The Anderson and Hsiao (1982) 2SLS estimators that use the lagged difference or simple lagged level produces both consistent and efficient estimates if  $T = 3$ . Arellano and Bond (1991) suggest that if  $T > 3$ , then this estimator provides consistent, but not necessarily efficient estimates, as it does not use all moment conditions. Efficiency of this estimator can be improved when data is available for more than three periods, as further valid instruments become available in this case. Arellano and Bond (1991) recommend to use further lagged levels (such as  $l_{i,t-3}$ ,  $l_{i,t-4}$ ,  $l_{i,t-5}$ ) as instrumental variables, as this estimator has smaller variance than using lagged differences as instruments. In sum, in the autoregressive distributed lag models the lagged dependent variable (used as an explanatory variable) is predetermined then one and more lags can be used as instruments. If the lagged dependent variable is endogenous, then two step and higher level lags can be used as instruments.

As there are some efficiency gains from using more than one instrumental variable, Arellano and Bond (1991) argue that using additional instrumental variables in the context of generalised method of moments (GMM) estimator that optimally exploits all available information. Specifically, they suggested that the first differenced lags could be weak instruments and proposed to use all available lagged levels as instrumental variables for the differenced variables. If data is available for  $T$  period then a set of available instrumental variables becomes  $(y_{i1}, y_{i2}, \dots, y_{iT-2})$ . GMM estimator that only uses lagged levels as instrumental variable is called as “difference GMM”.

The second condition is that instrumental variable should explain some part of variation in the endogenous variable. Arellano and Bover (1995) argue that lagged levels could be poor

instruments for first differences. In particular, when the correlation between first differences and lagged levels to be used as instrumental variables are weak, instruments become less informative and the estimates may be biased. Arellano and Bover (1995) and Blundell and Bond (1998) suggest to use the *differenced lags* along with the *lagged levels* as instruments for the equations in first differences, if they satisfy the following condition:

$$E(\eta_i \Delta l_{i2}) = 0 \tag{A-19}$$

Arellano and Bover (1995) and Blundell and Bond (1998) show that both *lagged differences* and *lagged levels* could be used as instrumental variables, that in combination increases efficiency. This estimator is called as “SYSTEM GMM” as it combines the lagged level instruments with the lagged difference level instruments.

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