Financialisation and the Productive Structure

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Submitted in accordance with the requirements for the degree of Doctor of Philosophy

The University of Leeds
Leeds University Business School
Department of Economics

February 2024

The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

The thesis was proof-read before submission of the final e-Thesis by a third-party proof-reader. The PGR confirms that the third-party proof-reading undertaken was in accordance with the Postgraduate Researcher Proof-reading Policy.

Acknowledgements

This research was based on the intellectual, financial and emotional support of others. First, I want to mention my eternal gratitude for having a fantastic supervisory team. All of you contributed in different ways to the development of this thesis. Nina, with your mentorship, endless comments, critiques and revisions, you elevated my work and ideas and helped me deliver them with greater clarity. All your support during this process has been crucial. To Gary, I have immense appreciation for your intellectual guidance, philosophical discussions, and provocative questions that made me confident in my research ideas and intuition. To Sandra, thank you for all the econometric discussions and lovely 'cafecitos' that combined work and encouraging life conversations. All of you made me feel at home while in Leeds.

Second, I am very grateful for the opportunity that LUBS gave me by giving me one of the divisional scholarships. This endeavour could not be possible without this financial support. I am also thankful for all the comments I have received in the early drafts of this thesis during the Brown Bag seminar and PhD economics conference at the LUBS Economics Department—a special thanks to Effie Kesidou, Peter Phelps, Esra Ugurlu and Karsten Kohler. In addition, thanks to all who made suggestions in academic conferences, and a special thanks to Gabriel Porcile for his in-depth comments during the Montevideo Structural workshop.

Special thanks to my dear friends and colleagues at Leeds, Alex, Bianca, Nicole, Lesslie, Daniel, Alma, Chris, Karina and Andrea. You made the time here wonderful, and your support meant a lot; it has been a pleasure to share so many good moments (and the tough ones). Lastly, words cannot express how grateful I am for the support of my Uruguayan close and extended family: my parents and siblings, my uncles, aunts, and cousins (a special mention to Rossana; you will always be with me in my heart) for their understanding, encouragement and love during the journey. To my friends, for their unwavering support, which made me feel their presence and encouragement despite the distance (Mariana, Flori, Lucy, Dani, Vito, Kari, Pao, JJ, Nico, Melgar, Juan, Vicky, Ceci, Sole and Tati). Your friendship is a treasure to me.

Abstract

This thesis explores theoretically and empirically the relationship between financialisation and structural change. Particularly, it analyses to what extent does financialisation shape the ability of developing countries to move to higher value-added activities. Financialisation has been linked to modest economic growth and investment since the 1980s. Nevertheless, most research focuses on the aggregate levels without zooming into countries' productive structures. Also, those who pointed to premature deindustrialisation paid little attention to how financialisation shaped these processes. This thesis fills these gaps by combining financialisation and Structuralist literature, with a particular focus on Latin America. It provides a theoretical framework to enrich the understanding of financialisation and structural transformation. Three empirical chapters further investigate the financialisation-productive structure nexus across time using panel data techniques and digging into regional patterns and centre-periphery dynamics.

The first analyses the relation between financialisation (measured by different indicators) and the economic complexity index, displaying that private credit has a detrimental effect on economic complexity across the board but with an inverted U-shape pattern in Latin America. Besides, in Latin America, the Middle East and North Africa, the stock of foreign financial assets and liabilities negatively impacts complexity.

The second delves deeper into one of the components of financialisation, the expansion of private credit, and the shift in importance from firm to household credit. It investigates the differential impacts of both types of credit on manufacturing activities. Results confirm that whilst firm credit positively affects the manufacturing sector in developed countries and Latin America, household credit has a negative effect across the board.

The third discusses premature deindustrialisation, if and to what extent it is associated with financialisation by analysing the evolution of employment and value-added

shares. It shows that deindustrialisation trends are not widespread and that it is accompanied by premature financialisation only in Latin America.

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List of abbreviations

BRICS Brazil, Russian Federation, India, China and South Africa
CAF Development Bank of Latin America and the Caribbean
CEO Chief Executive Officer
ECLAC Economic Commission for Latin America and the Caribbean-UN
EME Emerging Economy
ETD Economic Transformation Database
EU European Union
FDI Foreign Direct Investment
FIRE Finance, Insurance and Real Estate
GDP Gross Domestic Product
GGDC Groningen Growth and Development Center
GPN Global Production Network
GVC Global Value Chain
ILO International Labour Organization/Office
IMF International Monetary Fund
ISI Import-Substituting Industrialisation
IT Information Technology
Mercosur Common Market of the Southern Cone
MNC Multinational Corporation
MVA Manufacturing Value Added
NFC Non-Financial Corporation
NGOs Non-Governmental Organizations
OECD Organisation for Economic Co-operation and Development
QE Quantitative Easing (monetary policy)
R&D Research and Development
SDG Sustainable Development Goal
TNC Transnational Corporation
UK United Kingdom
UN United Nations
UN.ECA United Nations. Economic Commission for Africa
UNCTAD United Nations Conference on Trade and Development

UNIDO United Nations Industrial Development Organization
UNU-WIDER United Nations University World Institute for Development Economics Research
US United States (of America)
USD United States dollar
WB World Bank
WTO World Trade Organization

Chapter 1 : Introduction and overview of the thesis

1.1 Introduction

The current stage of contemporary capitalism has been described as financialised, as the influence of finance on the economy has grown substantially in size and substance. Financialisation, as a concept, tries to capture several of the changes experienced in the global economy, such as the growing number of players in financial markets (including Non-Financial Corporations and families), the shift of financial systems towards a more market-based structure, and the liberalisation of capital accounts together with the interconnectedness between economies and actors. This is on top of the fact that non-financial actors are increasingly generating profits derived from financial activities (Crotty, 2003; Bonizzi, 2013; Karwowski and Stockhammer, 2017). Furthermore, the literature suggests that financialisation is generally associated with macroeconomic instability along with a decrease in the rate of capital accumulation and aggregate demand, accompanied by higher levels of income inequality (Stockhammer, 2004; Stockhammer, 2017; Tori and Onaran, 2018). Some scholars indicate that in the last decades, the financial structure significantly changed the nature of economic relations, where a disconnection is evident between finance and the real economy (Epstein, 2005; Mader et al., 2020). In this new setting, the question of whether finance acts as an enabler of economic and social development, or indeed hinders such developments, has been an important source of discussion (e.g. Lazonick and Mazzucato, 2013; Botta et al., 2016; Lazonick, 2017). Several authors theorise that the financial sector could become so large that it could harm the economy (Arcand et al., 2012; Cecchetti and Kharroubi, 2012). Part of the discussion concerns whether the role of credit in the economy (Levine, 2005) potentiates real investment or more instability, brought by the excessive lending (Minsky, 1978; Kindleberger, 1978). In this context, Turner (2016) argues that credit to households increased massively, and that bank lending is not oriented to productive investment or capital formation.

Whereas the existing literature of financialisation largely focuses on its effects on GDP or investment in the aggregate level, the main topic of this thesis is to investigate the effects of financialisation on countries' productive structures, and how this is linked to deindustrialisation, in the context of developing countries[1] in particular. The productive structure refers to a country's output composition regarding the material goods and services produced.

The emphasis is mainly on the interrelations between financialisation and backwards productive structures. These are not advanced in terms of technological content and value-added and belong to countries that did not fully industrialise and, at the same time, opened prematurely to capital (sometimes forced to) with a substantial presence of foreign financial institutions. Following Post-Keynesian scholars, the place of these countries in the global financial system is related to the currency hierarchies, as their currencies are perceived as risky in opposition to the US dollar. What is more, central countries are responsible for setting most of the rules of the international financial system (de Paula et al., 2017; Fritz et al., 2018). This thesis adheres to those that portray financialisation as a global phenomenon in which emerging economies (EMEs) adopt a subordinated position (Becker et al., 2010; Bonizzi et al., 2020; Bonizzi et al., 2022). However, this thesis is particularly interested in the implications this subordination has for the productive structure of the economy, particularly in relation to the manufacturing sector and the technological complexity of productive activities.

Structuralist writers have previously established the connections between rent-seeking behaviour, the type of productive structure and the potential for structural transformation (Prebisch, 1976; Fajnzylber, 1990). This thesis includes the centre-periphery dichotomy that is related to distinctive productive structures in both poles, and that business and financial cycles originate in the centres and translate into the periphery. Diversifying the productive structure, in particular, through manufacturing activities, provides advantages for economies in terms of economic growth and providing better quality jobs (Cimoli et al., 2005; ECLAC, 2007). In the same vein, new

1 In this thesis, emerging, developing, and peripheral are used as synonyms. It is the same as advanced, rich or developed nations.

empirical evidence argues that it is crucial to increase the sophistication of a nation's productive structure, and that this is even more important than looking at a particular economic sector (Hausmann et al., 2007; Hidalgo and Hausmann, 2009; Felipe et al., 2012; Ourens, 2013; Zhu and Li, 2017).

The thesis has an emphasis on Latin America[2] and investigates how this new financialised stage of capitalism affects a region already characterised by an overall low productivity, which presents a widening gap with the rich world. Compared to the US, labour productivity in the region fell from around 40% in the early 1980s to about 27% in 2023 (OECD et al., 2023). In Latin American economies, there are notable differences between and within economic sectors, linked to heterogeneity in structuralist terms. Export-oriented firms coexist with informal and less dynamic firms. Additionally, the region displays low involvement in knowledge-intensive industries and patent production (Ocampo, 2015). The restricted ability of the productive structure to create formal and well-paid jobs lies behind the high-income inequality and poverty levels (ECLAC, 2022). Until now, informality in the labour market is substantial; in 2022 it was around 48% (ECLAC and ILO, 2023) and connected with high poverty levels (29% of the population in 2022, OECD et al., 2023). The region has consistently struggled to keep up with wealthy nations and advanced Asian economies in terms of economic growth, and it has been characterised by massive instability and cyclicality in GDP growth (Bértola, 2015). The region suffers from a lack of investment; from 2014 to 2023, it had the lowest levels of investment in the world, around 20% of its GDP (OECD et al., 2023). Overall, its productive structure is based on not very sophisticated commodities, where activities with different productivity levels cohabit, resulting in adverse social consequences.

Concerning the nature of its financial integration, Latin America is the developing region that first opened its capital accounts and deregulated the financial system (Diaz-Alejandro, 1985), displaying the more open capital account (Chinn and Ito, 2008), resulting in frequent economic crises. Washington Consensus reforms highly

2 Throughout the thesis, Latin America referees to South America, Central America, the Caribbean, and Mexico.

influenced the region, allowing the penetration of foreign financial institutions early (Storm, 2015; Déniz and Marshall, 2018).

1.2 Thesis objectives, research questions and contributions

The thesis has been elaborated following one overall research objective: trying to disentangle the relationship between financialisation and the productive structure of EMEs, and whether it differs from the one in developed countries.

To achieve this objective, three narrower research questions are guiding this thesis:

RQ1 Does financialisation affect the technological sophistication of countries?
RQ2 Does the change in the credit structure, characterised by greater importance in household credit, affect manufacturing activities?
RQ3 To what extent is deindustrialisation in EMEs connected to financialisation?

This work contributes to the literature on financialisation and structuralism on a theoretical and empirical level. Theoretically, drawing on Latin American Structuralism, it elaborates a framework for analysing the different ways in which financialisation affects the productive structure on a macro, meso and microeconomic level. The key theoretical axes mobilized to construct this encounter are the existence of a centre and a periphery with unequal relations between the two regarding technological development, balance of payment constraints, and the existence of business and financial cycles and unequal power relations. In addition, the framework constructed takes elements from Post-Keynesian literature concerning finance, in particular regarding financial subordination, currency hierarchies, fundamental uncertainty and liquidity preferences. Furthermore, the theoretical framework proposed in this thesis argues that EMEs show a particular financialisation style rooted in their economic structural characteristics, bringing to the analysis, and therefore to the literature, a novel element. The framework complements previous research made by financialisation scholars. First, there is an emerging discussion linking financialisation with the productive dimension but mainly looking at the role

of Global Value Chains (GVCs) (Milberg, 2008; Milberg and Winkler, 2013; Bonizzi et al., 2020; Bonizzi et al., 2022); this thesis enriches this dialogue by looking at the productive structure at large. Second, it examines the potential effects of financialisation on different economic sectors, for instance, the financial sector — competing for resources with others, or how financialisation strategies could create profitable opportunities for producing commodities.

Apart from making its theoretical contribution to the literature, the thesis also provides some perspectives on financialisation and productive structure through three different empirical investigations of this nexus at the macroeconomic level. By addressing financialisation and structural change through different indicators across time and using panel data techniques, the thesis aims to offer a general understanding of this interlink and fill a gap in the current literature. Existing empirical research on the financialisation-productive structure nexus is not abundant and has focused on specific aspects of that nexus, like the effect of capital flows (FDI and non-FDI) on manufacturing activities (Frenkel and Ros, 2006; Botta, 2017; Botta et al., 2023).

The three empirical chapters focus on the comparison between the centre and the periphery and, when possible, throughout geographical areas within EMEs. In this way, it contributes to comparative studies. Even though the core focusses on Latin America, other geographical regions are also investigated, adding to the literature on the economic geography of financialisation.

In the first empirical chapter, financialisation is captured by a set of indicators, including its domestic and international dimensions (private credit and its square, the stock of market capitalization, stock of foreign assets and liabilities, which are non-FDI, as a share of GDP and Chinn and Ito indicator), and the type of productive structure is captured by its technological content using the Economic Complexity Indicator. This chapter also contributes to the empirical studies on economic complexity by being the first study that includes financialisation as a possible driver of structural change.

In the second empirical chapter, it questions how private credit, as a major distinctive characteristic of financialised economies, and particularly the rise in household credit,

interacts with structural change. This chapter provides a valuable contribution to the existing literature by investigating the relationship of credit types with manufacturing activities (share of manufacturing to GDP) for the first time.

The third chapter addresses the relationship between deindustrialisation and financialisation and to what extent both trends could be connected by including indicators of job and value-added in the manufacturing and financial sectors over time. The chapter contributes to the empirical literature on premature deindustrialisation and financialisation by placing both trends in the context of the changes occurring in the productive structures of EMEs. Methodologically, the investigations draw on fixed effects panel data estimations in Chapters 3 and 4, and Ordinary Least Squares (OLS) regressions with country-fixed effects in Chapter 5.

1.3 Thesis structure

This thesis is divided into six chapters. Following this introduction, Chapter 2 provides a theoretical framework to analyse financialisation, which considers that financialisation needs to be considered regarding the integration of countries into the world economy. This implies including the integration into the international financial and global productive systems, where EMEs take a subordinate form. Basing the explanation on the ideas of Latin American Structuralism, financialisation reinforces the position of peripheral countries. The effects are divided at the macro, meso and microeconomic levels to investigate how they affect the productive structure. Financialisation increases volatility in economies and reduces the room for active industrial policies. In addition, the shareholder value orientation influences real investment and R&D activities. As well as this, it transforms the productive structure by influencing the profitability of various economic sectors, which generates favourable incentives for the agriculture sector and redirects resources to the FIRE sector. Furthermore, financialisation also influences these countries by aggravating financial dependency and cementing the position of peripheral currencies. The chapter also suggests that financialisation in the periphery takes a specific form

according to its structural characteristics where the process is selective and functional. Selective, as it is focalised in some activities, products and actors. At the same time, it is functional to capitalists from rich countries', international and national financial actors, and commodity producers by maintaining the subordinated positions of EMEs while unaltering internal political balances.

Chapter 3 combines the literature on financialisation with economic complexity; and investigates how financialisation could threaten the upgrading of technological sophistication in EMEs, focussing on Latin America. Recent studies show that increasing economic complexity can help developing countries achieve economic growth in the long run. This chapter conducts an econometric study of financialisation as a potential driver of structural change using panel data from 80 countries from 1975 to 2015.

Chapter 4 focuses on the increase in private credit as a fundamental aspect of financialisation. However, it argues that the effects of private credit on the productive structure could be different when analysing if the credit is oriented to households or Non-Financial Corporations (NFCs). Household credit has grown in importance since the 1970s, and it has been documented that it negatively impacts economic stability and GDP growth. This chapter analyses the different channels in which household credit and firm credit could affect economic development. Empirically, it investigates the effects of both types of credit on manufacturing activities using a database from the early 1960s to 2021, including developed and EMEs, and introduces a regional component to the analysis.

Chapter 5 discusses deindustrialisation and how the phenomenon has been categorised as 'premature' in developing countries. Some authors point out that premature deindustrialisation came accompanied by premature financialisation, as some emerging countries transitioned to an economy more centred around the financial sector without fully developing the industrial sector. The literature has confirmed premature deindustrialisation in several studies for emerging countries; this chapter uses analouge methods to investigate financialisation, focussing on studies analysing worldwide deindustrialisation, namely the work of Kruse et al. (2022). By allowing comparability, it seeks to dialogue with the literature on

deindustrialisation by investigating whether deindustrialisation is linked to premature financialisation with a focus on EMEs and some emerging regions.

Chapter 6 summarises the thesis's conclusions and main findings, then examines how the finance/productive structure nexus could be addressed to improve financial stability and economic development by providing some policy recommendations. Finally, the chapter suggests further research avenues.

Chapter 2 : Financialisation and the productive structure: a two- way relationship

2.1 Introduction

While the implications of financialisation for emerging economies (EMEs) have been less extensively studied compared to advanced economies, an increasing body of research is dedicated to examining its effects and unique characteristics shaped by their subordinated integration into the global economy (Becker et al., 2010; Correa et al., 2012; Powell, 2013; Bonizzi, 2013; Karwowski and Stockhammer, 2017). This subordinated integration is present in the productive and financial dimensions. Regarding production, EMEs typically hold subordinate positions within Global Value Chains (GVCs), supplying cheap labour and raw materials (Bonizzi et al., 2020). In terms of finance, the type of financialisation in EMEs is heavily influenced by external actors (e.g. Becker et al., 2010; Powell, 2013; Kaltenbrunner and Painceira, 2015), where international financial institutions play decisive roles (Déniz and Marshall, 2018). In addition, international transactions in liquid markets and trade exchanges are dominated by currencies from developed countries. For Post-Keynesians, this is a crucial feature that shapes financialisation (de Paula et al., 2017); the concept of currency hierarchy describes the hierarchical structure of the international monetary system. The system is structured around a dominant national currency that effectively performs the three primary functions of money on a global scale: means of payment, unit of account (including contract denomination), and store of value (serving as an international reserve currency) (de Paula et al., 2017). Currencies from EMEs are located in the lower part of the monetary hierarchy, which is often expressed as the inability to borrow in their currency, posing constraints on the balance of payment and economic growth (Painceira, 2009; Becker et al., 2010; de Paula et al., 2017; Kaltenbrunner and Painceira, 2017). The inability of EMEs' currencies to fulfil the traditional functions of money has to be compensated by high levels of profitability

(Vernengo, 2006; de Paula et al., 2017; Fritz et al., 2018; Bonizzi and Kaltenbrunner, 2019). That ultimately hinders productive purposes.

The few studies that connected the productive and financial dimension from a subordinated perspective placed an emphasis only on the role of Transnational Corporations (TNCs) and GVCs (Milberg, 2008; Milberg and Winkler, 2013; Bonizzi et al., 2020). These studies examine how financialisation enables value extraction from EMEs or drives the delocalisation of production. However, they do not address the implications of financialisation for the productive structures of these countries, particularly for firms and sectors not engaged in GVCs; nor the implications of the productive structure for the nature of financialisation in EMEs. The interrelation between financialisation and productive structures in this context remains largely understudied.

The theoretical analytical framework proposed here indicates that financialisation in any nation or region must be understood in relation to its productive insertion in the world economy and consider the sectoral composition of economies. To construct this framework, this chapter adopts concepts about centre-periphery dichotomy, technological dependency, external constraints, and business and financial cycles from Latin American Structuralists' writings (Prebisch, 1949; Tavares and Gomes, 1998)[3]. Financialisation is a new form of dependency that cannot be studied detached from the productive sphere, which has different implications for the centre and the periphery. This chapter combines the two dimensions and provides answers to (a) how financialisation affects EMEs' productive structures, potentially perpetuating their subordinate position in the global productive and financial system, and (b) how the specific structural characteristics of EMEs matter for financialisation phenomena.

The proposed framework suggests that financialisation affects the economic structure of peripheral countries, and is affected by it. It is a two-way relationship. First, the

3 In Pérez Caldentey (2015), there is a detailed analysis of Structuralism's contributions in different periods by author.

effects of financialisation on the structural characteristics at the macroeconomic, meso and micro levels are presented to analyse if and how financialisation could reinforce the subordinated position of peripheral countries (productive and financial). In particular, it is argued that financialisation reinforces a region's position in the centre-periphery dichotomy by increasing instability, resulting in recurrent economic crises, reducing the policy space for industrial reforms and intensifying reprimarisation strategies. Additionally, by taking resources from the real economy in favour of the financial sector and promoting short-termism, it is difficult for EMEs to upgrade their productive structures.

Second, the chapter analyses how the productive structure influences peripheral countries' nature of financialisation. In that sense, it is argued that financialisation in the periphery is *selective* and *functional*. It is *selective* as it is characterised by prominent financial integration levels focussing on short-term capital gains and not on promoting funds and stability for structural change. Moreover, it has been concentrated in some companies which are larger and have the possibility of accessing international financial markets to finance their operations, hedge, and fund speculative ventures, while low levels of intermediation characterise the rest of the economy. It is *functional* as financialisation has strengthened capital accumulation and the position of these countries in the world order based on the original international division of labour and Ricardian efficiency, without helping the periphery with productive capital for improving socio-economic conditions or promoting a catching-up transition. An industrialisation strategy in these countries could conflict with primary and financial activities (such as actively protecting emerging industries, controlling exchange rates, or enforcing capital controls), threatening the internal, and external, political and economic balances.

The rest of the chapter is organised as follows: Section 2.2 includes a brief introduction to the subordinated financialisation literature. Section 2.3 contains the main ideas from Structuralist writings that are relevant to the analysis of financialisation phenomena. Section 2.4 indicates first, how financialisation affects the productive structure, and then, how EMEs' structural characteristics potentially shape the nature of financialisation in these countries. Section 2.5 presents some final remarks.

2.2 The financialisation phenomenon, a brief characterisation

The concept of "financialisation" has increased over time, and most of the literature on the topic is produced by heterodox economists (Marxists, Post-Keynesians and Regulationists, see Mader et al., 2020). Here the definition from Epstein is followed, who defines *financialisation* as the "increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies" (Epstein, 2005, pp.3). The research around financialisation is extensive, and literature reviews on the topic concluded that the term had been used in several ways (Lapavitsas, 2013; van der Zwan, 2014). Researchers have incorporated different dimensions and used a variety of indicators to capture the complexity of the financialisation phenomenon (e.g., (Karwowski et al., 2020; Lapavitsas and Soydan, 2022). For the purposes of this chapter, the focus will be on those aspects that relate directly to the real economy and the productive structure. More specifically, it will examine the shift in generating profits through financial channels instead of real ones, financial liberalisation and its effects on economies, the role of financial institutions and actors in productive processes and the transformation of NFCs, banks and other financial institutions towards socio-economic outcomes. Generally, the aim is to analyse if financialisation and finance are oriented to enable/block structural transformation.

Financialisation is global by nature (Christophers, 2012). The new landscape results from active policies on an international scale: deregulation of the financial sector and capital flows, including the lift of interest rate ceilings. Consequently, there is a documented increase across the globe of external assets and liabilities in the search for short-term capital gain (e.g., Stockhammer, 2010; Akyüz, 2014; Karwowski and Stockhammer, 2017). The massive increase in the size of the financial sector, in comparison to the non-financial sector, came with a diversification of its activities and products used to manage risk and obtain capital gain (Aglietta and Breton, 2001; Crotty, 2003). The growth in the financial sector has been faster than the real economy, where financial profits to total profits increased (Stockhammer, 2010). The rise in capital flows worldwide and the unprecedented debt levels held by firms, households, and even in the financial sector was accompanied by the integration of

new players such as new financial institutions (shadow banks), pension funds, private equity, and hedge funds (Adrian and Shin, 2010; Bortz and Kaltenbrunner, 2018).

According to scholars, which have analysed financialisation in EMES, the international dimension of financialisation is the most influential when analysing financialisation in EMEs, where international conditions and capital movements drive the surge in cross-border flows, implying drastic impacts on domestic economies (Bortz and Kaltenbrunner, 2018; Alami, 2019; Bonizzi et al. 2020).

As a result of capital account liberalisation and financial deregulation, the world has become more unstable and volatile (Dymski, 1999; Arestis and Glickman, 2002; Ocampo et al., 2008). A growing interconnectedness through credit, bonds, stock, and real estate resulted in new channels of transmission of global financial shocks. According to the literature on subordinate financialisation, in EMEs, those shocks are derived more from external conditions, typically from central economies (ex., high liquidity and low interest rates), rather than based on their fundamentals (Andrade and Prates, 2013; de Paula et al., 2017; Kaltenbrunner and Painceira, 2017; Fritz et al., 2018). Compared with the US or central economies, EMEs are perceived as highly unstable, and investors focus on short-term investments for fear of sudden changes. These economies need to offer high-interest rates to compensate for low liquidity and high-risk environments, affecting the cost of financing production through debt (Paula et al., 2017; Fritz et al., 2018). When there is a perception that risk is rising, capitals leave peripheral countries ('flight to quality') producing sudden stops (Calvo et al., 1996) moving to positions in currencies that offer greater liquidity and stability. In this setting, placing EMEs' in the currency hierarchy is critical to understanding their subordinated position in the international financial system; their currencies lack the ability to be international currencies as it is usually challenging to be a medium of reserve or exchange in international transactions (Bortz and Kaltenbrunner, 2018; Alami, 2019).

Not only does financialisation reflect the transformations within the international financial system and financial sector, but it also manifests different behaviour concerning other actors within the economy (Stockhammer, 2004). In the case of NFCs, some of the changes in the behaviour have been collared under the term

'shareholder value orientation'; those changes are related to the reward structure of top managers, changing priorities by making firms more focused on short-term strategies and profitability levels. This implies a closer relationship of NFCs with the financial sector nationally and internationally (Lazonick and O'Sullivan, 2000; Crotty, 2003; Stockhammer, 2004; Hein, 2015). Boyer (2000) named the regime a 'finance-led accumulation regime', characterised by changes in firm investment behaviour with a redistribution favouring shareholders (Boyer, 2000, pp.111). The investment behaviour of firms is also affected by the fact that financial institutions decreased their participation in financing NFCs towards focusing on households while fuelling real estate booms (Aalbers, 2008; Karacimen, 2014; Robertson, 2017). Section 2.4 further expands on the effects of financialisation on particular outcomes like investment, innovation, resources for productive investment, or the policy space EMEs have to conduct industrial policies.

The literature that has a focus on the interlinks between financialisation and production on a global scale is less developed; some few authors investigate how financialisation is connected with the restructuring of global production by TNCs (Milberg, 2008; Milberg and Winkler, 2013). According to this literature, financialisation has helped firms to delocalise productive activities, enabling TNCs, usually from advanced economies, to maintain cost mark-ups while sustaining profits and shareholder value. The globalisation of production has led firms to narrow their focus to core competencies while maintaining high-profit rates for rich economies (Milberg, 2008; Milberg and Winkler, 2013). Core competencies are related to higher value-added activities like innovation, design, and marketing, while TNCs are outsourcing non-core activities, such as those associated with low value-added (Gereffi et al., 2005). Studies show evidence of higher pressures from shareholders resulting in stricter conditions on foreign suppliers in the case of retail firms engaged in GVCs from the UK in comparison to other European countries which are less financialised (Palpacuer et al., 2005). Cost minimisation is perused by pressuring suppliers to reduce prices and by seeking those suppliers offering lower costs. In addition, it is linked with intensifying worker exploitation and the bargaining power of low-skilled workers, sustaining higher levels of financialisation (Baud and Durand, 2012). The position of leading countries within GVCs is cemented, and the extraction of profits is facilitated by the use of intellectual property rights in an era of intellectual monopoly

(Durand and Milberg, 2020). Maher and Aquanno (2024), concentrating on the US, argue that financialisation boosted competitiveness, profits and productivity while increasing labour exploitation. In addition, financialisation facilitated the development of MNCs and the delocalisation of their activities searching for low taxes and moving capital freely across countries.

Some authors in this GVC/GPN tradition have emphasized that the position of EMEs in the global economy is a subordinated one in both spheres, that is production and finance (e.g. Milberg and Winkler, 2013). They incorporated to productive subordination, aspects related to financial subordination, like the dominant role of the US dollar and the fact that EMEs cannot set rules on international financial markets. For example, Powell (2018), using a Marxist framework, proposes that the central role of finance characterises the new stage of mature capitalist systems (financialised capitalism), which he distinguishes from a cyclical process (financialisation), and needs to be contextualised concerning the internationalisation of global production. Finance in this new stage of capitalism includes the internationalisation of production, where GPNs fueled the growth of international banking and the development of global capital markets. Consequently, the movement of capital through its various forms is related to the world market rather than a single nation-state. Financial capital facilitates the exploitation of workers, where the value is created. It contributes to its realisation, capturing profits which can be allocated towards financialised practices (buyback operations, paying dividends, increasing CEOs' salaries, or purchasing financial assets).

In a related vein, Bonizzi et al. (2020) argue that EME firms' typically hold subordinate positions in global production and finance. Within GPNs, supplying cheap labour and raw or intermediate inputs; and regarding global finance, ECEs are subordinated as global trade and capital markets predominantly denominated in rich countries' currencies, particularly the US dollar (Kaltenbrunner and Lysandrou 2017). EMEs firms capture less value in the scheme due to their position in international production. They face higher costs to hedge macroeconomic risks and are more vulnerable as they rely on US dollar-denominated debt. This leads to increased volatility, external vulnerability, and financial instability, which is reinforced by

financialisation due to capital flows focused on short-term gains rather than productive investments.

Bonizzi et al. (2022) further elaborate on these ideas, introducing a theory of global structural transformation. They indicate that the subordinated position of EMEs is in relation to the three circuits of capital (money, commodity and productive); on the global productive system, EMEs occupy lower positions within GPNs, and on the global financial system they are subordinated to the hegemony of the US dollar in a market-based financial system, as stated by the Critical Macro Finance literature. The internationalisation of money capital, characterised by the flexible supply of credit, the availability of hedging mechanisms and new financial instruments, facilities to freely move capital and store financial wealth in offshore centres, securing leading positions for some firms within GPNs. In addition, GPNs have significantly increased the transfer of value from subordinate regions to the centres. The new stage of capitalism has restricted the agency of public and private actors in subordinated regions, undermining their development strategies in this way. This tendency interacts with domestic class conflict and state mediation for determining the institutional specificities of a society's integration into the capitalist system.

The inclusion of the productive dimension in the research above mentioned is primarily illustrated by how GPNs alter the global division of labour, which is very important given their significance in international production and global trade. Nevertheless, these studies did not focus on the implications for EMEs' productive structures for their overall subordination. This means including the activities of GPNs and the rest of the firms who do not participate in GPNs; it is necessary to include how the financialised practices affect the overall productive dynamics of EMEs and how they could affect countries' sectoral composition. This is discussed in Section 2.4. The following section explores the centre-periphery framework of Latin American Structuralism, introducing elements related to the sectoral composition of countries. These elements are later used to examine the connections between the productive structure and financialisation.

2.3 Structuralism: characteristics of peripheral economies

Latin American Structuralism is a key outstanding theoretical contributions to economics and social sciences from the Global South (Rodríguez, 1986). According to the international division of labour, the theory reflected that the world is divided into two poles: the centre and the periphery. Both possess distinctive characteristics regarding capital accumulation and technological progress, where the periphery depends on the technology that originated in the centres. The periphery is heterogeneous because labour productivity is high in the exporting sector; meanwhile, the rest of the economic sectors are stagnant, and the economy specialises in a few commodity goods. In the centre's case, it presents high levels of labour productivity across economic sectors and produces a wide range of goods with inter-sectorial complementation and integration across economic activities (Rodríguez, 2001). Latin America, in this classification, is a peripheral region. Economic relations between both poles tend to reproduce the conditions of underdevelopment in the periphery and increase the distance between them because central countries appropriate most of the fruits of technical progress.

According to ECLAC, the pattern of specialisation is the cause of external imbalances (Hounie et al., 1999). Related to it comes a second key concept of the theory, the secular decline in the terms of trade. The Prebisch-Singer hypothesis indicated that terms of trade between the price of products exported by the periphery (commodities) and the centre (industrialised products) tend to decline over time (Prebisch, 1949; Singer, 1950). They challenged the idea that technological progress would lower prices in the industrial sector in relation to commodities. The secular tendency of the terms of trade to deteriorate is based on arguments related to commodities' and countries' characteristics (Erten, 2011). Arguments around commodities include Engel's law (Engel, 1857), which establishes that the demand for food increases in a smaller proportion when income increases. So, if income rises at a world level, food-producing countries will face a fall in demand in relative terms. Also, the price elasticity of demand for commodity products is smaller than that of manufacturing ones. As income expands, the demand for commodities grows less than in the case of industrial goods and the relative price is less favourable for these goods. Due to this, peripheral

countries need to export a growing amount of goods to keep up with the increased value of industrial exports (Rodríguez, 1986). What is more, commodity products can be substituted by synthetic products, competing for demand.

The rest of the arguments are related to the country's conditions, which are different in the centre and periphery. According to Prebisch (1949), there is surplus labour in peripheral labour markets because of the difficulties of industrialising and migrating to industrial countries. Trade unions are weaker in peripheral countries compared to central countries. In contrast, powerful unions and no surplus labour in rich countries guarantee that prices are set with a mark-up on costs. Consequently, wages in the periphery grow less concomitant with price increases. Also, rich countries tend to protect their primary domestic markets, shrinking market sizes. Lastly, the necessity of peripheral countries to import goods to industrialise makes the industrialisation process more complex. It results in a rise in the price of capital goods when many countries want to buy them. The process is exacerbated by international agencies promoting exports without coordination (Singer 1998 in Erten, 2011). That is why commodity production is related to underdevelopment. Erten (2011) indicates that Singer, in the 1970s, called for a change in the focus of the debate related to the terms of trade, from products to countries. That is because even commodity-producing countries tend to increase the amount of processed goods they trade in time; switching the focus from goods prices to countries' terms of trade is necessary to represent the centre-periphery dichotomy.

Another central aspect introduced by Structuralists is the role of economic cycles. Contrary to Neoclassic economics which focused on equilibrium and the transition to equilibrium, for Prebisch (1949), cycles are inherent to capitalist economies. They have an essential function in the capitalist system. Cycles have different manifestations in both poles; they originate in the centre, translate into the periphery and are the driver of economic growth in connection with productivity increases. In the upper part of the cycle, the rise in demand for goods in the centres cannot be satisfied by supply, so profits start to increase, and at some point, they generate a surge in prices, correcting in that way the excessive demand. The rise in profits in the centre is translated into higher demand for peripheral products. This demand impacts

commodity prices in the periphery; the magnitude will depend on the time response of production and stock availability.

Overall, commodity prices tend to increase more than industrial ones. Moreover, once exports increase, domestic activity, employment and income levels start to grow. With the rise in income levels, imports start to increase. In the descending phase, the opposite occurs; the fall in exports lowers income and employment, with the consequent decrease in imports. Added to that, commodity prices decline more than industrial ones. The explanation for these price movements (commodities vs industrial prices) is related to the flexibility in both economic systems. Firms compete for workers in the centres during the upward phase, and unions push for increasing wages. However, during the downward phase, there are rigidities for the wage decrease. This does not hold in the periphery, as working forces in primary production do not have the same level of organisation as in industrial countries, so the effects are not symmetric. The asymmetry is related to the higher union organisation of manufacturer workers and industrial markets' greater power in setting prices. As Prebisch puts it, the smaller the compression in income in the centre (profits or wages), the more significant it must be in the periphery. That is crucial because industrial centres can then retain the fruits of their technical innovations, and they can retain part of the technical progress of the periphery.

The main policy recommendation made by ECLAC in the 1950s was state-led industrialisation. The process of industrialisation did not disregard the upgrade of the technological content of primary production. On the contrary, it was essential to raise living standards and to incorporate equipment, machinery, and instruments to take advantage of technology. Plus, the periphery needed to import capital goods, so any improvement in the export sector was key. A long-term strategy for development must consider economic cycles as peripheral incipient industries are vulnerable to fluctuations and contingencies in the centres. Therefore, anti-cyclical and industrial policies need to be implemented together. However, these policies are challenging to implement as the necessities for infrastructure are particularly important, and the political costs are high.

Nevertheless, industrialisation must be conducted in a way that can counteract its own limits. If industrial growth implies a significant increase in consumption or an early decrease in productive effort, that can hinder the social purpose of industrialisation. Therefore, it was important to adapt the pace of imports to the export payment capacity. That was a crucial aspect as Latin American industrial strategy depends on the decision of other countries to buy their products. According to his analysis, spontaneous savings in most Latin American countries were insufficient to cover their most urgent capital needs, so foreign investments could contribute to increasing productivity per worker.

Seminal works from Prebisch about business cycles in the periphery (1921) stressed that they were connected with the place in the international monetary system and were caused by an unstable international capital market. Speculative bubbles result from an asymmetric monetary system, where developed countries impose conditions on the rest of the countries (Lampa, 2021). When working at the Central Bank of Argentina, he pushed for contra-cyclical monetary policies to reduce external volatility. According to him, if risk aversion and interest rates were low in the centres, international loans triggered monetary expansion and a hike in imports in the periphery, worsening the balance of payments and pushing for extra loans. In addition, domestic banks expanded the capital spent on speculative activities, resulting in an increase in financial fragility. When something initiated a reverse in capital flows, that surely meant a crisis for the periphery. He aimed to impose capital controls and increase the level of reserves levels to use in times of capital outflows (Pérez Caldentey and Vernengo, 2011). He also pointed out the necessity of cutting bank credit during the upper phase of the cycle. His observations were the opposite of mainstream economists'; for him, capital volatility in the periphery was a structural and permanent characteristic. Prebisch also prescribed a set of economic reforms to increase the use of local currencies and reduce the dollar dependency based on bilateral payment systems and create a type of central bank from various nations to be a lender of last resort to decrease political subordination. These measures complemented the industrialisation recommendations, focusing on substituting imports to be less dependent on US dollars.

Prebisch's original work and policy recommendations sparked a range of critical engagements, both within ECLAC and with other academics. Some of the first critiques, which emerged from ECLAC were in response to the import substitution industrialisation (ISI) strategy that showed several limitations. These critiques, articulated by Osvaldo Sunkel, Celso Furtado and others, were not mere disagreements but comprehensive analyses that revealed the numerous limitations of ISI. For Furtado (2021a), ISI fundamentally differed from the process of industrialisation in the centre, as the periphery did not benefit societies at large, rather, some minorities. Within peripheral countries, industrialisation was accompanied by increased levels of income inequality and consumption of the elites. Additionally, Furtado (2021b) addressed the issues of colonialism and culture; for him, industrialisation created a type of cultural duality in which elites were disconnected from their national realities as their consumption patterns emulated those of rich countries. Another crucial point made by Furtado (2021a) is related to industrialisation and sustainability. He criticises the fact that extending consumption levels of the masses in the developing world to US standards (and, as a result, resource waste) would be impossible in terms of non-renewable natural resources sustainability' and polluting waste with irreversible consequences for the world. He called for allocating natural resources based on agreed social criteria so that technological advancement can be directed towards those goals. The same concern is included in Sunkel's neo-structuralist writings (Sunkel, 1980). He criticised that the original centre-periphery analysis did not adequately include the environmental impact of the development process. He was particularly concerned with the environmental impacts of heavy industrialisation, urbanisation, and consumption patterns in Latin America and globally. He argued for the necessity of sustainable economic growth led by democratic participation and a reorientation of scientific and technical planning.

In addition, Furtado and Sunkel criticised the role of FDI and that industrialisation in the periphery relied massively on the transfer of technology from the centres. In particular, US firms had a significant influence on domestic policies and legislation and brought most of the earnings back to the capitalist core (Furtado, 2021a). In his paper, Big Business and "Dependencia", Sunkel (1972) analysed the practices of MNCs, which contributed to the uneven nature of development. Some of them are now

widely recognised, such as transfer pricing, royalties, and branding. For him, foreign subsidiaries of MNCs took much of the benefits of industrialisation by transferring profits, royalties, and payments for capital equipment, licenses, and patents. This also affected the industrial capabilities of the domestic capitalist class.

Dependency authors criticised some of the initial ideas of Structuralism in terms of technological dependency, ownership structures, including a more critical analysis of the state and class structures. They also highlighted the financial constraints these countries face. Dependency is described by Dos Santos (1970, pp. 231) as "a situation in which the economy of certain countries is conditioned by the development and expansion of another economy to which the former is subjected". Dos Santos (2002) discusses that Dependency theory traditions can be roughly divided into two strands. The first one is the Marxist and neo-Marxist one (including Baran, Sweezy and Gunder Frank; as well as Dos Santos, Marini and Quijano); the latter is directly derived from ECLAC (represented by Cardoso and Faletto, Tavares, Sunkel and Serra, among others) [4]. Both sides shared a historical approach to development and focused on the fact that the peripheral condition is related to the incapacity of advancing in the process of technological innovation, in the form of an autonomous and dynamic process, less dependent on foreign capital. Nevertheless, the two strands differ in their assessment of the potential for economic development in the periphery. Marxists would claim that development in the periphery and the catching up process with the centre is impossible within the capitalist system, (for example, Frank, 1967), whilst Structuralists would contend that dependent development is possible (Cardoso and Faletto (1979).

Cardoso and Faletto (1979) extended the original Cepalino approach by including social and class struggles at the international and domestic levels (Cardoso and Faletto 1979, pp. 13). They had a more historical approach than Prebisch and characterised different moments in history of structural change and dependency in countries of Latin America. The concept of dependency operates at the political and economic level.

4 Dependency theory influenced other schools of thought, including Immanuel Wallerstein's world-systems theory, which shared similar perspectives (Vernengo, 2006).

At the international level, dependency implies the relationship between countries with different technological capabilities and degrees of industrialisation, and not so much between commodity producers vs. industrialised countries. Countries were divided into developed or underdeveloped according to the technological advancement of their productive structures. At the domestic level, dependency was linked with the inability of the elites of making politically autonomous decisions disconnected from the interest of the centers. The ultimate goal was to achieve autonomous development, not only in technological aspects but also in political terms; this was a critical aspect that Structuralists did not address directly.

Marxist dependency theorists emphasised class analysis as a central component of understanding global economic disparities (Dos Santos, 1970; Marini, 1973). For example, for Marini (1973), one of the leading Marxist dependency scholars, dependency is the relationship between independent nations within productive subordinated relations. Class analysis, in this context, focuses on the global division of labour and the resulting class structures within and between nations. After the colonisation, capitalists from central countries tried to maintain their surplus by lowering the cost of consumer goods and reducing the labour force through technical innovation. Latin America facilitated this trend by exporting cheap food and goods that lowered relative labour costs, improving the organic composition of capital in central countries (Marini, 1973, pp. 14). Given the unequal exchange between nations originally described by Structuralists, workers in peripheral countries are not just exploited, but 'super-exploited' by capitalists. Latin American capitalists resorted to increasing the intensity and lengthening of the working day, or both (Marini, 1973, pp. 26-27). For Marini, this concept of 'super-exploitation' is a stark illustration of the imbalance and injustice in the system. As Latin America's role in the global economy is oriented to satisfying the centre's needs, its production does not need a domestic market to sell its products (commodities), as they are sold abroad. As a result, the system tends to exploit the labour force as much as it can without considering the minimum conditions for its reproduction[5]. For him, these structural characteristics were not overcome in the ISI era. The goods imported by elites were now partially

5 This was possible because due to the integration into the labour force indigenous people and migrants from other countries.

produced by domestic industries, whereas the labour cost continued to be less than the subsistence level. The expansion of the industry was only driven by external factors and not by the expansion of demand and workers' consumption.

Tavares (2000) adds a different angle to the analysis. She argues that the focus on industrialisation and technical progress of ECLAC authors' does not explain the situation of peripheral countries. For her, financial dependency, not technological dependency, is the greatest form of domination over the periphery. This form is represented by the hegemony of the US dollar after Bretton Woods, the push by Anglo-Saxon countries to deregulate capital markets worldwide and the inability of peripheral states to borrow in their own currencies. The latter characteristic reflects the inability of peripheral countries' domestic currencies to acquire all the functions of money. Putting finance at the centre of the stage reflects the fact that growth is viewed as demand-led rather than supply-constrained. As a result, poor growth rates are caused by a shortage of financing, particularly foreign financing, and the constraints imposed by the balance of payments constraint (Vernengo, 2006).

Structuralists' and dependentistas' ideas highlighted here are the contributions in which this chapter will build the nexus with financialisation. The key concepts for the analysis of financialisation from a peripheral point of view are the centre-periphery dichotomy, the pattern of specialisation and the fact that relations between countries are asymmetrical in terms of technology and finance and that business and financial cycles originate in the centres. An emphasis is also on the autonomy of the periphery to accomplish an autonomous process of economic development.

2.4 Financialisation and structural characteristics a two-way relationship

The possible interconnections between financialisation and the productive structure are presented in this section. First, it introduces how financialisation could affect the productive structure and the way it could potentially reinforce the subordinated position of peripheral countries (productive and financial). Second, a more novel path

analyses show how the economic structure influences the 'nature of financialisation' of peripheral countries, where the direction goes from the economic structure to financialisation.

2.4.1 Effects of financialisation on the productive structure

The effects of financialisation that could potentially affect the productive structure are presented, dividing them at the macro, meso and microeconomic levels.

2.4.1.1 Macroeconomic effects

Structuralist literature focuses on the link between financial inflows, the exchange rate, and structural transformation (Frenkel and Ros, 2006; Botta, 2017; Cimoli et al., 2020). Capital flow bonanzas[6] in low-regulated environments generate changes in the real economy. During periods of exchange rate appreciation caused by large financial inflows, asset prices and real wages are affected, causing consumption and investment booms (usually real estate) while raising external debt levels (see Taylor, 1998). As the price of imported goods decreases, and because there is availability of cheap credit and stronger balance sheets, companies can purchase new equipment. The overall effect on the productive structure in the absence of industrialisation strategies and capital control regulations is likely to be negative (compared to the positive ones derived from importing capital relatively cheap), and as shown by different authors, manufacturing declines (Frenkel and Ros, 2006). Botta (2017) indicates that the harmful effects of financial bonanzas on manufacturing can be described as a financial resource curse. When there is a reversal in capital flows, economic growth decelerates, usually ending

6 Capital bonanzas refer to episodes of significant capital inflows into a country or region that last for a certain amount of time (for an empirical discussion of how to account for a bonanza, see Reinhart and Reinhart, 2008).

in an economic crisis and significant currency depreciations, transforming production and consumption patterns and even generating changes in ownership structures (Fischer, 2015). If the bonanza does not increase productivity and output growth, downswings could reduce economic growth and bring debt sustainability issues. Maturity and currency mismatches are problematic in terms of the sustainability of firms.

The fact that financial cycles can reshape the productive structure was also empirically studied by Benigno et al. (2015). They analysed the effects of massive capital inflows over more than three decades in middle and high-income countries, finding that these episodes displaced investment and employment in manufacturing industries, favouring construction and services. Moreover, the more significant the credit and capital inflows, the deeper the fall in GDP, investment and total factor productivity. That result could be related to the fact that episodes of financial bonanzas are relatively short in time, but the effects on the productive structure could be more permanent. Furthermore, Botta et al. (2023) empirically investigated the relationship between non-FDI capital inflows and changes in the productive structure between 1980 and 2017 for a panel of countries, showing that large capital inflows negatively affect manufacturing activities in developing and emerging countries.

Additionally, as a result of financial deregulation the world became more unstable. Macroeconomic instability leads to more volatile prices and makes physical investment less attractive for firms (Stockhammer, 2008, Demir, 2009). The magnitude of the effect is hard to measure as uncertainty is difficult to capture (Stockhammer, 2012). Even for developed countries, Stockhammer (2004) linked financialisation with the slowdown in capital accumulation for the US, UK, and France. As Ocampo et al. (2008) argued, for developing countries, international financial integration resulted in wider gaps between the actual GDP and potential GDP (total capacity) as the increased risk demands higher returns from investors, limiting long-term investment. Financial shocks in the short term can affect the direction of real investment (Cimoli et al., 2020). If economic stability is something that developing countries cannot control easily, that implies a disadvantage for companies when looking for where to invest. Demir (2009) tested how uncertainty driven by financial liberalisation resulted in portfolio reallocations, shifting from long-term

irreversible fixed capital towards financial assets in firms. According to Ffrench-Davis (2015), heterogeneity among firms manifests in the fact that different companies cope differently with instability and sudden price changes. Those firms that invest in gross capital formation are less able to adapt to instability than financial investors, as their investments are difficult to reverse and are less able to take advantage of price differences (Ffrench-Davis, 2015, pp.137).

Moreover, EMEs frequently experience repeated economic crises that force governments to reduce infrastructure and human resources expenditures (Ocampo et al., 2008). Also, as public investment acts as a catalyst for private investment, economies have been pushed towards a spiral of disinvestments (crowding-in effect). Financial globalisation was accompanied by tax evasion and avoidance, which not only made the environment more unstable but also made it harder for governments to maintain favourable macroeconomic circumstances for investment and industrial policies.

The dynamics that EMEs bear in terms of the effects of financial cycles and economic instability are also interlinked with the position of these countries in the currency hierarchy. The dynamic described reinforces the countries' position in the global financial system and the pyramid of currencies, acting as a self-fulfilling prophecy that affects the productive structure. First, based on risk perception, international investor contracts are set mainly in US dollars (even import and export contracts), reinforcing the use of foreign currencies. Second, related to high inflation levels or sudden movements in the exchange rate, it is difficult for local agents to trust their currency as a store of value; therefore, in several Latin American countries, deposits are hoarded in hard currencies. Third, accessing external sources of credit in their currencies is difficult. Agents with income in local currencies are indebted in US dollars ('original sin', Eichengreen and Hausmann, 1999). Fourth, peripheral countries have higher external liabilities when compared to external assets (Akyüz, 2020), generating an outflow of financial income from the periphery to the centres. In the last years, derived from QE (Quantitative Easing) programs, high levels of capital availability made central banks engage in sterilisation strategies to control inflation, increasing the offer on public debt securities. These instruments were bought by banks and investment funds, expanding their balance sheets (Kaltenbrunner and Painceira, 2017). As Palma

(2016) indicates, the excess liquidity created by QE programs was not used for productive purposes in some EMEs, such as Latin American countries and South Africa. There, they financed capital flights, M&A, and the little that was invested in the real economy was directed to the commodity sector or to feed real estate bubbles. On the contrary, Asian countries managed to invest them in productive capabilities (though in China, some liquidity was introduced in the shadow banking sector). As a result of QE, Central banks accumulated reserves to cope with changes in the centre's financial and liquidity cycles. This strategy came with high costs for EMEs; international reserves do not receive (or receive low) remunerations compared to other instruments (Rodrik, 2006)[7]. The result was fewer resources available for other purposes, such as internal policies.

Finally, the effects on the productive structure also depend on the macro and industrial policies that countries implement (Cimoli et al., 2020). Due to financialisation, the policy space to conduct active development policies could be reduced (Chang, 2002; Chang and Andreoni, 2020), and governments may find it challenging to carry out policies suitable for long-term growth due to market discipline. There are limits imposed by international institutions and trade agreements (Wade, 2003; Wade, 2018), and there is fear that rating agencies could downgrade the qualification of government bonds if countries do not engage in sound fiscal policies (Streeck, 2017). For instance, market analysts focus on the short term and fail to distinguish the motive behind rising levels of indebtedness (spending on productive investments or consumption). In that sense, a debt reduction is welcomed even if this results from losing public assets, like in the case of privatisations (Ocampo et al., 2008). Notably, if EMEs want to conduct active industrial policies to protect infant industries, they need foreign reserves, and countries rely on those reserves to control speculative attacks on currencies and preserve economic stability (UNCTAD, 2015a; Bortz, 2018). Empirical evidence shows that reserve accumulation helped countries in their economic performance after large capital inflows (Benigno et al., 2015). In addition, the finance-led accumulation regime relegates the state's role in the productive sphere, where development banks are also debilitated due to neoliberal policies (specially

7 Some scholars defend this strategy (see Bortz, 2018).

promoted by the WB, see Griffith-Jones and Ocampo, 2021)[8] and cuts in government spending. Many indigenous technologies created locally in public firms were dismantled in Latin America. Privatisation policies sold firms to private owners, usually foreign, who were not interested in sustaining regional R&D activities (Cimoli et al., 2005).

2.4.1.2 Mesoeconomic effects

At the meso level, some authors pointed out how the different economic activities or sectors can compete for resources (human and financial) and also use their political influence to achieve specific goals which could be conflicting (Cecchetti and Kharroubi, 2012; Andreoni and Chang, 2019). Firstly, as Cecchetti and Kharroubi (2012) point out, there is competition for high-skilled workers between the financial sector and the rest of the real economy. The competition for highly skilled workers can be viewed as a drain of talent from the productive sectors of the economy. For the US, Philippon and Reshef (2012) provided empirical evidence that the finance industry has become relatively skilled-labour-intensive. Until 1980, financial markets grew substantially in the US, but it was not skill-biased; the financial industry hired workers proportionately. From the 1990s onwards, the finance industry hired highly skilled workers, paying higher wages (education-adjusted), where top executives' compensation is 250% greater than CEOs from other industries. These generate incentives for high-skilled workers to move away from productive activities.

Secondly, an excessively large financial sector could bring overall productivity down when private credit grows to the point where it exceeds GDP, as shown by Cecchetti and Kharroubi (2012). Furthermore, Cecchetti and Kharroubi (2015) analysed the effect of financial sector growth on productivity, finding that financial growth

8 The WB has now acknowledged the beneficial function of these organisations. However, as Gabor (2021) indicates, international financial institutions' vision towards them is problematic as the orientation is on de-risking to protect investors rather than creating a developmental state.

disproportionately harms R&D-intensive industries. According to these authors, this negative correlation arises because of the misallocation of skilled labour and because financial sector growth disproportionately benefits low productivity/high collateral sectors, like construction. This shows how different economic sectors are affected by financialisation. The fact that the finance-led type of capitalism excluded finance for certain activities while promoting others, like commodities, has been pointed out by scholars in the case of Latin American countries (Pérez Caldentey and Favreau Negront, 2019).

Thirdly, industrial policies can face external opposition, as indicated in the previous section and internal opposition. In particular, regarding EMEs, a catching-up transition period needs active policy measures which a powerful financial sector could oppose. Historically, the hostile attitude towards industrial policies is significant in those countries with a strong landlord or financial capitalist class. For example, in the case of Brazil, Andreoni and Chang (2019) argue that the financial capitalist class pushed for policies that resulted in over-valuated exchange rates with negative consequences for manufacturing industries.

Lastly, another aspect to consider is that financialisation affects the agricultural sector, commodity production and commodity prices, resulting in resource allocation and the change in productive strategies. First, Akyüz (2020) indicates that capital inflows move pro-cyclically with commodity prices due to global financial integration and the financialisation of commodities as financial investments in future markets are becoming highly influential. Price increases are a powerful motivator to improve output and shift resources to profitable sectors (UNCTAD and FAO, 2017), resulting from the relocation of resources and reprimarisation strategies related to a favourable price shift[9]. Second, commodity products are treated as financial products and included in international portfolio investment baskets (Gilbert, 2010; Akyüz, 2012). They were perceived as safe for institutional investors due to the low correlation with stock returns (Tang and Xiong, 2010). Indices managed by massive hedge funds, like

9 In the case of Latin America, reprimarisation strategies in South America coexist with 'maquiladora' activities in Mexico and other Central American countries.

Black Rock, included stocks and bonds from commodity-producing firms (van Huellen and Abubakar, 2021). Besides, investment banks are linked with derivatives and even investing in physical commodities (Isakson, 2014). Lastly, commodity price shocks may affect debt sustainability (and the financial structure) as public finances are reliant on commodity export income in many of these countries (UNCTAD and FAO, 2017). The commodity sector is also largely impacted by climate change, where events like droughts and floods contribute to greater instability levels regarding productive capabilities and commodity prices; this has been highlighted by Löscher and Kaltenbrunner (2023).

2.4.1.3 Microeconomic effects

At the micro level, financialisation can affect the productive structure by influencing firms' behaviour and access to investment funding. NFCs have been affected by the rise of institutional shareholders and the proliferation of the shareholder value orientation, introducing changes in corporate behaviour (Aglietta, 2000; Froud et al., 2000; Lazonick and O'Sullivan, 2000; Lazonick, 2017), shifting from a "retain and reinvest" model to a "downsize and distribute" model (Lazonick and O'Sullivan, 2000, pp. 17). Orhangazi (2008) explains that this happens mainly by two channels: first, because firms invest in financial assets, crowding out real investment and creating short-termism, generating revenues for firms that are sometimes more profitable than those obtained with real investment; second, because internal funds are channelled to payments to financial markets.

Empirically, for developed countries, there is evidence of a negative relationship between investment in capital expenditures and financialisation (Stockhammer, 2004; Orhangazi, 2008; van Treeck, 2008; Barradas, 2017; Davis, 2018; Tori and Onaran, 2018; Tori and Onaran, 2020, among others)[10]. Similar effects are evidenced

10 See Davis (2017) for a survey on the links of financialisation with productive investment.

in the case of EMEs. Demir (2009), using data from publicly traded industrial firms, finds that the expanding gap between the rate of return between financial and fixed investment substantially affects the latter, providing evidence for the first channel. For Latin American firms, Pérez Caldentey et al. (2019) showed that bond-issuing firms are more prone to speculative behaviour and, with time, less towards hedging strategies. Bond-issuing firms are relevant at a national and sectoral level regarding fixed tangible assets and long-term investment, finding a non-linear relationship between cash flows and real investment in bond-issuing firms.

However, some scholars remain sceptical about the extent of financialisation (Christophers, 2012; Fiebiger, 2016; Rabinovich, 2019; Soener, 2021). Christophers (2012) argues that, on the one hand, research on the topic often assumed that financialisation existed without sufficient empirical support. On the other hand, he argues that just looking at corporate profitability on a national scale is not enough to capture financialisation. Financial capital is highly internationalised, and global connections must be included. Rabinovich (2019) further scrutinises the empirical evidence gathered in the US to argue for financialisation. Although he acknowledges the rise of shareholder value strategies, he states that for the US, financial accumulation is not a widespread strategy; financial income to total income has increased in the last decades, but the level has been relatively low (less than 3% since 1980). In line with the previous studies mentioned, he finds that financial assets could be associated with the delocalisation of production through M&A (mergers and acquisitions), offshoring, and tax benefits "unidentified miscellaneous assets" in particular "goodwill" and other intangibles like patents and copyrights that are categorised as financial in national statistics (even though they may not necessarily be financial in nature). Similar observations are made by Fiebiger (2016) considering that financialisation is exaggerated when considering foreign direct investment as a financial asset. The shareholder value orientation in the US made managers shift operations abroad to reduce costs (mainly labour costs), minimise taxes, and expand markets. Evidence suggests that this strategy has led to the relocation of production rather than an absolute reduction in the size of international firms.

There is some disagreement amongst scholars on whether financial investment crowds out real investment (Kliman and Williams, 2015; Soener, 2021; Maher and Aquanno,

2024). Kliman and Williams (2015) argue that US companies exhibit signs of financialisation, such as adopting the shareholder value orientation, where firms have increased their purchases of financial assets faster than real ones and that financial payments grow faster than profits. Nevertheless, they provide evidence that the rise in financial assets did not result in a reduction in real investment because financial payments were not funded by profits, but from borrowing. By including an additional source of funds, the trade-off hypothesis is blurred. In addition, they point out that most of the studies used the 1970s as a point of comparison, and according to them, this decade was unusual in the relation between profits and investment: "Although the investment share [as a percentage of profits] did decline after the early 1980s, it did so because the investment share at the start of the 1980s was abnormally high and unsustainable, not because profit was diverted from productive investment toward financial uses" (Kliman and Williams 2015, pp. 86). Fiebiger (2016) agrees with Klimand and Williams (2015) that financial investment is funded by borrowing instead of profits. Similarly, Soener (2021) conducted a comprehensive study using data from publicly traded corporations in 37 countries, both developing and developed, from 1991 to 2017. His findings do not support the notion that corporations crowd out real investment due to financialisation. While real investment decreased for these companies, financial income and financial assets also declined during the period. The only financial asset that grew was shareholder payouts, primarily in large US corporations. Additionally, Maher and Aquanno (2024) also pose doubts about the short-termism arguments, asking why corporations would want to curtail their prospects by cutting the value of their assets in the long run and that in a setting of low interest rates, there is not such a trade-off between companies engaging in buyback operations and investment as companies could borrow almost for free. In addition, they point to the fact that some US tech firms remained global leaders, indicating that their investment levels were sufficient to secure their positions.

Tori and Onaran (2022) claim that the effect of financialisation depends partly on the context of companies. Those firms in countries with more advanced financial markets (in terms of reforms, capital account openness and stock market capitalisation) and more integration into GVCs have adverse effects on real investment. Being more integrated into GVCs appears to drive shareholder value and financial pressure demands.

The evidence of the interlinks between financialisation and real investment at the firm level is mixed, suggesting that the relationship is complex and context-dependent, which could also be influenced by the indicators used to capture financialisation. It seems that the effects on large US international firms are not the same as on EMEs firms (Soener, 2021). Relocation of production and access to credit may affect these results. Nevertheless, shifting some activities abroad could affect other local firms due to the synergies in manufacturing activities and the spillover effects of this sector. More studies are necessary to investigate further if financialisation in some settings could reduce real investment and radical innovation.

The effects of financialisation on innovation remain less explored compared to its impacts on investment. The degree of investment in innovation and the strategies employed to retain and attract talented workers could be adversely affected by aspects discussed in previous sections, such as the shareholder value orientation and the focus on the short term (Lazonick, 2007; Mazzucato, 2013a; Dosi et al., 2016). Those adverse impacts on innovation could translate into the inability of firms to contribute to broader economic structural transformation and the composition of the productive structure (more in favour of financial activities and less on innovative activities). Innovation is a process that entails a high degree of uncertainty and requires a long-term commitment, including financial, due to the difficulty in predicting the success of such endeavours (Mazzucato, 2013). Econometrically, Mazzucato and Tancioni (2012) have demonstrated that pharmaceutical companies with higher investment in technology experience greater stock return volatility. Bernstein (2015) finds that firms after being listed on the Nasdaq, experience a patent filing decline and a drop in innovation novelty (based on patent citations), compared to those companies that withdraw the initial public offerings and remain privately held. Furthermore, these listed firms experience highly skilled inventors leaving at higher rates and a drop in productivity among the remaining ones. Also, listed companies increasingly rely on external innovation, acquiring patents through M&A.

In the case of Aggarwal and Hsu (2014), they find that firms undergoing a public offering experience a negative impact on innovation quality. Additionally, in M&As, greater technology overlap between the acquiring and acquired firm boosts patent quantity but reduces quality, indicating the prioritisation of short-term outcomes over

long-term innovation. Also, Wies and Moorman (2015) found that when firms go public, they tend to introduce less risky innovations (fewer breakthrough innovations and innovations into unfamiliar categories). Similarly, Lee et al. (2020) present evidence that the quality of innovation is compromised in OECD countries: financial markets rewarded companies with more patents but with less radical innovation (captured by the number of times a particular patent has been cited). Seo et al. (2012) empirically established a negative relationship between financialisation and R&D for South Korean firms after the Asian financial crisis. In the case of Brazilian firms, Jibril et al. (2018) found evidence that financial assets and profits negatively affect investment in intangibles via the crowding-out channel (financial assets relative to total assets) and the shareholder-value orientation channel (dividend payments relative to equity), with more considerable influence from the former channel. Intangibles capture a broader range of activities such as R&D, design, and copyrights.

Additionally, the contributions made by financialisation scholars analysed the effects of financialisation without considering its impacts on the sectoral composition of the productive structure. For example, if the effects of investment or R&D were equally distributed among economic sectors (agriculture, manufacturing or services). Orhangazi (2008) divides the US sample of non-financial firms into manufacturing and non-manufacturing, where the financialisation results on investment are not significant for these subsamples. Tori and Onaran (2018) divide manufacturing firms and the rest, finding out that the effect of financialisation on physical accumulation is stronger for manufacturing firms. Nevertheless, they just investigated UK companies.

It is argued here that assessing a 'composition effect' is essential, as, in EMEs, productivity among firms is not homogeneous; the overall effect of financialisation in a peripheral country will depend on the affected sector. If financialisation impacts those highly productive firms, the country will be worse than central countries. Still, that can have the paradoxical effect of reducing the productivity gap within the country as highly productive firms are mainly exporting firms focused on commodity activities that can usually be characterised as large. Exporting companies generally have more sophisticated structures. However, small and medium-sized manufacturing firms dominate the economic landscape and have lower productivity levels and a smaller innovation capacity. The effect on those firms is important in terms of economic

diversification. That is why, from this perspective, including the sectoral dimension to measure an impact is imperative.

In conclusion, financialisation exacerbates the centre-periphery division rather than alleviating it. It worsens the position of peripheral countries in the global productive system by increasing structural heterogeneity, imposing balance of payments constraints, and restricting policy space. Financialisation deepens economic volatility and capital mobility, which peripheral countries struggle to manage. These factors reinforce the peripheral position within the global financial system. The lack of funds for productive investment and shrinking policy space further entrench this division. More research is needed to understand the specific impacts on different companies and sectors in peripheral economies compared to central ones. If financialisation affects long-term investment and innovation, it can lead to deindustrialisation and hinder diversification of the productive structure.

2.4.2 Financialisation in the periphery

This section argues that financialisation in the periphery takes a specific form according to its place in the global financial and productive system. As presented in Section 2.3, the productive structure of peripheral countries is characterised by being heterogeneous and specialised. The periphery is heterogeneous because labour productivity is high in the exporting sector; meanwhile, the rest of the economic sectors are stagnant, and the economy specialises in a few commodity goods. Dividing into macro, meso and micro dimensions, the financialisation 'style' in the periphery is described as selective and functional.

2.4.2.1 Macroeconomic dimension

Due to its structural characteristics, EMEs are more prone to instability compared to rich economies. As noted earlier at the beginning of Section 2.4, financialisation has

further exacerbated instability, and they are subject to business cycles and policy decisions outlined by developed countries (as described in Ocampo, 2001). The asymmetrical characteristics of the world economy mean that peripheral countries are affected by real and financial cycles that have the epicentre on rich countries. As explained in the previous section, due to its place in the currency hierarchy, these countries' policy autonomy is limited, and they face both currency and maturity mismatches. All in all, they are minor players in the international financial market, for which it is not easy to set favourable conditions[11].

In Neo structuralist's writings, the fact that short-term dynamics in the periphery are related to external shocks has been called under the name "balance of payment dominance" (Ocampo, 2011, pp.9). External shocks are related to the access to international capital and cycles of liquidity, but also to changes in commodity prices and the level of activity of some relevant economies; these factors dominate the internal macroeconomic dynamics in the short term (inflation, consumption, real wages, aggregate demand, and exchange rate).

When international financial conditions are looser, capital encounter opportunities in developing countries. Palma indicates these countries became the "markets of last resort", where capital look for gains and capital booms usually end in economic crises (Palma, 2012, pp.14). EMEs are susceptible to global cycles of capital that they cannot control (Rey, 2015); Prebisch already emphasised this while working at the Central Bank of Argentina (Pérez Caldentey and Vernengo, 2018). These boom and bust trajectories are not beneficial for economic performance (Diaz-Alejandro, 1985; Arestis and Glickman, 2002) or positive in terms of productivity and are very costly in terms of profit repatriation. International investors can take advantage of volatile conditions and quickly pull out from a country; in this context, financial investment has an advantage over real investment (Ffrench-Davis, 2015). That is why the financialisation style then in the periphery has been *functional* to capital accumulation. This notably to the interests of investors from rich countries, as the

11 These are added to the market failures that financial markets already have.

periphery operated as a place to pull in or out depending on the conditions, and the permanence of capital did not revolt around progressive structural change or achieving a growth path towards bringing more economic stability. Conditions were also exploited by domestic elites.

Even some EMEs are partially industrialised- China, India, Mexico, and Turkey- and most still specialise in commodities. That is why the movements in the terms of trade, especially in commodity prices, are incredibly significant, as these countries are mostly price takers. The products they produce are subject to price movements that they do not control. Another essential element is that commodity prices showed significant levels of volatility, not only following demand patterns from rich countries but also sometimes following a boom-and-bust trajectory linked to capital movements (Akyüz, 2020). The fall in commodity prices tends to lower capital flowing into commodity exporters countries, resulting in slow economic growth. The factors affecting commodity prices and capital inflows are linked to policies in rich countries, especially the US monetary policies, as most exporting contracts are set in US dollars.

Besides, financialisation practices in EMEs could be a consequence of this instability; some firms hedge themselves, buying forwards on the prices of commodities, and companies have been speculating and increasing financial gains; this could be a strategy to take advantage of good times and to save for moments of declining prices.

Furthermore, as discussed in Section 2.4.1 TNCs play a crucial role in preserving the nation's standing in the global division of labour and collaborate to establish a specific kind of financialisation in the periphery. Nowadays these companies are responsible for a massive amount of global trade, where GVCs represent around 70% (OECD, 2023). The role of TNCs in intensifying labour division across the globe has been largely addressed by Structuralists and Dependentistas (Cardoso and Faletto, 1979; Furtado, 2021a; among others). That is because there is intense competition among the lower value-added parts of the pyramid, with low wages and profit margins, typically located on the periphery. In the upper parts, innovation finance and marketing activities are produced, typically occurring in the headquarters that are located in the developed world. This type of division is based on controlling technology and property rights at the top (de Medeiros and Trebat, 2017). Multilateral and

bilateral agreements assured monopolistic positions for TNCs, so developing countries have difficulties escaping from the lower levels of international technological hierarchies. The position in the hierarchy is determinant for benefiting from innovation and being able to profit from it. According to Cimoli et al. (2005), a dominant position in the hierarchy guarantees "the control of knowledge de-codification mechanisms" (pp. 34), determining the access to knowledge and the capacity to spread it across the rest of the productive structure. According to Fischer (2015), even Southeast Asian countries that incorporated more technological capacities are trapped in subordinate positions in the international production structures.

The neoliberal agenda facilitated corporate mobility and made it easier for TNCs to shift profits to low-tax jurisdictions, increasing rents for these firms. TNCs have been pushing for the appearance and diffusion of GVCs through redesigning international rules to protect their extractive practices (de Medeiros and Trebat, 2017; Andreoni and Chang, 2019). TNCs expanded their profitability through financialisation (Milberg, 2008; Milberg and Winkler, 2013; Auvray and Rabinovich, 2019).

That is why the initial global division of labour is reinforced by financialisation practices related to TNCs. First, they provided finance to their subsidiaries in conditions that national companies could not access. Second, as it is more difficult for national firms to climb the technological ladder, economies of scale and externalities gave TNCs a competitive edge for patenting intellectual property, making it more difficult for other companies to compete, acting as 'enclaves' within countries. In particular, it is difficult for those companies with headquarters that are not based in financial centres, as financial centres and pricing transferring strategies allow these companies to evade taxes (UNCTAD, 2015b; de Medeiros and Trebat, 2017). Relocating profits into offshore jurisdictions, making fewer funds available for national governments, influencing productive structures, for example, through less public investment in education or innovation. Financialisation in this way has been functional to the interests of these corporations.

2.4.2.2 Mesoeconomic dimension

Cyclicality and economic instability affect economic sectors disparately; therefore, instability is not neutral. Financial investors can adapt more quickly to sudden changes in relative prices or expectations than industrial capitalists. Productive capitalists need more extended periods to make investment or employment decisions as they can be difficult to revert. At the same time, industries related to commodities can cope better with economic volatility than domestically oriented industries (Cimoli et al., 2020). Commodity exporters are powerful actors in many EMEs and in the case of Latin American countries, the roots of this behaviour can be traced back to the origins of these republics; some of the historical reasons for creating the modern democracies were to export raw materials out of the region where social pacts were established to maintain the links with a transnational alliance. The interlinks between rent-seeking behaviour, the productive structure and the possibilities for structural change were introduced by Prebisch and Fajnzylber (Prebisch, 1976; Fajnzylber, 1990). In order to industrialise, a strong state's strategy to implement policies and manage conflicts among economic groups is necessary to put forward this agenda, but this is not easy to achieve if the domestic elite 'captures' the state (Palma, 2019). As Palma indicates, the main difference between the industrialisation process in Asia and the ISI process in Latin America was the incapacity to establish mechanisms for industrialisation to be sustained when the state support ended. The support for companies was not oriented, as seen in the infant industries, to be temporary until firms become internationally competitive (Fajnzylber, 1990). The neoliberal waves that came afterwards in the 70s' and 90s' are a new expression of this rooted dynamic favouring comparative advantages (Déniz and Marshall, 2018). Domestic elites were not opposed to financial liberalisation, and financialisation did not interfere with the interest of national commodity producers or TNCs, which has been *functional* to their interests. In that way, financialisation could be seen as a 'new pact' between financial powers (domestic and international) and domestic elites related to commodity exploitation and financial capital (*selective* to those sectors and their strategies).

2.4.2.3 Microeconomic dimension

At the firm level, heterogeneity is manifested in that, compared to rich countries, most companies in EMEs present stagnant productivity levels and limited capacity for innovation, with some exceptional dynamic nucleolus usually related to GVCs or state-owned firms. Small firms in Latin America represent a massive proportion of the productive structure, usually disconnected from dynamic activities and GVCs. However, exporting companies are usually larger, more sophisticated and frequently linked with foreign capital (Bértola, 2015, pp. 279).

The lack of depth and access to the financial sector results in difficulties when trying to finance investments, as firms need to rely on assets and liabilities that are short-term or retained profits, constraining structural change as retained profits are available for existing firms (Griffith-Jones and Ocampo, 2021). Shallow and not investment-oriented financial sectors could not promote the emergence of new firms that could be important in terms of progressive structural change. The funding gaps are more pronounced in the case of EMEs (OECD, 2019). After liberalisation, finance for productive purposes in EMEs is scarce, especially for manufacturing activities (Naqvi, 2018; Pérez Caldentey and Favreau Negront, 2019). EMEs' firms, especially small ones, encounter difficulties accessing financial services, including the banking system (for the case of Latin America, see Manuelito and Jimenez, 2010). Long-term finance in local currencies and funding for new and innovative ideas are very scarce in the Latin American context (Machinea and Kacef, 2007).

Within EMEs' firms, only a small number possess high productivity levels and can compete internationally, and those firms potentially have access to international capital markets (and domestic ones). Presbitero and Rabellotti (2016) found a positive association between labour productivity and better finance access. The firm that can invest in profitable financial assets or use financial products to hedge against volatility possesses an advantage over the rest, favouring a concentration process, thus reinforcing heterogeneity. In EMEs, size appears to be crucial for financing access (Galindo and Schiantarelli, 2002; Demir, 2009; Akkemik and Özen, 2014), and also

has been found to be key in terms of the use of the international bond market in the case of Latin American firms (Pérez Caldentey et al., 2019).

The tendency observed of a secular increase in cash holdings and liquid assets in the US (Davis, 2016; Rabinovich, 2019) and other rich countries (Azar et al., 2016) is also evident in EMEs. Rabinovich and Pérez Artica (2023) showed evidence for Latin American listed firms, Powell (2013) for Mexican companies and Karwowski (2018) for South Africa. Amongst financialisation scholars, the motivation behind this phenomenon is related to profitability associated with problems in the productive sphere due to the slowdown in aggregate demand and the difficulties of realising profits in the conventional way, shifting NFCs to look for opportunities in the financial sector. In corporate finance writings, causes are related to precautionary motives, suggesting that firms accumulate cash to seize profitable investment opportunities if they face a shortfall in internal cash flow and high costs of raising external funds (Bates et al., 2009). In addition, Harris and Raviv (2017) argue that within precautionary motives, asymmetric information makes firms hoard cash. Still, holdings are not equally distributed among firms as it depends on their investment opportunities and the cash-raising cost. According to Azar et al. (2016), the cost of carrying cash explains the variation in cash holding dynamics in the US and across other wealthy countries. Some companies could be exploiting a competitive edge related to the way in which they take advantage on different situations.

NFCs from EMEs use financial products to protect themselves against volatility in uncertain macroeconomic environments (Demir, 2009; Akkemik and Özen, 2014; Kaltenbrunner and Painceira, 2017). Özen and Akkemik (2012) argued that companies in Turkey financialised as a response to sudden policy changes and an unstable business environment. Rabinovich and Pérez Artica (2023) found that there is evidence of increased cash holdings for precautionary motives in Brazil due to the volatility in the economy. Financialisation strategies in this case are a response to economic instability.

Additionally, by exploiting interest rate differentials, carry trade operations have also emerged as a lucrative business (Galati et al., 2007) where EMEs firms' are more prone to this operation and are connected to companies which have high cash balances

(Bruno and Shin, 2017). Some financialisation scholars have suggested that due to their structural characteristics, such as higher interest rates compared to wealthier countries, fixed or semi-fixed exchange rates, higher inflation, and greater volatility- EMEs are more susceptible to engaging in these types of practices (Bonizzi, 2013; Rabinovich and Pérez Artica, 2023).

The discussion around a particular type of financialisation must also consider the business structure of firms in the region; TNCs and diversified business groups are crucial features of the type of capitalism present in Latin America. Both types of firms are responsible for mobilising investment (Galindo and Schiantarelli, 2002), and are representative of a type of capitalism described as 'Hierarchical' (Schneider, 2009) as the type of governance characterised by the relationship between managers and family owners or with the headquarters of TNCs is hierarchical concerning technology transfer, suppliers and customer relations. Along with the ownership structure, where financial markets are not very deep, creating a culture orientated to shareholder value is challenging (Torija Zane and Gottschalk, 2018). High concentration levels lead to a more 'closed' system, where shares do not usually entitle the right to vote. That is an essential difference between rich country's types of financialisation.

In sum, access to finance to fund productive investment and resort to hedging instruments is still challenging, where a particular type of firm is prone to financialisation, those NFCs that are productive enough to operate in financial markets. Still, we need a better understanding of these firms, the characterisation of their economic sector, size, links with foreign capital, etc., to better characterise their financialisation style. Nevertheless, we can argue that those firms that can take advantage of financialisation are those that, in a way, are the strongest within countries.

2.5 Final remarks

Financialisation is a global phenomenon with different implications for the centre and periphery; so, it requires to be analysed jointly. The integration of peripheral countries in the world economy must consider the financial and productive dimensions. Under this scheme, the chapter analysed how countries' structural characteristics are affected by financialisation, finding that financialisation strengthens the subordinate position in the global productive and financial system. Financialisation deepens the centre-periphery dichotomy, increases structural heterogeneity, and amplifies business and financial cycles, reinforcing their place in the global financial system and currency hierarchy. In the productive dimension it is intensified by: i) decreasing real investment, productivity, and expenditures in R&D, ii) reducing the policy space for industrial reforms, and iii) amplifying commodity boom-bust trajectories and reprimarisation strategies. On top of it, from the financial side, it exacerbates it by: i) increasing instability and recurrent economic crises, with limited policy space that reinforces the position of countries in the global financial system and ii) leading to a lack of resources for long-term investment. Although more research is required, in the case of peripheral countries, it is vital to assess the industry and kind of company that is affected by financialisation. Financialisation may be particularly problematic if it impedes the diversification of the productive structure, leading to deindustrialisation; the chapter makes the case that evaluating a 'composition effect' is indispensable.

The second part of the chapter analysed how the structural characteristics of EMEs matter for financialisation phenomena. The periphery's financialisation is *selective* and *functional* due to its productive and financial integration into the world economy. Because the EMEs function as a place where capital draws in or out depending on the circumstances, and EMEs currencies are at the bottom of the pyramid, the financialisation style prevalent in the periphery is not oriented to progressive structural change or achieving a growth path that would have brought about greater economic stability for these countries. Short-term investment looking for capital gains in the periphery is not oriented to provide capital for improving socio-economic conditions or promoting a catching-up transition. It is *functional* as financialisation strengthened the position of these countries in the world order based on the original

international division of labour, unaltering the characteristics of countries specialised in commodity production and low value-added activities compared with central countries. It is *functional* in the interest of commodity producers, including TNCs, business groups or economic elites, without challenging internal economic and political balances. It did not promote industrial and value-added activities that could potentially have conflicting interests with primary activities (regarding capital controls, exchange rate management or active infant industry protection). It is also *selective*, in the sense that it is focalised on some domestic firms prone to financialisation; they can access financial markets to fund their activities, hedge themselves and obtain some gains from speculative activities. Low levels of intermediation characterise the rest of the economy.

Chapter 3 : Does financialisation threaten economic complexity? A global empirical inquiry for the 1970-2015 period.

3.1 Introduction

In recent years, there has been a sharp increase in the activity of financial markets, influencing the entire global economy, which has been pointed out by the literature on financialisation, particularly after the financial crisis of 2008. Also, many studies assess the level of financialisation in domestic economies and the impact on several economic outcomes, like GDP growth or investment (Stockhammer, 2004; Epstein, 2005; Orhangazi, 2008; Stockhammer, 2012; Tori and Onaran, 2020). Nevertheless, the literature has largely overlooked the possibility that financialisation could potentially reshape economic development in the long run by influencing structural change and the evolution of productive structures.

As shown in Chapter 2, several aspects of financialisation can impact the productive structure and its diversification. At a macro level, by enlarging uncertainty and volatility (Dymski, 1999; Arestis and Glickman, 2002; Akyüz, 2014) financialisation could make investing more challenging (Stockhammer, 2008). In addition, it could limit the policy space to conduct active policies (Chang, 2002; Streeck, 2017; Andreoni and Chang, 2019). Financial inflows can modify the profitability of different economic activities, shifting resources away from productive enterprises (Demir, 2009; Bortz, 2018). Furthermore, it could boost commodity production through the correlation of commodity prices with global financial cycles and the financialisation of commodities (Akyüz, 2020). Some authors also pointed out how the financial sector competes for resources such as high-skilled workers (among others) with the rest of the economic sectors (Cecchetti and Kharroubi, 2012; Philippon and Reshef, 2012). Lastly, nonfinancial corporations (NFCs) have been affected by the shareholder value

orientation introducing changes in corporate behaviour (Aglietta, 2000; Froud et al., 2000; Lazonick and O'Sullivan, 2000; Lazonick, 2017) with detrimental effects on long-term innovation and value creation (Seo et al., 2012; Lazonick and Mazzucato, 2013; Dosi et al., 2016; Jibril et al., 2018). Even though the aspects described are closely related to the productive structure, to my knowledge, no studies empirically address the impacts of financialisation on the productive structure[12]. This chapter fills this gap by conducting an econometric study of financialisation as a potential driver of structural change and combining the literature on financialisation with the one about economic complexity.

The way in which countries mix resources and technology in order to produce material goods and services is what is referred to as the productive structure. Increasing the diversification of a country's productive structure is a key component of economic development (Prebisch, 1949; Singer, 1950; Hirschman, 1958). Diversified productive structures, are better able to withstand economic shocks, provide better quality jobs and capture a greater share of global trade (Cimoli et al., 2005; ECLAC, 2007). Consequently, structural change entails the diversification and complexification of productive structures which, for emerging countries, means narrowing the technological gap with rich countries.

A recent, but quickly expanding body of empirical literature on economic complexity argues that it is crucial to increase the sophistication of a nation's productive structure and productive capabilities (Hausmann et al., 2007; Hidalgo and Hausmann, 2009; Felipe et al., 2012; Ourens, 2013; Zhu and Li, 2017). They argue that countries can produce certain products based on the capabilities[13] they possess where the Economic Complexity Index (ECI) tries to capture those capabilities indirectly. Despite the fact that the literature on economic complexity is vast, only a few studies empirically analyse the key determinants of its transformation. Those which do exist focus on the

12 Theoretically, Corrêa and Feijo (2022) point out three channels of how financialisation affects the productive structure for the Brazilian case. First, through the financialisation-investment nexus; second, through the financialisation in commodity markets, which reinforces the production of those goods; and finally, through the impact on the competitiveness of the exchange rate. Overvalued exchange rates are detrimental to domestic manufacturing.

13 Defined as non-tradable inputs (Hausmann and Hidalgo, 2010).

role of FDI and trade integration (Javorcik et al., 2018; Sepehrdoust et al., 2019; Gabrielczak and Serwach, 2020); the effect of new patents (Nguyen et al., 2020), and the role of gross fixed capital formation (Sepehrdoust et al., 2019). These focus on a country (Gabrielczak and Serwach, 2020) or region (Sepehrdoust et al., 2019), and some of them make their analysis for a relatively short period (Nguyen et al. 2020). None of these papers consider the potential impact the phenomenal rise in global financial markets might have for economic complexity. Nguyen et al. (2020) includes an indicator of financial development, concluding that in the long run, having a deeper financial sector can be detrimental to the diversification and sophistication of national economies. In addition, Botta et al. (2023) found that episodes of large capital inflows have a negative effect on economic complexity. To date, there is no paper which explicitly brings together the literatures on financialisation and economic complexity and systematically investigates the impact the different manifestations of financialisation might have on countries' productive structures and potential for structural change.

This chapter fills this gap by constructing a panel of 80 countries, including developed and developing economies. To capture the long-term nature of structural change, the panel is collected from a large time frame between 1970-2015. The multi-faceted phenomenon of financialisation is measured by several indicators: private credit[14], stock market capitalization, stock of foreign assets and liabilities, which are non-FDI, as a share of GDP. The productive structure is captured by the ECI, and panel fixed effects are used to estimate the regressions. The results indicate that private credit has detrimental effects on economic complexity for the whole sample, and when dividing it into developed and emerging countries. When focusing on geographic areas, Latin America and the Caribbean display a slightly different behaviour: private credit has an inverted U-shape type of relationship with economic complexity. The stock of foreign assets and liabilities (non-FDI) has an adverse effect on economic complexity. The last effect is also present in the Middle East and North Africa (MENA) region. The results are robust to alternative specifications, including a different measure for productive

14 This comprises the financial resources provided to the private sector by domestic money banks (including commercial banks and other financial institutions that accept transferable deposits).

structure (the proportion of medium and technological exports in total exports) and a range of extra control variables.

The rest of the chapter is organised as follows: the economic importance of having a complex productive structure is discussed in section 3.2. Section 3.3 presents the literature on economic complexity. Section 3.4 presents the key determinants of change in the productive structure, including financialisation. Section 3.5 discusses the methodology and Section 3.6 presents the results. Section 3.7 concludes.

3.2 Importance of a diversified productive structure

Understanding the factors that influence economic development is one of the most contentious issues in economic literature. From Adam Smith, economists have claimed that the division of labour is the base of the wealth of nations (Smith, 1776), but specialising in one or another activity is not neutral. Manufacturing has long been recognised as a growth engine (Prebisch, 1949; Kaldor, 1966a; Kaldor, 1966b) because of its linkages and spillovers effects with other sectors, the capacity to introduce technological innovations, and the positive influence on employment (Hirschman, 1958). The economic complexity literature focuses on productive capabilities pointing out that measuring a society's ability to transfer its knowledge, productive capacity, technology, and know-how into products is crucial. Here, even within manufacturing activities, not all produced goods have the same impact on economic growth, and there is a hierarchy of goods (Hausmann et al., 2007 pp. 2). A country's economic success is not necessarily predicted by a rise in the exporting volume but rather by exporting quality (Hausmann et al., 2007; Anand et al., 2012). There is evidence that economic complexity has a sizable and long-lasting positive influence on economic growth (Hidalgo and Hausmann, 2009)[15]. For developing countries, a more complex and

15 For a critique of the use of the product space approach (in which the ECI is based) to assess industrial strategies, see Andreoni and Chang (2019).

diversified economy helps to converge to the income level of high-income countries. Ferrarini and Scaramozzino (2016) establish a measure for economic complexity. Their research reveals a strong positive correlation between complexity and its ability to adapt, with considerable implications for output growth across a panel of countries over the period from 1990 to 2009. Moreover, Sweet and Eterovic (2019) find that economic complexity (measured by the ECI) positively affects total factor productivity growth studying 70 countries over 40 years. The effects of increasing complexity are also positive in terms of income inequality; for Hartmann et al. (2017) countries that are able to raise economic complexity are likely to improve their inequality levels after controlling for income, education and the quality of institutions.

3.3 How to measure the productive structure?

How countries combine resources and technology in order to produce certain material goods and services is what we refer to as the productive structure. To measure the pattern of specialisation of a country, the literature has used a variety of measures. Some studies focus on employment shares of economic sectors, while others use output (in real or nominal prices). Different measures will give different trajectories and results. Other studies used aggregate measures of sectorial concentration and indicators of production of related products (see Hartmann et al., 2017 for a detailed explanation). Nevertheless, neither of these measures considers the sophistication of products.

The framework of economic complexity is based on measuring productive capabilities within a certain productive structure. Broad categories such as agriculture, services, or manufacturing fail to capture differences in industrial structures adequately (Hartmann et al., 2017). That does not mean that manufacturing is not related to more complex products; of course, it is, but manufacturing has highly complex products like electronics and chemicals, and others not so much like food and beverages (see Atlas of Economic Complexity on Product Complexity Indexes). This chapter will focus on

the ECI to capture the differences in capabilities in countries across time[16]. The structuralist's recommendations for a sustainable and prosperous economy entail shifting from low value-added activities to high ones. From this standpoint, it is also feasible to highlight that structural change entails building a complex and diverse industrial sector, enhancing productivity through the economy's technological sophistication. According to Gala et al. (2018) the ECI is a suitable measure to analyse structural change and explain countries' convergence and divergence patterns across time.

In this index, the more sophisticated the items a country produce and export, and the more diverse the number of products, the more complex the country is (Hausmann et al., 2013). The ECI considers the diversity and sophistication of countries' exporting portfolio baskets and compares to how many countries can export the same product. Consequently, the ECI combines two dimensions: the diversity and ubiquity of exported products. Based on those dimensions, the ECI gives information to rank countries. Those at the top of the ECI rank export a wide range of products (diversified basket) and are amongst the only countries with similar productive capacities to export those goods. The diversity of a country's exports is then a proxy of the range of capabilities accessible in that country. The ubiquity of a product is an approximation of the range of capabilities required to make that product. More ubiquitous products require little knowledge and vice versa. Therefore, countries can improve their complexity by generating new products, deepening their productive capabilities. Also, they can create new productive capabilities that, combined with pre-existent, can develop even more products.

Here, there is a detail of how the index is constructed, taking the explanation from Hausmann et al. (2013). First, we consider M_{cp} as a matrix in which c represents the countries and p products. Where any element of the matrix is 1 if the country c produces the good p and, 0 otherwise. By adding the rows, it is possible to measure

16 Other indicators have been constructed using this approach, like PRODY, developed by Hausmann et al. (2007) or EXP, more detail in section 4.

diversity; and by adding the columns of the matrix the ubiquity. It is defined by the equations (a) and (b):

$$\text{(a) Diversity} = k_{c,0} = \sum_p M_{cp}$$
$$\text{(b) Ubiquity} = k_{p,0} = \sum_c M_{cp}$$

In order to generate accurate measures for the capabilities a country possesses, or a product requires, they correct the information using diversity to correct ubiquity and vice versa. This means using an iterative process. For countries, they calculate the average ubiquity of the items that a country exports, as well as the average diversity of countries that create those same products and so on. In terms of products, this implies calculating the average diversity of the countries that produce them, as well as the average ubiquity of the other items that the countries in the sample produce. The recursion is indicated in equations (c) and (d): [17]

$$\text{(c)} \quad k_{c,N} = \frac{1}{k_{c,0}} \sum_p M_{cp} * k_{p,\ N-1}$$

$$\text{(d)} \quad k_{p,N} = \frac{1}{k_{p,0}} \sum_c M_{cp} * k_{c,\ N-1}$$

Then (d) is inserted into (c) to obtain the following equations:

$$\text{(e)} \quad k_{c,N} = \frac{1}{k_{c,0}} \sum_p M_{cp} * \frac{1}{k_{p,0}} \sum_{c\prime} M_{c\prime p}\ \ k_{c\prime,\ N-2}$$

$$\text{(f)} \quad k_{c,N} = \sum_{c\prime} k_{c',\ N-2} * \sum \frac{M_{cp}\, M_{c\prime p}}{k_{c,0}\ \ k_{p,0}}$$

After some operation the equation is transformed into:

$$\text{(g)} \quad k_{c,N} = \sum_{c\prime} \widetilde{M}_{cc'}\ \ k_{c',N-2}, \text{ where } \widetilde{M}_{cc'} \text{ is:}$$

17 N is the number of iterations, the larger the number it is more accurate the ordinal ranking of countries (or goods).

$$\text{(h) } \widetilde{M}_{cc'} = \sum_p \frac{M_{cp}\, M_{c'p}}{k_{c,0}\, k_{p,0}}$$

The equation (g) is satisfied by $k_{c,N} = k_{c,N-2} = 1$, which is the eigenvector of $\widetilde{M}_{cc'}$ associated with the higher eigenvalue. As this is an eigenvector of ones, they take the second larger vector in order to capture the economic complexity ($\vec{K}$). Therefore, ECI is defined by the following equation, where $< >$ symbolises the average, and $stdev$ the standard deviation:

$$ECI = \frac{\vec{K} - \overrightarrow{< K >}}{stdev(\vec{K})}$$

Additionally, to make countries comparable, the indicator considers the countries' size. Even when analysing countries that export the same good, larger countries are expected to export a higher volume. Hence, the indicator looks at the quantity that a country exports and the world trade for each commodity.

ECI is based on the revealed comparative advantage (Balassa, 1965). According to this definition, a country has a Revealed Comparative Advantage in a particular product if the country's share on world exports is higher than what can be consider its "fair share", which is equivalent to the product's proportion of total world trade. [18]

The formula of the RCA_{cp} for the country c in the product p is:

$$RCA_{cp} = \frac{X_{cp}}{\sum_c X_{cp}} \Big/ \frac{\sum_p X_{cp}}{\sum_{c,p} X_{cp}}$$

Where X_{cp} is the export of the product p by country c; $\sum_c X_{cp}$ represents the total export of country ; $\sum_p X_{cp}$ is the global export of the good p, and finally $\sum_{c,p} X_{cp}$ is the

18 They give the example that Brazil has a comparative advantage in soybeans because from the total trade of soybeans in 2010 (0.35 % of global trade with $42 billion), Brazil exported approximately $11 billion of the total, with the total exports of the country of $140 billion, accounting for the 7.8% of the country's total exports. So, Brazil exported more than 20 times the "fair share" of soybean exports (7.8% divided by 0.35%).

total global exports. So, the numerator represents the share of exports of the commodity p, for country c among total exports of that country. Whereas the denominator is the percentage of product p in total global exports, the elements of the matrix M_{cp} are determined using the information of RCA:

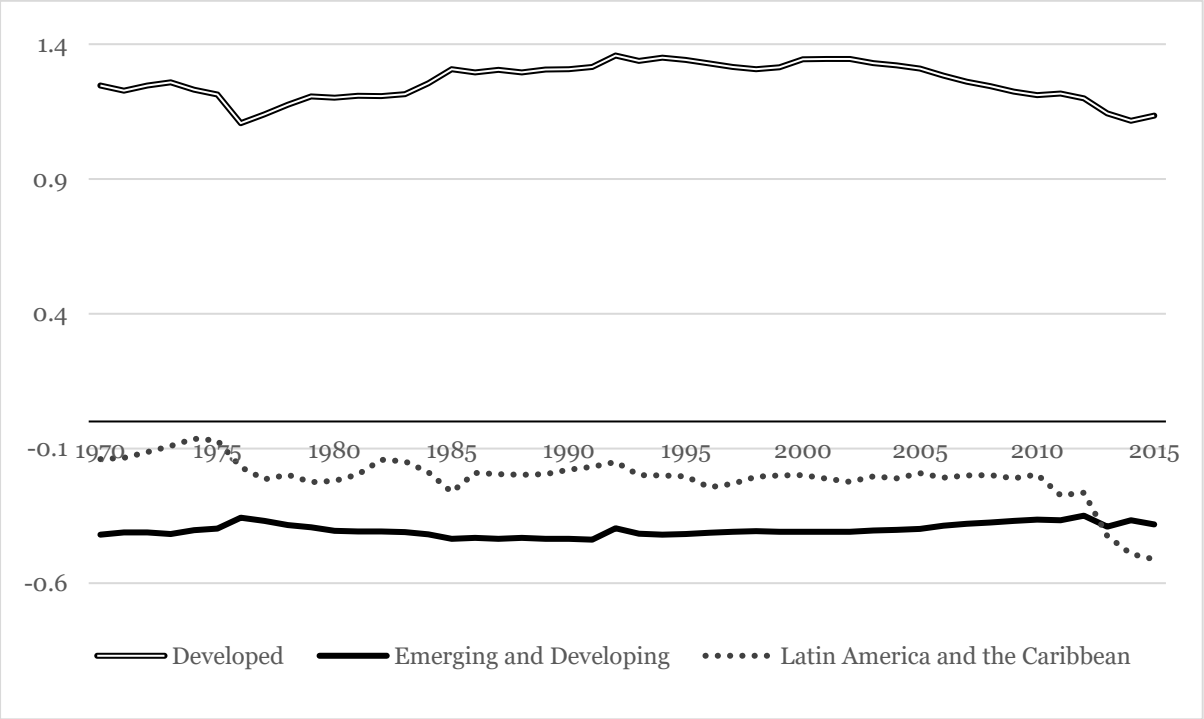
$$M_{cp} = \begin{cases} 1 & \text{if } RCA_{cp} \geq 1 \\ 0 & \text{if } RCA_{cp} < 1 \end{cases}$$

When $RCA_{cp} \geq 1$, the export share of nation c's product p surpasses the worldwide export share for this product. M_{cp} is the matrix that has the information of what countries produce which goods and it is used to construct the product space and the ECI.

The approach of economic complexity is a pragmatic one in the sense that it uses an outcome measure based on trade statistics. The fact that it does only consider exports and not production can be a drawback. However, we must remember that centre-periphery dynamics are maintained through international trade relations (Presbich, 1949). As this chapter will show, there is a substantial distance between peripheral countries and those from the centre using this index.

Figure 3-1 shows the evolution of the ECI over the period 1970-2015 for developed countries, and for emerging and developing countries (together), following the IMF country classification.

Figure 3-1: Economic Complexity Index 1970-2015.

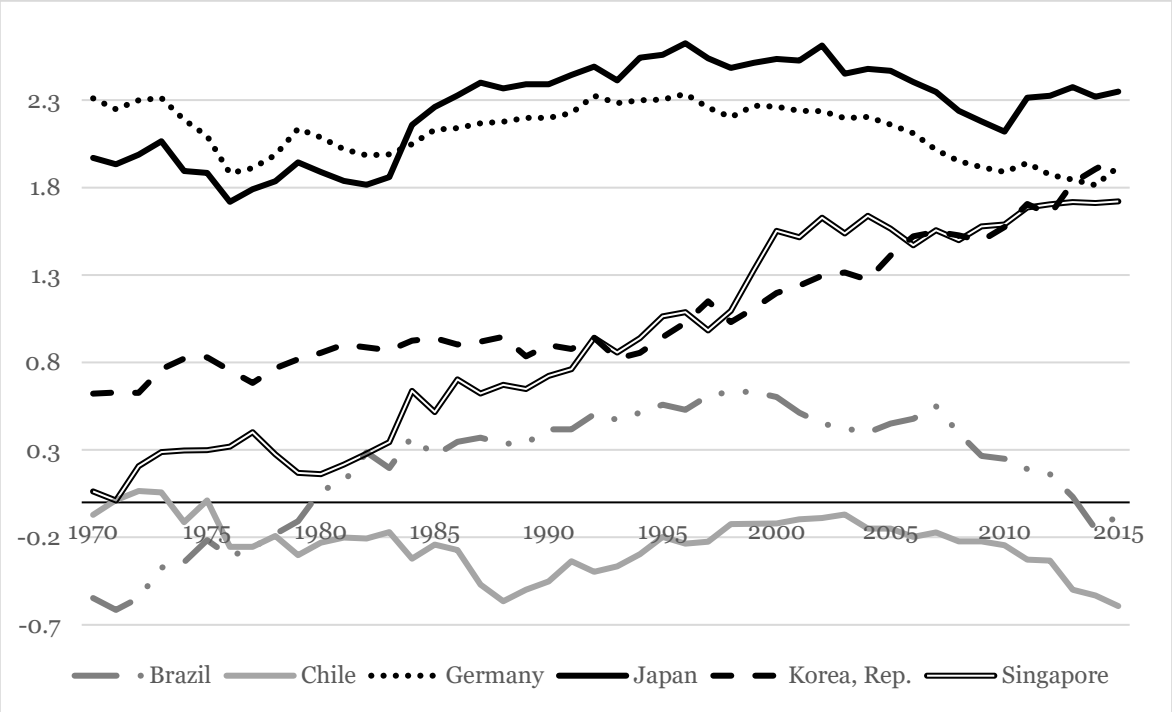


Source: Author's elaboration using data from ECI (Hidalgo and Hausmann, 2009).
Notes: Countries are classified following the IMF country classification.

The indicator range is from about -2 to +2 (-2.79 minimum and 2.62 maximum). The figure shows a clear gap in ECI across the two groups of countries, which has been stable over time. In the case of developed countries, there is a moderate increase from the mid-1980s, until around 2002, with a slight decrease after. In the case of emerging and developing countries, their complexity has been plunged to substantial low levels, around -0.4. In the case of Latin America and the Caribbean, complexity is, on average, above the one of developing and emerging countries. However, after 2010, there is an evident deterioration, ending the period below the average of those countries. The trajectory shows a regressive structural change, which could be linked to the commodity boom cycle.

Then Figure 3-2 presents the evolution of the ECI for selected countries: Brazil, Chile, Germany, Japan, Korea and Singapore.

Figure 3-2: Economic Complexity Index 1970-2015, selected countries.



Source: Author's elaboration using data from ECI (Hidalgo and Hausmann, 2009).

The case of South Korea and Singapore are worth noting, Asian countries conducted active long-term policies to develop capital and technology-intensive sectors, and the index reflects it. Developing productive capabilities in new sectors was a moving target as economies diversified and (dynamic) comparative advantages improved (Cimoli et al., 2020). The difference between Asia and Latin America is evident and well-documented in the literature. In the case of Latin America, there is an inability to develop long-term structural change processes. When comparing countries, the difference is noticeable, especially with those that systematically rank high in the ECI, like Japan and Germany. The indicator for Brazil after the 1990s shows an inverted U-shape with a steady decrease in the last decades (continuous grey line with dots). Chile has also experienced a reduction in recent years. That could be linked with the evolution of commodity prices and with inconsistent and ineffective industrial policies in the region.

3.4 Key determinants of the changes in economic complexity

Nowadays, economists are paying more attention to the complexity of productive systems in addition to some traditional factors of economic growth, such as capital or technological accumulation, following the neoclassical models of Romer (1986; 1990) or Solow (1956; 1957). According to the economic complexity literature, a country's productive system may become more sophisticated over time if it either improves the quality of previously produced goods or shifts towards new and more sophisticated products. The determinants of complexity levels are less studied. Anand et al., (2012) constructed a measure of export diversification based on the work of Hasumann et al. (2007) (EXP) to analyse the effects of human capital and external liberalisation on the complexity of goods and services over a 20-year period. Education, information flows, and external liberalisation are associated with greater sophistication. Javorcik et al. (2018) captured the complexity of new domestic products of Turkish manufacturing firms by using the approach developed by Hidalgo and Hausmann (2009) to investigate the effects of FDI and product upgrading. They establish that foreign affiliates positively affect the complexity of new products.

Some studies analyse the determinants of economic complexity using the ECI, where most of them generally include as explanatory variables: resources (human, capital or natural), technological advances, and trade or institutional quality. Gala et al. (2018) studied the effects of the employment structure on economic complexity, where the amount of manufacturing and sophisticated services jobs positively impacts ECI. Likewise, Lapatinas (2019) suggests that the Internet enlarges an economy's level of complexity and productive potential. In the case of Lapatinas et al. (2019), they looked at the influence of the taxation structure for OECD countries, revealing that higher capital taxes relative to labour imply lower levels of ECI, while labour taxation shows a positive effect on ECI. In the case of Sepehrdoust et al. (2019), they simulated shocks using information from the Middle East developing economies, highlighting the favourable effects of increasing trade liberalisation, gross capital formation, and FDI on ECI. Furthermore, two studies scrutinized the effect of scientific knowledge on ECI. The first, from Laverde-Rojas and Correa (2019), find that scientific productivity in basic science and engineering has a positive effect on economic complexity for high-

income countries, this effect is not significant for low-income countries. In the second, Nguyen et al. (2020) scrutinized the role of innovation, concluding that patents contribute to greater economic complexity. Gabrielczak and Serwach (2020) focused on the effects of policy measures using synthetic control methods to compare the effects of the adoption of the euro in Estonia, demonstrating that, in comparison to the alternative scenario, the introduction of the euro has increased the complexity of exported items. Yalta and Yalta (2021) included natural resource rent and education, where natural resource rent exerts a negative influence on economic complexity, and that education (primary and secondary) enhance it. When analysing terms of trade, they find detrimental effects for some of the specifications. Another study by Nguyen et al. (2022) revolve about the effects of Internet, institutional quality, and economic integration on ECI. Their results showed that the Internet, trade openness and institutional quality are crucial for economic complexity. When analysing FDI, the results depend on the level of development in the countries. For the least developed countries, FDI inflows are not beneficial, while they exert a positive effect on middle-income ones. Finally, Bahar et al. (2022) considered the effects of migration on ECI. Concluding that the more diverse the birthplaces, the better for economic complexity.

Two studies include in their analysis the connections of economic complexity with the financial sector, one by analysing the effect of financial development and the other by looking at the influence of financial globalisation on complexity. The first study by Nguyen et al. (2020) expanded upon the analysis of patents described above by highlighting the role of the financial sector (utilising the ECI+). They argue that overall, the effect of financial development on complexity, using the IMF Financial Development Index[19], is positive[20]. When considering the time horizon, in the short run, the results are positive but not significant. Notwithstanding, long term, the overall effect of financial development is negative, raising concerns about its sustained impact on economic complexity. Financial depth, one component of financial development, is

19 The index has nine dimensions, including access, depth and efficiency of financial institutions and financial markets. It is only available for 52 countries and for a relatively short period.

20 They find positive results when using the ECI+. Nevertheless, the results of financial development on economic complexity when using ECI are negative, attributing the differences to the construction of these two indicators. The ECI+ is available for a shorter period than the one used in this study, and it is also a less commonly used indicator, which is why it was not included in this chapter.

also found to be harmful in the long run. The authors explain these results based on the fact that an excessively large financial sector could reduce the productive capabilities of a given country. The observation aligns with the theoretical discussion of Chapter 2 in this thesis. When splitting the sample into country groups, the effect of financial development is negative but not significant for middle-income countries. Conversely, for high-income countries, the result is positive and significant. The second paper, Botta et al. (2023) includes a financial variable that represents financial globalisation, showing that episodes of large capital inflows (non-FDI) negatively affect economic complexity for the entire sample[21]. Compared to developed countries, the magnitude is more significant in the case of emerging and developing countries.

Table 3-1 below summarises the key papers on the topic with the main findings, estimation techniques and data characteristics.

Table 3-1: Summary of the Empirical Literature on the determinants of economic complexity.

Study	Dependent Variable	Data	Estimation Method	Main Findings
Gala et al. (2018)	ECI	Panel data for 35 countries between 1995-2011	System GMM	Positive long-run effects of manufacturing and sophisticated services sectors employment on economic complexity
Lapatinas (2019)	ECI	Panel data for 100 countries between 2004-2015, 5-year averages	FE 2SLS/IV and Difference GMM	Internet access has a positive effect on ECI

21 The paper is concerned about industrialisation/deindustrialisation, and it uses the ECI as a control variable. Still, the results are relevant for this chapter.

Lapatinas et al. (2019)	ECI	Panel with 17 OECD countries for 1970-2001	FE 2SLS/IV	Capital taxation has a negative effect while labour taxation and the ratio of labour to capital taxation presents a positive effect.
Sepehrdoust et al. (2019)	ECI	Panel of Middle East developing economies 2002–2017	PVAR	Positive shocks derived from trade freedom, foreign direct investment and gross fixed capital formation.
Laverde-Rojas and Correa (2019)	ECI	Panel of 91 countries between 2003-2014	System GMM	Positive effect of scientific productivity on complexity.
Nguyen et al. (2020)	ECI+/ECI	Panel of 52 economies (developed and middle-income economies) for 1995-2017	PCSE. Robustness with other techniques (pooled OLS, FGLS, and system GMM)	The number of patents contribute to greater economic complexity, but a too large financial sector is detrimental.
Yalta and Yalta (2021)	ECI	Panel data for 12 countries from the MENA region for the period 1970-2015	System GMM	Positive effect of human capital, and detrimental of natural resource rents.
Nguyen et al. (2022)	ECI	Panel of 89 countries over the period 2002–2016.	PCSE. Robustness with other techniques (pooled OLS and FGLS)	Positive effects of Internet, trade openness and institutional quality. For the least developed countries FDI inflows are not beneficial, while positive for middle-income countries.

Botta et al. (2023)	ECI	Panel data for 36 countries, 1980-2017	PCSE	Negative consequences of episodes of financial bonanzas. Larger effects for emerging and developing economies.

Source: Author's elaboration.
Notes: OLS is Ordinary Least Squares, 2SLS is Two-stage Least Square, IV is Instrumental Variables, GMM is Generalized Method of Moments, PCSE is Panel Corrected Standard Errors model, PVAR is Panel vector auto regression model and FGLS is Feasible Generalized Least Squares.

As previously stated, the literature on the determinants of economic complexity is not very extended and has not included financialisation systematically in its analysis. Also, several studies examine the influence of the variables in relation to the sample countries' degree of development, finding different results for developed vs EMEs (Laverde-Rojas and Correa, 2019; Nguyen et al., 2020; Botta et al., 2023; and Nguyen et al., 2022). The next section will introduce the empirical investigation of financialisation as a driver of structural change.

3.5 Empirical specification, data sources and econometric methodology

The chapter examines the influence of financialisation on economic complexity given by equation (1):

$$ECI_{it} = \alpha + \beta_1 Financialisation_{it} + \gamma X_{it} + \theta_i + f_t + u_{it} \quad (1)$$

ECI_{it} is the Economic Complexity Indicator by Hidalgo and Hausmann (2009), available by MIT in their Observatory of Economic Complexity, i represents the country and t the year. $Financialisation_{it}$ is a vector of financialisation indicators and

X is a vector of macroeconomic explanatory variables. The regression model includes country-fixed effects (θ_i) and time-fixed effects (f_t). This is to account for unobserved country-specific characteristics that are constant over time within countries and control for year-specific factors common to all nations, as they could both affect the productive structure. u_{it} is the error term representing the residual variation in the dependent variable after accounting for the independent variables (X_{it}) and the fixed effects ($\theta_i$and f_t). The error is assumed to be normally distributed.

The indicators of financialisation are divided in two: those at a domestic scale and one reflecting the international dimension of financialisation. At the domestic scale, it includes private credit to GDP ($privatecred_{it}$) and its square to capture non-linear dynamics. Mainstream literature claimed a positive relationship existed between financial growth and economic growth (Arestis et al., 2015 for a meta-analysis). Nevertheless, there has been caution about this nexus where some studies confirmed an inverted U-shape type of relationship (Cecchetti and Kharroubi, 2012 or Arcand et al., 2015). From the heterodox tradition, the importance of credit levels (and their sustainability) is in line with the Minskyan financial instability hypothesis (Minsky, 1978). The stock of private debt relative to income (in this case, GDP, as information on disposable income is not available for the countries in the sample) can lead to insolvent positions of economic units when central banks increase interest rates or asset prices fall. The second measure of domestic financialisation, stock market capitalization to GDP ($stockmarkcap_{it}$), is related to the discussions around the type of financial system countries have, if they are more focused on banks or on financial markets (Lazonick and O'Sullivan, 2000; Hall and Soskice, 2001). The stock market capitalization indicator has been used as an indirect measure of corporate ownership structure. In those countries with a more market-based financial system the ownership is dispersed and facilitated by capital markets, like in the case of Anglo-American countries. This aspect is linked with being responsible for modest investment rates when comparing to Japan or Germany, where the ownership structure is concentrated in banks or other corporations are the major shareholders (Sjoberg, 2009). In addition, considering the international dimension of financialisation, a proxy of financial openness capturing *de facto* capital account openness is incorporated. This is a comprehensive measure that includes all sectors' foreign financial assets and

liabilities, including portfolio equity, debt and financial derivatives[22] (tot_nonFDI_{it}). The reasons for excluding FDI to capture financialisation and using non-FDI in the analysis are twofold. First, FDI is considered the less volatile category regarding capital inflows (Griffith-Jones and Ocampo, 2021) and the more desirable. As Fiebiger (2016) states, there is no evidence to consider FDI as financialisation, and it should be considered a real type of investment. In the same vein, and for these reasons, Rabinovich (2019) argues that including FDI as an indicator of financialisation is misleading. Second, non-FDI captures short-term capital movements better, where these transactions are closely linked with harmful effects on macroeconomic stability and the productive structure (Botta et al., 2023). FDI is usually linked with productive motives, such as market-seeking, efficiency-seeking or resource-seeking, rather than financial ones (Milberg and Winkler, 2013, p. 132).

The baseline specification is, in a way, arbitrary, as several variables could be included. Control variables of the baseline specification are income level (GDP per capita, GDP_{it}) and country size (population, POP_{it}) and its squares, following the influential paper of Rodrik (2016). As will be discussed in Chapter 5, some authors argue that the economic structure of a country shifts from agriculture to manufacturing (and then to services) during the development process, where labour and value added move from one sector to the other (Rowthorn and Ramaswamy, 1997 and Palma, 2005). After reaching a peak in manufacturing, during advanced stages of economic development, the share starts to decrease, showing signs of deindustrialisation. So, GDP_{it} and its square capture the fundamental inverted U-shaped dynamics of manufacturing shares. In the case of economic complexity, Imbs and Wacziarg (2003) suggest that the complexification of a country also follows an inverted U-shape with economic development. The study of Rodrik (2016) also controls for population for a more accurate comparison between regions with different population sizes, as it is connected with job supply and aggregate demand. Both variables are also included in Botta et al. (2023). These two variables capture more structural forces associated with the evolution of productive structures. Coefficient γ_1 is expected to be positive, and its

22 International reserves are included because, as seen in Chapter 2, the increase in foreign reserves by Central Banks reflects a more financialised environment and shows the need of governments to defend themselves against speculative attacks and contagion effects.

square (γ_2) negative, aligned with Rodrik (2016). The same signs are expected for population.

Trade openness, measured as exports plus imports divided by GDP ($tradeopen_{it}$), is included in the equation as it is an important factor that could potentially affect complexity. On the one side, access to foreign markets could facilitate the flow of technology and knowledge and provide economies of scale and agglomeration. On the other, in the absence of technological policies, it could make countries specialise in their comparative advantages (commodities in some countries as seen in Chapter 2) (for a discussion, see McMillan et al., 2014). The expected sign, γ_5, will depend on which effect predominates. Trade openness has also been incorporated as a control in the research about the determinants of ECI (for example, Nguyen et al., 2020). What is more, the inflation rate is included ($inflation_{it}$), as highly inflationary environments may distort decision-making regarding investment to upgrade productive capabilities (included in Lapatinas, 2019). So, the sign, γ_6, is expected to be negative.

The model is then defined by equation (2):

$$ECI_{it} = \alpha + \beta_1 privatecred_{it} + \beta_2 \ privatecred_{it}^2 + \beta_3 stockmarkcap_{it} + \beta_4 tot\_nonFDI_{it} + \gamma_1 GDP_{it} + \gamma_2 GDP_{it}^2 + \gamma_3 POP_{it} + \gamma_4 POP_{it}^2 + \gamma_5 tradeopen_{it} + \gamma_6 inflation_{it} + \theta_i + f_t + u_{it} \quad (2)$$

The coefficient on private credit β_1 is expected to be positive, as private credit can be channelled to finance investment and upgrading technological capabilities. Then, β_2 is expected to be negative as high levels of indebtedness can stimulate risky behaviour or be perceived as excessively high for international investors triggering reversal movements and making it difficult to channel resources into the productive system. β_3 is expected to be negative as short-termism is more present in countries which are more reliant on financial markets. In the case of β_4 , it is also expected to be negative, especially in developing countries as capital account openness leads to more volatile environments which are challenging for real investment and investing in R&D.

In the extension of the baseline specification, more variables are added, on some occasions reducing the sample size. The first variable is natural resource rents ($nrents_{it}$), which incorporates the concept of the natural resource curse. This hinders structural change for several reasons discussed in Chapter 2, such as rent-seeking behaviour (Cimoli and Rovira, 2008) and the adverse effects of the Dutch disease (Palma, 2019). Nevertheless, natural resources could provide essential inputs for production in other sectors, potentially serving as a foundation for broader economic activities. Overall, the effect on economic complexity is expected to be negative. This variable was also included in the study by Botta et al. (2023) and Yalta and Yalta (2020).

Yet, the terms of trade index is added ($ttrade_{it}$). The overall effect of the terms of trade on economic complexity is unclear as it depends on two opposite forces. On the one hand, an increase in terms of trade could lead to a rise in profitability, encouraging economic diversification. On the other hand, it could discourage export diversification as it is more profitable to focus on exporting larger quantities of existing products rather than expanding into new sectors and further diversifying the economy, as explained by Agosin et al. (2012). This last variable is present in Yalta and Yalta (2020). Also, FDI (tot_FDI_{it}) is incorporated as it can potentially benefit technological transfer (UNCTAD, 2003) and economic complexity, as shown in Javorcik et al. (2018). Therefore, the sign is expected to be positive.

The variables included are primarily associated with structural factors emphasised in Structuralist writings. These writings focus strongly on the external dimension (terms of trade), commodity production, and unstable economic environments (inflation). However, this does not mean that other factors, such as education or institutional quality, are unimportant.

Also, another financialisation indicator is added, the Chinn-Ito Index (Chinn and Ito, 2006), to measure de jure capital account openness (ka_open_{it}). It is based on binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions. The indicator ranges between 0 and 1, where one indicates a capital account fully open (*in the facto* terms). That does not necessarily mean that capital is actually flying into the country, which would be reflected in a high value of

foreign assets and liabilities to GDP (*de jure* measure). The indicator has been widely used in the financialisation literature (for example, by Kohler et al., 2019). According to the literature on financialisation, its sign is expected to be negative.

The study is conducted using an unbalanced panel with 80 countries recorded at an annual frequency over a maximum timespan of 41 years, from 1975 to 2015. The panel was elaborated trying to maximise the information on economic complexity. ECI contains information for 120 countries[23], but financialisation variables are available for only 80 of those countries, covering a maximum timespan from 1975 to 2015. Especially in emerging and developing cases, there are missing values on the financialisation variables and sometimes on the control ones. The full sample is divided into two subsamples -developed, and emerging and developing (EMEs)- following the IMF country classification (International Monetary Fund, 2023). See Table 1 in Appendix A for details on the countries, regions, and data availability. Emerging and developing countries are further divided into regions. There is a focus on Latin America and the Caribbean region, and, when appropriate, some regional comparisons are presented. The data comes from a variety of sources, primarily from the World Bank's World Development Indicators (WBDI), the Observatory for Economic Complexity, the Lane and Milesi-Ferretti database (2017) and the Global Financial Development Database from the World Bank (GFDD). A complete list of the variables and their sources is presented in Table 3-2.

To maintain a certain level of consistency and to allow a more straightforward interpretation of the results, the indicator of economic complexity (ECI) is re-scaled between 0 and 100, following Botta et al. (2023)[24]. The summary statistics of these variables are presented in Table 3-3.

23 ECI has information for 124 countries from 1970 to 2015, but for 3 of them, there is information for only one year, so they were eliminated.

24 This is done following the mathematical formula: eci_new = ((max_new - min_new) / (max_old - min_old)) * (eci_old - max_old) + max_new where max is the highest value of ECI in a given year and min is the lowest. New is in the new scale, and old is in the usual scale of ECI (from around -2.39 to around 2.39).

Table 3-2: Variable description.

Level	Variable name	Definition	Source
Productive structure	ecir	Economic Complexity Index- rescaled (0-100)	Hidalgo and Hausmann (2009)
	techexp	Medium and high-tech exports (% manufactured exports)	WDI
Financialisation	privatcred	Private credit by deposit money banks to GDP (%)	GFDD
	stockmarket	Stock market capitalization to GDP (%)	GFDD
	tot-non FDI	Total external assets and liabilities excluding FDI to GDP (%)	Lane and Milesi-Ferretti (2017)
	ka_open	Chinn-Ito Index of capital account openness	Chinn and Ito (2017)
Macro controls	GDP	GDP per capita (constant 2015 US$), in thousands	WDI
	POP	Total population, in millions	WDI
	exports	Exports of goods and services (% of GDP)	WDI
	imports	Imports of goods and services (% of GDP)	WDI
	tradeopen	Exports plus imports (% of GDP)	WDI
	inflation	Consumer prices (annual %)	WDI
	nrents	Total natural resource rents (% of GDP)	WDI
	ttrade	Net barter, ratio of export to import unit value indexes (2010=100)	WDI
	tot-FDI	Total FDI assets and liabilities to GDP (%)	Lane and Milesi-Ferretti (2017)

Source: Author's elaboration.

Table 3-3: Descriptive statistics of base line variables and extension variables.

	Full Sample			Developed countries			EMEs		
	Obs.	Mean	Std. dev.	Obs.	Mean	Std. dev.	Obs.	Mean	Std. dev.
ecir	3,436	56.883	18.161	1,220	74.815	11.594	2,216	47.011	12.762
privatecred	3,112	50.013	38.201	1,094	77.924	40.466	2,018	34.883	26.681
tot_nonFDI	3,348	160.722	252.967	1,208	249.977	362.422	2,140	110.340	137.748
tot_FDI	3,362	46.603	103.674	1,209	82.046	159.785	2,153	26.700	36.782
stockmarkcap	1,716	59.518	94.087	886	76.143	120.366	830	41.771	47.285
GDP	3,246	15.002	17.097	1,152	30.483	14.898	2,094	6.486	11.255
POP	3,677	59.388	167.274	1,288	31.795	52.874	2,389	74.264	202.321
tradeopen	3,247	73.642	53.017	1,187	85.506	73.429	2,060	66.806	34.606
inflation	3,203	25.581	200.950	1,221	8.684	44.126	1,982	35.990	252.560
nrents	3,337	6.584	11.461	1,187	0.883	1.656	2,150	9.732	13.211
ttrade	2,030	111.817	33.979	528	101.032	16.890	1,502	115.608	37.487
ka_open	3,308	0.545	0.375	1,178	0.767	0.298	2,130	0.422	0.357

Source: Author's calculations based on data as reported in Table 3-2.
Notes: *** *p<0.01*, ** *p<0.05*, * *p<0.1*.

Then, Table 3-4 presents the correlation between the baseline variables. All correlations are below 0.65. Private credit, total non-FDI, and stock market capitalization are positively correlated with economic complexity. In addition, the Variance Inflation Factor test (VIF) is conducted for the variables included in Table 3-4 and provided in Appendix A (Table 2). The values are below the standard threshold of 10.

Table 3-4: Correlation of base line variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ecir	1							
(2) privatecred	0.56***	1						
(3) tot_nonFDI	0.24***	0.45***	1					
(4) stockmarkcap	0.13***	0.46***	0.42***	1				
(5) GDP	0.57***	0.55***	0.44***	0.27***	1			
(6) POP	0.01	0.06***	-0.12***	-0.01	-0.14***	1		
(7) tradeopen	0.16***	0.33***	0.55***	0.53***	0.21***	-0.23***	1	
(8) inflation	-0.03*	-0.06***	-0.04**	-0.16***	-0.07***	-0.01	-0.05***	1

Source: Author's calculations based on data as reported in Table 3-2.
Notes: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Given the inherent heterogeneity of panel data, it is essential to control for this variation to prevent biased results. The fixed effects model is more suitable than pooled ordinary least squares (Baltagi, 2021); fixed effects models are widely recognised as effective and powerful tools and were developed to address the issue of omitted variable bias in nonexperimental research (Wooldridge, 2002; Allison, 2009). The primary strength is that omitted variable bias and unobserved heterogeneity are often reduced under a fixed effects approach because variation is contained within units (e.g., countries) rather than between units, where unobserved factors remain constant. In addition, it offers a clear interpretation of causal relationships, especially in economic studies where context-specific factors might influence outcomes (Baltagi, 2021). Additionally, fixed effects offer a more straightforward implementation when

compared to methods like GMM. GMM relies on the use of instruments, which can lead to the issue of instrument over-proliferation (Roodman, 2009). Authors have cautioned about the complexity of using appropriate instruments (for further discussion, see Kiviet et al., 2017).

The model is estimated using the fixed effects estimator and heteroscedasticity-consistent standard errors[25]. Panel data analysis assumes that a change in a variable has the same marginal effect in different countries, which is a strong assumption. The results are presented for sets of countries that exhibit a substantial degree of heterogeneity, so one should read the coefficients with caution and as a general snapshot. Panel unit root tests have been conducted, rejecting the hypothesis of a common unit root of ECI at the 1 per cent level. The test is also applied to the rest of the variables, rejecting the null of a unit root at the 5% per cent level for all variables but for total FDI (Appendix A, Table 3). In addition, robustness is checked using an alternative measure of economic complexity, which reflects the technological content of manufactured exports ($techexp_{it}$).

3.6 Results

3.6.1 Main results

Table 3-5 reports the results for the baseline specification. Column (1) incorporates the entire sample, while columns (2) and (3) are constructed by dividing the sample into two, between developed and emerging and developing (EMEs here). Lastly, column (4) shows the regression only for Latin America and the Caribbean.

25 In addition, the regressions were run using random effects and comparing the two with the Hausman test. The test showed that fixed effects was the recommended technique.

Table 3-5: Panel fixed effects regressions. Dependent variable: ECI.

	(1) All countries	(2) Developed countries	(3) EMEs	(4) LAC
privatecred	**-0.073****	**-0.117****	**-0.102***	**0.298****
	(0.035)	**(0.047)**	**(0.051)**	**(0.097)**
privatecred²	**0.000**	**0.000****	**0.001**	**-0.003*****
	(0.000)	(0.000)	(0.000)	**(0.001)**
stockmarkcap	0.004	0.002	-0.006	-0.041
	(0.005)	(0.005)	(0.013)	(0.027)
tot_nonFDI	0.000	0.001	-0.009	**-0.028***
	(0.004)	(0.003)	(0.007)	**(0.014)**
GDP	0.603*	1.382***	0.126	-4.238
	(0.357)	(0.413)	(0.648)	(2.613)
GDP²	-0.007**	-0.009**	-0.001	0.192
	(0.003)	(0.003)	(0.010)	(0.130)
POP	0.068	0.027	-0.041	0.111
	(0.050)	(0.355)	(0.045)	(0.351)
POP²	-0.000	-0.000	0.000	-0.001
	(0.000)	(0.001)	(0.000)	(0.001)
tradeopen	0.009	-0.002	0.032	0.115
	(0.023)	(0.023)	(0.027)	(0.111)
inflation	-0.032*	-0.058	-0.007	-0.044
	(0.018)	(0.078)	(0.021)	(0.051)
_cons	54.319***	56.228***	43.691***	54.762***
	(4.427)	(12.838)	(4.200)	(8.864)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	1567	795	772	179
R2	0.221	0.494	0.331	0.643

Source: Author's estimations based on data as reported in Table 3-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

For the baseline specification, the results for the financialisation indicators are similar for the entire sample (column 1), and when dividing the sample into two (developed vs EMEs columns 2 and 3); private credit to GDP ($privatecred_{it}$) has a negative and significant effect on economic complexity, at 10% and 5% respectively. This is, in a way, contradictory to what the mainstream literature on financial deepening states (Levine, 2005). Nevertheless, some new studies for developed countries alert that the fast growth in private credit is a good predictor of subsequent economic instability (Jordà et al., 2013). As seen in Section 3.4, instability could prevent countries from

investing in structural changes. Stock market capitalization ($stockmarkcap_{it}$) and the total assets and liabilities that are not FDI (tot_nonFDI_{it}) are not significant. The significance of regional context in the estimation is evidenced by the higher R^2 coefficient observed in column (4) compared to the aggregated results in column (1) of Table 3.5. The same is evident for the rest of the regional divisions (Table 4 in Appendix A). This difference suggests that the regional-level analysis plays a role in accurately modelling and understanding the underlying relationships within the data.

In the case of Latin America and the Caribbean, the results present a different pattern. Private credit shows an inverted U-type of relationship regarding economic complexity, having a positive effect up to a certain point, as its squared is negative and significant. One possible explanation of the pattern indicated in this region is related to the difficulties faced by Latin American firms when trying to get access to credit. According to data from the World Bank Enterprise Survey (2018), approximately 28.5% of the firms in the region identify access to finance as a major restriction compared to 18.6% in high-income countries. The proportion is even higher in the case of manufacturing firms, where it reaches 29.2% (data available in Cipoletta and Matos, 2018). It could be the case that an initial increase in credit triggers a process of investment and upgrading of productive capabilities. However, this process has its limitations because the region has suffered recurrent economic and banking crises, and high levels of indebtedness can indicate financial fragility. The extremum point of private credit (to GDP) for Latin America is calculated by $-\beta_1/(2\beta_2)$ 0.298/2(0.003) =45.73%. Chile has consistently surpassed the threshold from 1993 until 2015, with an additional period above the threshold in the 1980s (1981-1986). The country stands out for having the highest proportion of private credit in Latin America, reaching 80.7% in 2015. Following Chile, Panama has consistently stayed above the threshold from 1993 through to the end of the observed period. Brazil shows intermittent periods surpassing the threshold, specifically from 1992-1994, 1998-1999, and again from 2008-2015. Uruguay and Costa Rica also have had some years where they exceeded the threshold.

The non-monotonic relationship found here echoes the results from Arcand et al. (2012), Cecchetti and Kharroubi (2012) and Beck et al. (2014), who all indicated that an excessively large financial sector could be detrimental to the economy. The

empirical evidence from these studies indicates the presence of an optimal threshold, beyond which, it begins to draw resources away from productive uses. This misallocation includes drawing talented workers away from productive activities and resources to speculative activities, contributing to economic instability (Arcand et al., 2012). The economic implications for policymakers could include monitoring the size of private credit. Furthermore, historical evidence of prosperous countries which successfully upgraded their productive structures indicates that they often maintained strict controls over the size of their financial and banking sectors, and oriented credit towards specific key industries for economic development (Amsden, 2001).

In the case of stock market capitalization ($stockmarkcap_{it}$) the effect on economic complexity is negative but not significant. Regarding the total stock of non-FDI external assets and liabilities (tot_nonFDI_{it}), the results show their detrimental impact on economic complexity (significant at 10%). Scholars have pointed out that caution is needed when analysing the relationship between short-term capital and economic development in general and with the productive structure in particular, like in the case of Botta et al. (2023). In Appendix A, the results for the rest of the regions are included (Table 4). In general, financialisation measures are not significant, except for the Middle East and North Africa region, where cross-border capital also harms economic complexity, and in the case of Sub-Saharan Africa, where the stock of market capitalization has a positive effect on complexity.

When analysing panel data, it is relevant to notice that structural breaks could occur from events such as financial crises, economic policies or technological progress (Okui and Wang, 2021). Significant shocks, such as the 2008 economic crisis in the Global North or the Asian crisis of 1997, likely impacted many countries in the sample, potentially altering both economic complexity and financialisation indicators[26]. Appendix A presents the results for developed countries before and after the 2008 crisis, and the negative results for private credit hold analysing both periods (Table 5). In the case of Latin America, the results are also run without considering the decade of 1980 because of the debt crisis in the region; the findings align with those presented above (inverted U-shape of private credit and a negative effect of total non-FDI). In

26 Unfortunately, tests such as xtbreak must be conducted in balanced panels in Stata.

the case of East Asia and the Pacific, the results remain insignificant when excluding the period of the financial crisis of 1997 (Appendix A, Table 6).

3.6.2 Robustness checks

Table 3-6 presents the second specification, which controls for the total natural resource rents ($nrents_{it}$).

Table 3-6: Panel fixed effects regressions. Dependent variable: ECI.

	(1) All countries	(2) Developed countries	(3) EMEs	(4) LAC
privatecred	**-0.076****	**-0.118****	**-0.106****	**0.255****
	(0.035)	**(0.047)**	**(0.050)**	**(0.102)**
privatecred²	0.000	0.000**	0.001*	**-0.003****
	(0.000)	(0.000)	(0.000)	**(0.001)**
stockmarkcap	0.004	0.002	-0.006	-0.031
	(0.005)	(0.005)	(0.012)	(0.022)
tot_nonFDI	0.000	0.001	-0.008	**-0.024***
	(0.004)	(0.003)	(0.007)	**(0.011)**
GDP	0.626*	1.380***	0.114	-3.720
	(0.354)	(0.400)	(0.612)	(2.480)
GDP²	-0.007**	-0.009**	-0.000	0.170
	(0.003)	(0.003)	(0.010)	(0.124)
POP	0.056	0.028	-0.051	0.150
	(0.050)	(0.354)	(0.043)	(0.316)
POP²	-0.000	-0.000	0.000	-0.001
	(0.000)	(0.001)	(0.000)	(0.001)
tradeopen	0.007	-0.005	0.035	0.113
	(0.022)	(0.023)	(0.028)	(0.102)
inflation	-0.030	-0.065	-0.006	-0.027
	(0.018)	(0.076)	(0.020)	(0.051)
nrents	-0.177	-0.338	-0.157**	-0.212
	(0.120)	(0.255)	(0.066)	(0.190)
_cons	55.756***	56.830***	45.882***	53.554***
	(4.334)	(13.018)	(3.787)	(8.924)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	1567	795	772	179
R2	0.231	0.497	0.343	0.649

Source: Author's estimations based on data as reported in Table 3-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

As in the previous case, the results for financialisation variables are similar for countries altogether (column 1) and when divided into developed and EMEs (columns 2 and 3), regarding the effects of private credit on economic complexity. The "natural resource course" is only relevant in EMEs (column 3). Analysing Latin America and the Caribbean, the results are similar to those described in the case of the baseline specification. An inverted U type of relationship for private credit, and a negative effect of stock market capitalization and total non-FDI on economic complexity (only statistically significant in the last case). Natural resource rents exerts a negative effect on the ECI but is not significant.

Then, when controlling for the terms of trade, the regression in Table 3-7 indicates that the effect of financialisation variables regarding Latin America and the Caribbean remain with the same signs as in the previous two cases, but not significant in the case of private credit. Terms of trade is negative for the four regressions indicating that the most prominent effect, with respect to economic complexity, is the one that points out that given a rise in the terms of trade, countries do not have incentives to diversify further their productive structures. Instead, they choose to export the same goods in which they possess advantages. Results are in line with Yalta and Yalta (2021).

Table 3-7: Panel fixed effects regressions. Dependent variable: ECI.

	(1) All countries	(2) Developed countries	(3) EMEs	(4) LAC
privatecred	-0.080**	0.014	-0.159***	0.102
	(0.040)	(0.059)	(0.055)	(0.123)
privatecred^2	0.000*	0.000	0.001**	-0.002*
	(0.000)	(0.000)	(0.000)	(0.001)
stockmarkcap	-0.005	-0.004*	-0.001	-0.005
	(0.004)	(0.002)	(0.013)	(0.025)
tot_nonFDI	0.001	0.001	-0.011	-0.026**
	(0.002)	(0.001)	(0.008)	(0.010)
GDP	0.865***	1.179***	0.690	-3.423**
	(0.210)	(0.294)	(0.603)	(1.311)
GDP^2	-0.009***	-0.007**	-0.009	0.186**
	(0.003)	(0.003)	(0.009)	(0.068)
POP	-0.060	-0.526	-0.054	-0.217
	(0.069)	(0.422)	(0.082)	(0.325)
POP^2	0.000	0.001	0.000	-0.000
	(0.000)	(0.001)	(0.000)	(0.001)
tradeopen	0.013	0.013	0.046*	0.161
	(0.019)	(0.013)	(0.023)	(0.091)
inflation	-0.022	0.163	-0.020	-0.056
	(0.014)	(0.111)	(0.017)	(0.047)
ttrade	-0.029**	-0.063**	-0.042***	-0.080***
	(0.011)	(0.023)	(0.014)	(0.021)
_cons	52.117***	61.741***	53.010***	83.852***
	(4.982)	(12.066)	(7.318)	(12.773)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	1173	453	720	168
R2	0.431	0.760	0.410	0.695

Source: Author's estimations based on data as reported in Table 3-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Table 3-8 presents the results with the total FDI assets and liabilities included as a control variable. Similar to the previous findings, the effects of financialisation variables remain consistent for the entire sample (column 1) and when separated into developed economies and EMEs (columns 2 and 3). In both cases, private credit shows a negative impact on economic complexity. The results of Latin America and the Caribbean align with those from the baseline model and other control regressions, indicating an inverted U-shaped relationship between private credit and economic complexity. Additionally, total non-FDI assets and liabilities exert a negative influence

on economic complexity. FDI has a positive effect in this region but a negative one in developed countries.[27]

Table 3-8: Panel fixed effects regressions. Dependent variable: ECI.

	(1) All countries	(2) Developed countries	(3) EMEs	(4) LAC
privatecred	**-0.074****	**-0.116****	**-0.101***	**0.272*****
	(0.035)	**(0.048)**	**(0.051)**	**(0.084)**
privatecred²	0.000	0.000**	0.001	**-0.003*****
	(0.000)	(0.000)	(0.000)	**(0.001)**
stockmarkcap	0.006	0.004	-0.006	-0.038
	(0.005)	(0.005)	(0.013)	(0.024)
tot_nonFDI	0.002	0.002	-0.009	**-0.027****
	(0.004)	(0.003)	(0.007)	**(0.011)**
GDP	0.602*	1.385***	0.119	-2.879
	(0.352)	(0.410)	(0.647)	(2.106)
GDP²	-0.007**	-0.009**	-0.001	0.125
	(0.003)	(0.003)	(0.010)	(0.106)
POP	0.060	-0.041	-0.035	0.168
	(0.050)	(0.364)	(0.047)	(0.332)
POP²	-0.000	0.000	0.000	-0.001
	(0.000)	(0.001)	(0.000)	(0.001)
tradeopen	0.014	0.005	0.030	0.098
	(0.022)	(0.023)	(0.028)	(0.109)
inflation	-0.033*	-0.049	-0.007	-0.052
	(0.018)	(0.073)	(0.022)	(0.049)
tot_FDI	-0.005	-0.005**	0.007	0.100**
	(0.003)	(0.002)	(0.009)	(0.035)
_cons	54.282***	57.247***	43.517***	50.204***
	(4.324)	(12.657)	(4.244)	(7.686)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	1567	795	772	179
R2	0.227	0.507	0.332	0.659

Source: Author's estimations based on data as reported in Table 3-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

27 The regression was also run including the first difference of FDI because of the results derived from the unit root test. The effects of financialisation on ECI remain the same.

Table 3-9 includes the Chinn and Ito measure of capital account openness as an additional measure of financialisation (ka_open_{it}). In this case, the results for Latin America and the Caribbean, are robust, showing a similar pattern for private credit. Stock market capitalization and non-FDI are still negative but not significant. Capital account openness (de jure measure) negatively affects economic complexity for the entire sample and for emerging countries.

Table 3-9: Panel fixed effects regressions. Dependent variable: ECI.

	(1) All countries	(2) Developed countries	(3) EME countries	(4) LAC
privatecred	-0.051	-0.089**	-0.077	**0.298****
	(0.036)	(0.043)	(0.057)	**(0.094)**
privatecred²	0.000	0.000*	0.000	**-0.003*****
	(0.000)	(0.000)	(0.000)	**(0.001)**
stockmarkcap	0.002	-0.001	-0.006	-0.041
	(0.005)	(0.004)	(0.012)	(0.030)
tot_nonFDI	-0.000	0.001	-0.008	-0.028
	(0.003)	(0.003)	(0.007)	(0.016)
GDP	0.812**	1.766***	0.145	-4.238
	(0.354)	(0.335)	(0.616)	(2.624)
GDP²	-0.009***	-0.013***	-0.001	0.192
	(0.003)	(0.003)	(0.009)	(0.128)
POP	0.063	0.033	-0.051	0.111
	(0.049)	(0.317)	(0.048)	(0.348)
POP²	-0.000	-0.000	0.000	-0.001
	(0.000)	(0.001)	(0.000)	(0.001)
tradeopen	0.013	0.004	0.030	0.115
	(0.022)	(0.022)	(0.027)	(0.111)
inflation	-0.050***	-0.063	-0.022	-0.044
	(0.016)	(0.071)	(0.017)	(0.050)
ka_open	**-3.323***	0.319	**-2.524****	-0.013
	(1.903)	(1.362)	**(1.245)**	(2.089)
_cons	53.481***	48.908***	45.618***	54.768***
	(4.079)	(10.163)	(4.122)	(8.529)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	1538	767	771	179
R2	0.250	0.553	0.343	0.643

Source: Author's estimations based on data as reported in Table 3-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Something to point out is that in all the specifications for Latin America and the Caribbean, real GDP per capita (GDP_{it}) presents a negative sign on economic complexity. This could be related to the fact that the type of economic growth in the region is closely related to commodities, and when a commodity boom arises (because of prices or quantities) countries do not feel the need to diversify their productive structures. This is, somewhat, in line with the sign found in terms of trade. Also, it is worth noting that the exact opposite occurs in the developed world, the signs here are in line with those found in Rodrik (2016).

Finally, to test the robustness of the findings in Table 3-10, the regression is run using the percentage of medium and high technological exports in relation to manufactured exports as the dependent variable instead of the ECI. The results for the entire sample and for the division into developed and EMEs do not hold for private credit, but the total stock of foreign assets and liabilities has a negative effect on technological exports in the entire sample and in emerging countries. In the case of Latin America and the Caribbean, the results are coherent with the previous ones regarding financialisation variables. An inverted U-type relationship concerning private credit is reported. Also, it shows damaging effects when increasing the size of the stock market and the amount of non-FDI foreign assets and liabilities.

Table 3-10: Panel fixed effects regressions. Dependent variable: technological exports over total exports (%).

	(1) All countries	(2) Developed countries	(3) EMEs	(4) LAC
privatecred	0.011	-0.094	0.049	**1.112****
	(0.073)	(0.074)	(0.131)	**(0.483)**
privatecred²	-0.000	0.000	-0.000	**-0.013****
	(0.000)	(0.000)	(0.001)	**(0.004)**
stockmarkcap	-0.007	-0.003	-0.018	**-0.046***
	(0.007)	(0.010)	(0.030)	**(0.024)**
tot_nonFDI	-0.007**	-0.004	-0.046**	**-0.064****
	(0.003)	(0.003)	(0.021)	**(0.023)**
GDP	0.711	1.152*	1.442	-4.814***
	(0.536)	(0.592)	(1.356)	(1.164)
GDP²	-0.010*	-0.010	-0.031*	0.397***
	(0.005)	(0.006)	(0.017)	(0.097)
POP	-0.284**	-1.138	-0.345**	0.254
	(0.123)	(0.751)	(0.172)	(0.187)
POP²	0.000**	0.002	0.000**	-0.001*
	(0.000)	(0.001)	(0.000)	(0.001)
tradeopen	0.049	-0.003	0.115**	0.191*
	(0.038)	(0.058)	(0.051)	(0.103)
inflation	-0.097	-0.226	-0.067	-0.057
	(0.077)	(0.361)	(0.081)	(0.099)
_cons	41.494***	69.340**	29.383**	6.362
	(9.700)	(25.537)	(14.007)	(10.258)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	1322	581	741	165
R2	0.195	0.240	0.265	0.570

Source: Author's estimations based on data as reported in Table 3-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

3.7 Conclusions

This chapter contributes to the financialisation and economic complexity literature by investigating the impact of the different manifestations of financialisation on countries' productive structures and potential for structural change. Empirically, it constructs a database covering 80 countries from 1975 to 2015 to analyse this relationship. The results refute the view that finance positively affects productive development by showing the perverse effects of private credit on economic complexity.

The finding aligns with previous studies on the impact of private credit on economic growth, financial crisis and the long-term effect of financial development on economic complexity. The negative impact of private credit on economic complexity is present in developed, developing, and emerging economies.

Latin America and the Caribbean, exhibit an inverted U-shape effect between private credit and economic complexity. That could suggest that financial and banking institutions remain inclined to uphold their traditional role of providing funding to the productive sector. Due to credit constraints, firms effectively translate the increase of available funds into productive capabilities when there is an increase in credit up to a point. On top of that, in Latin America and the MENA region, non-FDI external assets and liabilities negatively affect economic complexity, reinforcing the view that these funds are looking for short-term gains. Furthermore, the connection between capital inflows and commodity prices (Akyüz, 2020) could be behind this relation, as commodity price booms incentivise the strategies towards primary activities. Besides, as shown in the literature about financialisation, when there is a reversal in capital flows, a 'fly to quality' moment, instability arises, making technological upgrading less likely. This is in line with previous studies on the effects of financial bonanzas on the economy, and can be viewed as a basis for applying macroprudential policies concerning short-term financial flows (for example, Botta et al., 2023). The main finding is that financialisation impacts structural change and, with it, long-term economic development. Of course, structural change is directly linked to proactive industrial and technological policies in a given country. Still, countries that want to pursue a developmental strategy need to be cautious as financialisation affects the environment to invest in and the countries' policy space. That is particularly important for those regions lagging productively.

For further research, it will be interesting to dig deeper into the effects of private credit on the productive structure by looking at whether firms or households are receiving the credit, considering bank vs non-bank credit, or the allocation within economic activities. If private credit is oriented to finance real estate booms or upgrading technological capabilities, it does not mean the same regarding economic development.

Chapter 4 : Types of credit and structural change

4.1 Introduction

There has been considerable debate in the economics literature regarding the role of credit in the real economy. On the one hand, academics built theoretical models of how financial intermediation provided credit for firms to invest, potentiating real GDP growth (Levine, 2005), while others have shown that excessive lending can lead to severe periods of financial instability (Minsky, 1978; Kindleberger, 1978). Evidence has been found that private credit expansions are a good predictor of financial crises (Schularick and Taylor, 2012; Jordà et al., 2020) and are associated with output losses and slow recoveries (Cerra and Saxena, 2008; Baron et al., 2020). Furthermore, above a certain threshold there is a negative link between economic growth and credit depth (Arcand et al., 2012; Cecchetti and Kharroubi, 2012; Rousseau and Wachtel, 2017).

However, most studies have used aggregated measures of private credit without dividing it into its components: household and firm credit[28] (Beck et al., 2012). Analysing the differential impact of firm and household credit on the real economy is of great importance since credit directed to firms could encourage innovation and investment in the private sector (Schumpeter and Opie, 1983), while credit to household component does not seem to have the same effect (Beck et al., 2012; Bezemer et al., 2016). A new strand of literature is digging into this division (Mian et al., 2017; Jordà et al., 2020; Müller and Verner, 2023; Bezemer et al., 2023), analysing its effects on GDP, inequality, employment and productivity (Beck et al., 2012; Mian et al., 2017; Jordà et al., 2020). Household credit has grown to be a crucial component

28 Credit can be oriented to the public or private sector. The later includes household and firm credit. Inside household credit, one important component is mortgage credit, consumer credit and other non-mortgage credit. This chapter uses firm, business, enterprise and non-financial corporation credit interchangeably.

of the financial industry worldwide, making this issue far from trivial (Jordà et al., 2014; Müller, 2018). Most certainly, to the best of my knowledge, there are no empirical studies investigating the effect of the different types of credit (to households or firms) on the productive structure, particularly concerning manufacturing activities. This chapter plans to contribute to the literature of the field by filling this gap.

Jordà et al. (2014) show that in developed countries household debt, and mainly mortgage credit, was driven the massive expansion of private credit in the period 1870-2010. The increase in household debt is also found in emerging countries (Müller, 2018). Beck et al. (2012), point out that firm credit is the only type of credit positively linked to GDP growth and negatively to income inequality. Similar results are present in Jordà et al. (2020), where firm debt booms do not present adverse repercussions on the real economy. Nevertheless, contractions in GDP, preceded by household credit booms, are worse in magnitude and recovery speed. Similarly, Mian et al. (2017) demonstrate how household credit expansions predict growth slowdowns and unemployment.

Financialisation scholars have emphasised the banking industry's shift away from lending to corporations and towards focusing on consumers as a characteristic of financialisation (e.g.Crouch, 2009). The increase in household credit was made possible due to the financial sector's deregulation and linked to privatising public businesses and services. For these authors, household indebtedness seems to be the way to compensate for the state's retreat from the public provision of housing, health care, or education, where credit expansion to working-class people solves weak aggregate demand and manages social conflicts. Some scholars indicate that wage share stagnation can be seen as a contributing factor to household indebtedness (for the US, see Barba and Pivetti, 2008).

Furthermore, the reorientation to the household sector and mortgages proved more profitable and safer for banks (dos Santos, 2013; Streeck, 2017). For developed countries, housing emerged as a main aspect within the literature on financialisation (Aalbers, 2008; Fernandez and Aalbers, 2016), particularly for the US, UK, Ireland and Spain. Debt sustainability, a concept that was first related to business credit

(Minsky, 1978) but later on incorporated consumer debt levels, (Palley, 1994; Cynamon and Fazzari, 2008) is also flagged as a cause for concern. The shift in credit allocation towards the household sector, in particular mortgage lending, does not typically generate stable and sufficient income to sustain debt growth levels (Minsky, 1986; Bezemer, 2014). On the contrary, credit that supports productive endeavours allows borrowers to meet credit obligations. Macroeconomic instability takes place when speculative lending arises compared to productive credit (Bezemer et al., 2023). In the case of emerging countries, foreign banks brought financialisation practices from the global North, reorienting the business to the household sector and focusing on fees as a source of profit (Lapavitsas, 2013). The changes in the financial sector, and those brought by financialisation in general, have been intrinsically connected with modest economic growth and low fixed capital investment rates (Stockhammer, 2004; Orhangazi, 2008; Demir, 2009).

Post-Keynesian literature has recognised the importance of debt as a driver of economic instability and fluctuations (for a review, see Isaac and Kim, 2013). More recent contributions differentiate between household and firm debt. They investigate the effects on GDP growth, income distribution, or aggregate demand as well (Isaac and Kim, 2013; Zhang and Bezemer, 2014; Stockhammer and Wildauer, 2016). The consequences of household debt on the productive structure need yet to be analysed. Past research that scrutinises the link between the productive structure and financialisation components did not include debt types (for example, Botta et al., 2023).

This chapter contributes to the literature by investigating the effects of private credit on structural change, by examining the dynamics of developed vs. emerging countries, with an emphasis on the latter, and introducing a regional component to the analysis. Empirically, the chapter analyses if household and NFC credit have differential effects on manufacturing (manufacturing as a share of GDP) constructing an unbalanced panel of 43 countries from the early 1960's to 2021. As indicated in previous chapters, structural change is key in terms of economic development and, within it, the role of manufacturing is essential as it offers more potential than other industries for innovation, expanding productive capabilities and diversifying exports. As a result, the rise of manufacturing is the reflection of progressive structural change (Rodrik,

2009). The chapter verifies that household debt has a detrimental impact on manufacturing across the board for the full sample, developed nations, emerging Asia, and Latin America (shown with a stronger effect). Furthermore, this region shows that credit issued to firms is beneficial for manufacturing activities. These findings are consistent with previous contributions that indicated the financial industry is undermining productive credit by focusing on the household sector, with adverse consequences for manufacturing industries.

The rest of the chapter is organised as follows: Section 2 reviews the main points regarding credit types in the literature from mainstream and non-mainstream perspectives, stating how credit types could affect the productive structure; Section 3 introduces private credit trends, dividing into firm and household credit. Section 4 describes the database, descriptive statistics and econometric technique. The results are discussed in Section 5. Finally, Section 6 concludes.

4.2 Credit and the productive structure, a review of the empirical and theoretical literature

4.2.1 Credit-productive structure nexus: Mainstream contributions

The literature on economic development has long been concerned with the finance-growth nexus. During the 1970s, McKinnon (1973) and Shaw (1973) criticised financial repression policies, arguing that liberalisation would increase savings and investment by allowing interest rates to be at their equilibrium levels. In addition, they argued that financial intermediaries could boost productivity as they reduce asymmetries and information costs, enabling a better allocation of resources and facilitating corporate control. Levine (2005), in his review of financial deepening and economic growth, notes several ways in which financial systems contribute to prosperity (based on the loanable funds' theory). These include improving information flows, mobilising investment and savings, diversifying risks, and encouraging the exchange of goods and

services. Specifically, by providing capital to firms, "better functioning financial systems ease the external financing constraints that impede firm and industrial expansion, suggesting that this is one mechanism through which financial development matters for growth" (Levine, 2005, p. 868). In addition, two broad reviews on the topic by Ang (2008) and Arestis et al. (2015) state that most studies demonstrate a favourable correlation between financial deepening and GDP growth, but with great variability depending on countries, regions, variables used to measure financial development[29] and causality of the direction[30].

Some studies dig deeper into the relationship between credit and economic growth, including the work of Rajan and Zingales (1998) and Beck and Levine (2002), looking at specific industries. In the case of Rajan and Zingales (1998), they demonstrate that those industries that depend more heavily on external finance[31] to develop their activities grow faster in countries with a better-developed financial sector, using information from a panel with different types of industries during the 1980s[32]. Beck and Levine (2002) conclude that growth within industrial activities is more related to an efficient legal structure and financial development, rather than having a more "bank-based" or "market-based" financial system for a group of 42 countries between 1980 and 1990. Nonetheless, whilst considering some of the productive sectors credit was allocated to, these studies used aggregated measures of private credit and did not distinguish different credit types.

29 Common measures include deposits, financial development indexes, M2 or M3, stock market measures and private credit indicators.

30 According to Tuner (2016), economic history could shed some light on the direction of the causality by showing how the financial system helped in the development of projects like canals and railways in the United Kingdom, how Germany relied on banks or the United States on capital markets for industrialisation in the early twentieth century (p32).

31 They look at investments and the cash generated by US firms. Industries like pharmaceuticals or electronics show a high dependence, tobacco very low.

32 The information about industries is from the US; they assume that the industry structure in terms of finance needs is similar in the countries of the sample.

Due to the financial crisis of 2008/9, there was a more prominent discussion about the financial sector's size and the financial system's procyclicality. An excessively large financial sector proved detrimental to the real economy.

Empirical studies have indicated that when private credit as a percentage of GDP exceeds a certain threshold, it leads to suboptimal outcomes for economic growth or productivity (Arcand et al., 2012; Cecchetti and Kharroubi, 2012; Rousseau and Wachtel, 2017). Furthermore, post-2008, discussions increasingly scrutinized the functioning of the financial system and the role of credit (Aikman et al., 2013; Borio, 2014; Turner, 2016)[33]. These works revealed that the traditional textbook description of how financial markets (banks) operate, in the sense of pooling savings from households to lend to firms, is not an accurate description of what banks do nowadays, as household indebtedness is a significant component of credit. Due to changes in bank regulation, household credit has expanded and is crowding out of firm credit. Several countries like Canada, the UK and Japan had constraints on mortgage lending prior to the middle of the 20th century, and once these restrictions were removed, they reoriented their activities to household lending. In this context, Turner (2016) makes the argument that in advanced countries, bank lending nowadays is not oriented to productive investment and capital formation, but instead to consumption and housing ("too much of the wrong sort of debt" in Turner, 2016, pp. 61-73). Mainly lending against existing assets and land and not even facilitating construction activities. As Turner explains, this presents reinforcing mechanisms as credit supply, credit demand, and asset prices move jointly. The extension in credit supply leads to an increase in prices and, therefore, the demand for credit, which also boosts the expectation of future asset prices and the demand for new credit.

In a recent paper Müller (2018) indicates how household credit increased in OECD countries after the Second World War and exploded after the mid-2000s, where residential mortgages account for roughly 60 to 70 per cent of household borrowing in developed nations. Jordà et al. (2014) called this phenomenon the "great mortgaging" as banks in most developed countries focus on real estate lending. These

33 Some of this literature is more interested about financial cycles than levels of credit as this chapter explores.

trends have not been confined to developed countries, as in emerging and developing countries the rise in household credit is evident after 1980 (Müller, 2018).

As indicated in the introduction, the fact that credit is oriented to the household sector is not neutral in terms of economic development. Chakraborty et al. (2018) find that within the US, prior to the financial crisis and due to house price market booms, banks crowded out commercial lending. For those firms depending on this lending, they find that the consequence is a reduction in real investment. In addition, the results are more substantial for those banks that are more capital-constrained[34]. At the macro level, they argue that the lack of credit for capital-constrained firms is more substantial than the positive effect of the construction sector on GDP. According to Beck et al. (2012), enterprise credit is the only type of credit positively correlated with economic growth. What is more, household credit is higher in countries where the financial sector is more market-based and the manufacturing sector is smaller, including data from developing countries from 1994 to 2005. In addition, Mian et al. (2020) show that a rise in household debt is linked with an increase in employment and prices in the non-tradable sector compared to the tradable one using a panel of 56 advanced and emerging economies with data going back to 1960. On the contrary, firm credit is not associated with these variables. In a similar vein, Jordà et al. (2014) investigated banks' balance sheets dividing credit into mortgage and non-mortgage lending for 17 advanced countries, showing how mortgage credit is a significant source of financial instability. Over and above, Jordà et al. (2020) find that firm debt booms do not negatively affect consumption or investment. Notwithstanding, contractions in GDP preceded by household credit booms are worse in magnitude and recovery speed in advanced economies. Additionally, Richter and Diebold (2021) trace household expansions financed by the foreign sector, finding that this is highly correlated with the risk of a financial crisis.

Due to the lack of cross-country data, there is little research on firm credit that distinguishes between the industry to which the firms belong to; two exceptions are Müller (2018), and Müller and Verner (2023). Müller's novel database contains

34 These are relatively smaller banks, less engaged in security markets or more leveraged.

information on household credit and NFC credit with the sector of those firms for 120 countries (developed and emerging) since, for some countries, 1940[35]. According to his description, there has been a structural shift as agriculture and industry firms receive smaller shares of total private credit while construction, real estate, and the tertiary sector are growing in importance. He discusses how this behaviour is uniform in developed and emerging countries and how, considering the restructuring of global production, the credit did not flow to these countries where manufacturing industries were relocated to, as the economic theory indicates.

Then, the work of Müller and Verner (2023) further expands by analysing the impact of credit allocation on economies' productive structure using Müller's database described above. They empirically observe that more lending to the tradable sector (agriculture, manufacturing and mining) boosts economic growth and productivity without endangering the financial system's integrity. An expansion in the credit to the tradable sector is linked with a more stable exchange rate. On the contrary, credit expansions to the non-tradable sector[36] are associated with higher activity (but exhibit lower productivity levels and predict future slowdowns) and real exchange rate appreciation. When credit is directed to this sector, the economy becomes more vulnerable and is prone to experience financial crises. In conclusion, to assess the consequences of credit expansions, it is crucial to differentiate between both types of credit and the allocation of firm credit across industries.

The work of Müller and Verner (2023) focuses on credit allocations within the corporate sector, but the database used in this chapter does not allow for this distinction. In their paper, the emphasis is on the tradable sector and not on manufacturing, with little consideration of what this could mean for commodity-exporter countries in terms of industrialisation opportunities, an issue that is investigated here as it is key for emerging countries and Latin America. Adding to that,

35 Unfortunately, their database called 'Global Credit Project' was made available for academic purposes when this chapter was completed. For future research, it would be interesting to expand the analysis using it.

36 Including construction, real estate, services like wholesale and retail trade, accommodation, and food services, transport and communication.

their emphasis is on short-term movements, boom and busts, while here, the aim is to analyse long-term trends.

In sum, as household credit has grown in importance since the 1970s, failing to distinguish between firm and household credit can lead to misleading conclusions when analysing the impact of private credit on the real economy. From the contributions mentioned above, two main channels through which private credit may interact with structural change are summarised. The first channel, the *productive channel*, refers to the typical textbook effect by which firm credit enables productive investment, efficient credit allocation, and allows companies to hire skilled workers, increasing the economic capacity of a given economy. The second channel, the *consumer channel*, is derived from the fact that financial institutions oriented their business to household and consumer credit, displacing traditional productive credit with potentially harmful effects on the productive structure. Nevertheless, rising household debt could have some positive effects—for example, enabling households to invest in education or microentrepreneurs to fund their businesses (Beck et al 2012), —providing a third channel, namely the *household investment channel*.

The next subsection introduces the key contributions by financialisation scholars.

4.2.2 Credit-productive structure nexus: financialisation literature contributions

Mainstream explanations attribute the current surge in credit to the deregulation of capital markets, lowering capital requirements for banks, and environments of high economic growth and low inflation/interest rates, plus demographic changes. Indebtedness is the result of rational individuals responding to economic conditions by increasing their willingness to borrow and purchase assets (for a review, see Mian et al., 2017). In contrast, in the financialisation literature, the rise in credit must be understood in a broader context of contemporary capitalism and social relations. Financialisation is based on credit-debt relationships (Langley, 2021), and the global rise in debt is a result of financialisation itself. The features affecting the financial

sector (NFCs and households) and, in addition, the country's position in the global economy, must be taken into account to explain the phenomenon.

The financial sector has experienced massive changes, such as the increased size of stock and derivative markets and the emergence of institutional investors (such as pension or mutual funds). Within the financial industry, banks underwent a profound transition, re-orienting the business to household credit and consumer lending, moving away from productive capital lending, which has historically been the key component of credit. The deregulation of international capital markets made it easier to access global liquidity, which in turn allowed for an expansion in consumer lending. Bezemer et al. (2023) empirically investigated the reasons behind the rise in household credit in advanced economies. They confirmed that relaxation in credit controls, the lowering of financial account restrictions and privatisation of state banks are associated with this expansion, through analysing the period before the financial crisis (1973–2005). Banks have extended credit to the household sector through mortgage and credit card lending, and in some countries, surpassing the lending to NFCs (Mohanty et al., 2006; Erturk and Solari, 2007). A mortgage also functions as an investment vehicle on its own. Since mortgages rely on land and bricks, they provide a high-quality institutional structure to collect future income, giving investors options for global portfolio diversification.

As a consequence of the shift in the commercial strategies mentioned above, banks are relying on fees as a significant source of income. Erturk and Solari (2007) emphasise how banks' reliance on fees—rather than income from interest rate differentials—which has grown significantly over the years, from about 25% in 1984 to 40% in 2003 for rich countries[37]. dos Santos (2009) analysed international megabanks' balance sheets and documented the change in banking business. These banks are increasingly mediating and assisting firms and households that want to operate in financial markets. Banks assisted NFCs with their buyback, merge operations, and other financial activities by administering, advising, and lending funds for these operations. With the increase of investment funds, banks saw an opportunity to manage pensions,

37 Simple average of France, Germany, Netherlands, Italy, the UK and the US.

money and other independent ones. Other new activities include issuing and trading interest rates and foreign exchange derivatives. Overall, the changes in the banking sector were not focused on financing productive activities (Lapavitsas and dos Santos, 2008; Stockhammer and Wildauer, 2016). The fact that banks are reorienting their business away from productive investment is also linked to the fact that NFCs are demanding less bank credit. Companies are seeking alternative funding sources, like bond issuing and equities, especially in the case of big corporations (Mohanty et al., 2006; Fernandez et al., 2018). Furthermore, there is a discussion not only regarding who is providing the credit for NFCs (banks or by bond issuance, for ex.) but also on the use of companies' funds. Bruno and Shin (2017) show that bond issuance by NFCs, was not always used for productive purposes. Buyback operations, and the purchase of financial assets, have been prioritised by the shareholder value orientation, placing the use of company funds and debt at the centre of the stage, as they are related to a boost in profits without producing (as in Lapavitsas, 2013).

Some of these transformations are also documented for emerging countries. In emerging countries, and related to Washington Consensus policies, the increasing presence of foreign banks paved the way for the rise in household credit and triggered the competition with domestic banks that emulated those practices (Karacimen, 2014; dos Santos, 2013). Banks expanded household credit by lending to consumers with insufficient credit scores through other related financial institutions. For example, there is evidence that Citibank established a network of non-bank offices in Latin America to provide consumer loans (Dymski, 2009), or that banks are integrating their services into retail channels to target low-income families in the region (Mas and Almazán, 2011). Along with this, even in Latin America, banks are getting closer to wage earners directly withdrawing loans from employees' paychecks. In order to encourage the use of consumer credit in poor households, who were not used to borrowing from financial institutions, banks employed aggressive marketing and advertising methods (for e.g. Karacimen, 2014). IT advances related to risk management and financial innovations, like securitisation, made it possible to provide credit to people who were not typically clients of financial institutions.

The fact that companies are looking for alternative sources of funding other than bank credit is also found in emerging countries. Bond issuance by NFCs was also

documented for Latin American and Asian companies and used for carry trade operations and not for productive investment (Fernandez et al., 2018). Similar observations were made by Bruno and Shin (2017), who found that companies in emerging countries are more prone to use USD-denominated bonds for cash hoarding rather than investing in capital expenditures and R&D than companies in advanced countries. Lastly, credit supply and indebtedness dynamics in the global South are also related to the monetary policies in the global North. Low international interest rates or Quantitative Easing policies help expand the lending capacity of the domestic financial industry (Bruno and Shin, 2015; Rey, 2015; Fernandez et al., 2018). Capital inflows made emerging countries' governments engage in sterilisation operations in order to combat inflation. This resulted in purchases of developed countries' government bonds, especially from the US, strengthening the financial domestic infrastructure and increasing credit issuing by commercial banks (Fernandez and Aalbers, 2020).

The reasons behind this debt shift towards household credit are related to the abandonment of credit allocation policies towards priority sectors such as exporting and manufacturing and the move towards a more neoliberal agenda that changed the relationship between the state and the markets. The neoliberal agenda shifted welfare states from providers of public goods and services to facilitators through private markets to access services such as housing, education or health, and supporting aggregate demand (dos Santos, 2013; Streeck, 2017). The debt shift towards household credit, particularly real estate, is also linked with policy changes related to mortgage subsidies or loosening loan-to-income ratios on mortgages. However, it is primarily connected with the profitable opportunities for foreign and domestic banks in the consumer and mortgage lending sector (Bezemer et al., 2023). There is evidence of above-average profits in the case of foreign-owned banks in Latin America (Correa et al., 2012). The re-orientation to this type of credit was first apparent in the US economy, spreading later to other advanced economies (excluding Germany and Japan) and more recently extending to a variety of middle-income countries (dos Santos, 2013).

This movement is tied to market-based finance as banks are increasingly borrowing from other financial institutions in domestic and international markets and also as

securitisation permits trading illiquid assets (like a 20-year fixed-rate mortgage loan) in mortgage-backed securities that could be sold and bought globally (Chick, 2008). Fees derived from securities are more profitable than those previously earned from spreads derived from lending and borrowing. As Bezemer et al. (2023) indicate, lending decisions are now more influenced by the balance between revenues from selling credit-backed securities and the costs of borrowing market-based assets; where it is no longer accurate to view bank behaviour as optimising lending volumes based on a fixed lending-borrowing interest spread. According to them, and following Minsky, the increase in credit is not a problem, nor is its rise relative to GDP, but rather the type of credit extended and the revenue it generates. The shift in credit allocation towards the household sector does not typically generate stable and sufficient income to sustain debt growth levels, especially the one directed to mortgages[38] (Minsky, 1986; Bezemer, 2014). On the contrary, credit that supports productive activities contributes to productivity and aggregate demand, generating cash inflows necessary to repay debts. The ability to generate sufficient cash flow income to repay debts is the basic condition for financial stability in Minskyan terms (Minsky, 1986, pp. 79-80)

When households need to resort to borrowing to satisfy their needs, private banks can find profitable to accommodate this demand in rich countries (Moore, 1988), and increasingly so in the case of Latin America, where credit creation is possible but needs to comply with what international investors are able to tolerate (Cerpa Vielma and Dymski, 2022). Additionally, financial deregulation enabled other non-banking institutions to provide credit, which is nowadays a substantial source. Even in the case of Latin America they have become a key source of credit provision (Cerpa Vielma and Dymski, 2022).

Overall, Post-Keynesians worried about financial fragility in terms of household indebtedness (Palley, 1994; Cynamon and Fazzari, 2008). The shift in credit allocation towards the household sector, in particular mortgage lending, does not typically generate stable and sufficient income to sustain debt growth levels (Minsky, 1986; Bezemer, 2014). On the contrary, credit that supports productive endeavors allows

38 Credit that supports spending could lead to some positive effects derived from aggregate demand (Bezemer et al., 2023).

borrowers to meet credit obligations. Instability arises when speculative or unproductive lending arises in comparison to productive credit. Recent contributions analyse the effects of both types of credit on different economic outcomes like GDP growth, income distribution, or aggregate demand (Isaac and Kim, 2013; Zhang and Bezemer, 2014; Stockhammer and Wildauer, 2016) but not on the productive structure. This chapter focuses on closing this gap in the empirical literature by considering the effects of both types of credit on the productive structure.

From the contributions made by financialisation scholars, one extra channel on how private credit alters the productive structure can be summarised in the *financialisation channel*. Here, the change in composition of credit oriented towards households could be related to financial instability, in terms of agents being unable to repay their debts. In the case of EME countries, there is also an extra element of fragility when economic agents are highly indebted in foreign currencies, related to the 'original sin' concept. Seemingly, as discussed, the rise of the shareholder value orientation could affect real investment, and it could be that credit, when issued to the productive sector, does not necessarily translate into improvements in the real economy if it is not used for progressive structural change.

The following section investigates the evolution of private credit divided into two components and presents the empirical investigation of its effects on manufacturing.

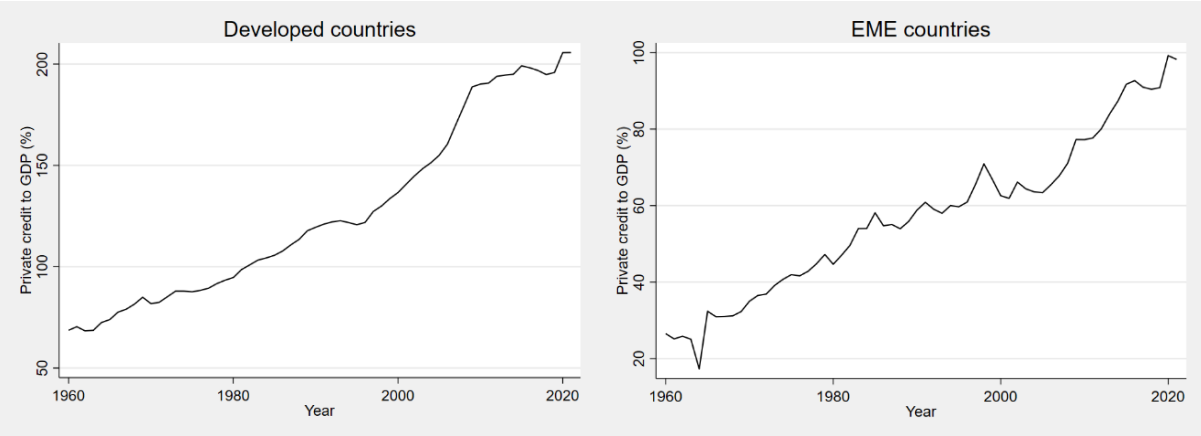
4.3 Evolution of private credit and its types

Dramatic changes in private credit and its composition have occurred in the last sixty years. Figure 4-1 plots the average evolution of total private credit[39] to the non-financial sector over GPD from 1960-2021. The data comes from the Bank for International Settlements' credit statistics (BIS), which contains information for 43

39 Private credit includes credit to NFCs, households and non-profit institutions serving households.

countries[40]. Countries are classified into two categories, following the IMF[41] country classification (27 advanced and 16 emerging economies).

Figure 4-1: Private credit to the non-financial sector to GDP (%) 1960-2021.



Source: Author's elaboration using data from the BIS.
Notes: Panels show the cross-country average of total credit to GDP per year. Countries included in each category are detailed in Table 4-1.

The figure exhibits a substantial increase in private credit in developed and EME countries. Developed countries started at higher debt levels, from around 80% in 1970 and surpassing 100% in the 1980s, when the financialisation process is usually pictured as starting, to over 200% in 2021. In the period after 1980, the expansion of private credit decelerated at the beginning of the 1990s, but after 1996, there was a

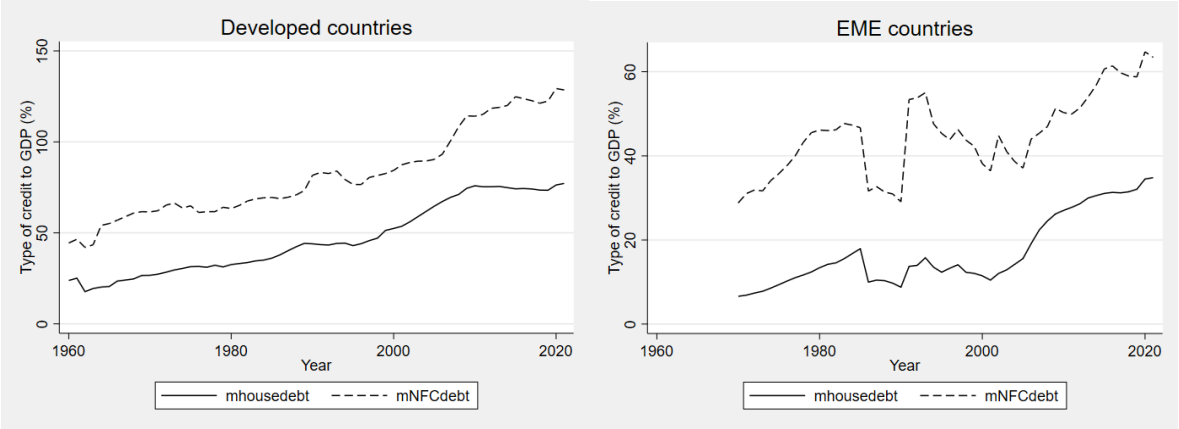
40 Country and economy are used indistinctly and not necessary refers to a territorial entity, following the IMF classification. Developed and advanced are also used as synonyms.

41 The country classification of the BIS differs from the one of the IMF. In the IMF classification of the World Economic Outlook report for 2023, Advanced economies include: Australia, Austria, Belgium, Canada, Czechia, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Ireland, Israel, Italy, Japan, Korea Rep., Luxembourg, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, United Kingdom and the United States. EME economies: Argentina, Brazil, Chile, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Poland, Russian Federation, Saudi Arabia, Thailand, Turkiye and South Africa (International Monetary Fund, 2023).

substantial build-up in debt that persisted up to the financial crisis of 2009, showing a slowdown in the years afterwards. When it comes to EME countries, the growth is way more volatile and exhibits lower levels of financialisation, jumping from 35% in 1970 to around 100% in 2021. Overall, the expansion in private credit in EME countries is superior to the one in developed countries in the period.

Then, Figure 4-2 summarises the evolution of household and NFC credit over GDP for a similar time frame by country group. For most countries, private credit appears disaggregated into these two components only after 1990 (27 countries out of 43). Overall, there is a boost in both types of credit in developed and EME countries, but as in the previous graph, the pattern is more erratic in EME countries.

Figure 4-2: Categories of credit for Developed and EMEs.



Source: Author's elaboration using data from the BIS.
Notes: Panels show the cross-country average of household debt and NFC debt (both at market values) over GDP. Countries included in each category are detailed in Table 4-1.

The left panel presents the data for developed countries, it shows that NFC credit has grown over time, and it is still the most significant type of credit, rising progressively from 44% in 1960, surpassing 100% of GDP in 2007, and reaching 129% in 2020. Some of these countries exhibit a substantial amount NFC indebtedness levels, like Hong Kong surpassing 200% in 2014, Ireland exceeding 200% since 2011, and Luxembourg reaching 300% in 2012. Concerning household credit, it has dramatically grown throughout the years, it expanded significantly prior to the financial crisis of 2009,

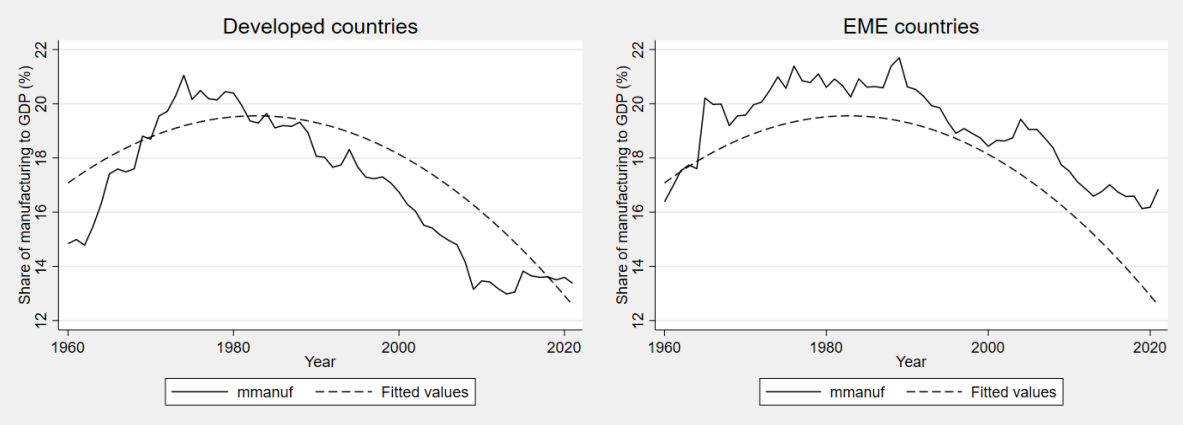
surpassing, on average, 74% in 2009. In some countries, lending levels to households are very similar and even slightly higher to NFCs; that is the case of Anglo-Saxon countries like Australia, New Zealand, the US and the UK (see Graph 1 in Appendix B). Still, there are some countries with relatively low levels of household indebtedness like Italy, with less than 45% in 2021, whereas Australia reached 120% in the same year. After the crisis, and given that the crisis was located in that sector, there was a slowdown in household credit and an increase in firm credit after.

The distinction between credit categories is only available for the majority of EME countries after 1990; the only countries having a longer time span prior to that are Turkey and Hungary. The graph illustrates how credit levels in both countries sharply declined, most likely as a result of the political and economic downturns they experienced. Overall, after 1990, the graph shows how NFC debt has increased substantially to more than 60% in 2021. Among EMEs, there are also differences; Chile (with 104% in 2021), China (156% in 2021), Russia (84% in 2021), and Thailand (88% in 2021) are above the average. In the case of Argentina (20%), Mexico (26%) or South Africa (34%), the percentage for 2021 is below the average.

Regarding household credit in EMEs, it rose from less than 7% in 1970 to 11% in 2000 and 34% in 2021. Among this country group, the levels are heterogeneous. Some countries present credit levels similar to developed countries, such as Chile (around 46% in 2021), China (60% in 2021), Malaysia (74% in 2021), and Thailand (90% in 2021). At the same time, countries like Mexico, Saudi Arabia or Turkiye showed very low levels of household credit to GDP in 2021, ranging between 15 and 17%. Lastly, it should be noted that household credit displayed a major increase in both EMEs and developed countries, growing at a higher rate in EMEs.

Then, Figure 4-3 shows the evolution in manufacturing to GDP by country group; this indicator is used in the literature to analyse industrialisation and deindustrialisation trends. Countries show signs of deindustrialisation when their manufacturing share decreases while orienting their productive efforts into services over time.

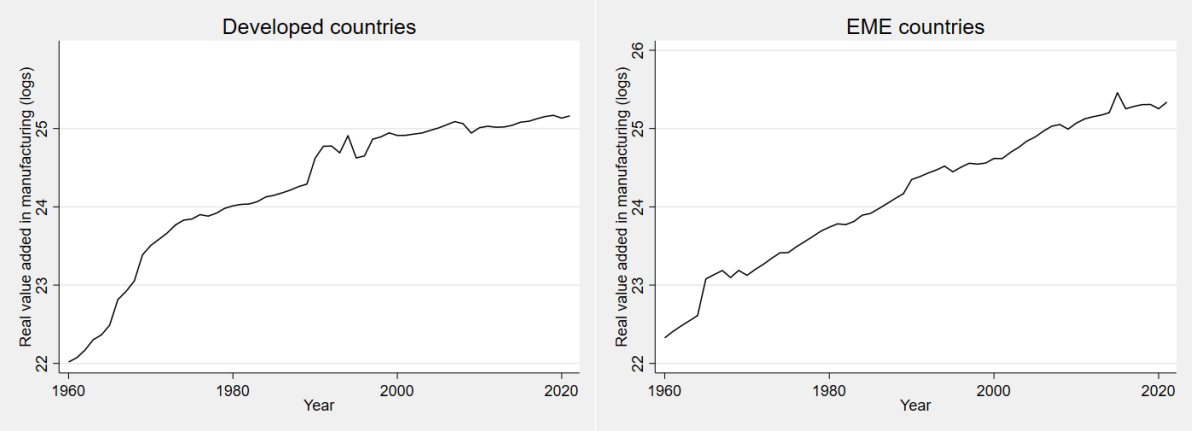
Figure 4-3: Manufacturing to GDP (%) 1960-2021 by country division.



Source: Author's elaboration using data from the WBDI.
Notes: Panels show the cross-country average of the share of manufacturing over GDP (current prices). Countries included in each category are detailed in Table 4-1.

Both groups' graphs of manufacturing to GDP over time exhibit an inverted U-shape pattern. In the case of developed countries, left-hand panel, there is a greater sustained increase in manufacturing shares until they peaked in 1974, decreasing then with relatively low levels of volatility. In the right-hand panel, the pattern is a bit more erratic for EME countries, peaking a bit later in 1989 and ending the period with higher rates than those of rich countries. For China, the information is available after 2003, which could make the average for the sample higher in this period, as their manufacturing shares annually are the largest among EME countries. Then, Figure 4-4 presents the evolution of manufacturing value added (absolute values), the results are presented in logs.

Figure 4-4: Manufacturing value added (logs) 1960-2021 by country division.



Source: Author's elaboration using data from the WBDI.
Notes: Panels show the cross-country average of the log of manufacturing value added at constant prices. Countries included in each category are detailed in Table 4-1.

First, in the case of developed countries, the left-hand panel shows that the sector's increased value added has been substantial until around the year 2000 and broadly stable after that. On the right-hand panel, the value added by the manufacturing sector in EME countries has been increasing steadily throughout the period. Even though, as seen in the previous graph, the participation of manufacturing in the economy decreases, it is not at the expense of the sector's value-added production.

Most developed countries decrease the weight of manufacturing in the economy. In the US, the sector's importance on the product declined to 10% in 2021. Meanwhile, the value added to the sector is the greatest in the sample. Japan's sector' size remained stable at around 20% but also exhibited high value-added levels. The case of Korea is exceptional, boosting value added in the sector and maintaining its participation to GDP around 24%.

Some EME countries have a significant manufacturing sector: Thailand, Indonesia, and China. Thailand, Indonesia, and Malaysia had their manufacturing industries peaking in size later in the early 2000s. Others, like South Africa, Poland, and some Latin American countries, decreased manufacturing participation over GDP. Among the Latin-American countries, the ones on the southern corn, like Argentina, Brazil and Chile, show a substantial decrease in the share of manufacturing in their

economies. For example, in the case of Brazil, the share of manufacturing in GDP was around 30% during the 1980s, and by 2021 it went down to less than 10%. Argentina went from 40% in 1965 to less than 16% in 2021. This observation is in line with what is found in the literature by Palma (2019). In the case of Mexico, and probably derived from the maquiladoras, the participation has remained relatively stable, around 20%. In all EME countries, value added in manufacturing has increased or remained stable[42]. In appendix B, more details about the individual countries' manufacturing performance are presented (see Graph 2).

4.4 Household and NFC credit and the productive structure: an empirical investigation

In previous sections, the theoretical analysis of how the different types of credit evolved and could affect the productive structure were introduced from the perspective of mainstream and financialisation scholars. The discussion has shown that household and NFC credit has grown in developed and EME countries, so analysing the differential impact of both types of credit is of great importance. Besides, on section 4.2 four main transmission channels were summarised, describing how the expansion of household and NFC debt could affect the real economy. Due to its significance for economic development and the lack of empirical estimations, this section investigates how the two types of credit affect manufacturing activities. It sheds a light on a regional component to the study, focusing on emerging Asia and Latin America. The results must be evaluated in the context of the previous theoretical analysis and research presented in the chapter. In social sciences, causality may be contested. The indicators used are incomplete proxies of the processes (evolution of credit or manufacturing trends) and could be affected by measurement issues. Finally, the following results

42 Value added is not available for China.

support the previous claims by demonstrating a positive association between firm credit and manufacturing and a negative one with household credit.

4.4.1 Data

This chapter investigates how the different types of credit affect manufacturing activities using an unbalanced panel of 43 countries for a maximum period of 1963 to 2021. However, for most countries due to data availability the period is much shorter. The choice of the country sample is constrained by credit data available at the Bank for International Settlements (BIS). Table 4-1 presents the countries included in the sample divided by two according to the IMF country classification[43]:

Table 4-1: Country sample and country division.

Developed (27)	EME (16)
Australia; Austria; Belgium; Canada; Czechia; Denmark; Finland; France; Germany; Greece; Hong Kong, SAR; Ireland; Ireland; Israel; Italy; Japan; Korea Rep.; Luxembourg; Netherlands; New Zealand; Norway; Portugal; Singapore; Spain; Sweden; Switzerland; United Kingdom and United States	Argentina, Brazil, Chile, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Poland, Russian Federation, Saudi Arabia, Thailand, Turkiye and South Africa

Source: Author's elaboration.

Table 4-2 presents a description of the variables used in the study with the data sources; all statistics are taken from international institutions to ensure comparability.

43 EMEs are divided into Latin America (including Argentina, Brazil, Chile, Colombia and Mexico) and emerging Asia (including China, Indonesia, Malaysia, Russian Federation, Saudia Arabia, Thailand, and Turkiye).

Table 4-2: Variables and sources.

Level	Variable	Explanation	Source
Productive structure	VACmanuf	Manufacturing, value added constant prices (2015 USD)	WBDI
	manuf	Manufacturing, value added as a share of GDP (%)	WBDI
Credit	housedebt	Households & NPISHs' debt over GDP	BIS
	NFCdebt	Non-financial corporations' debt over GDP	BIS
Macroeconomic	GDP	GDP per capita (constant 2015 US$, in thousands)	WBDI
	inflation	Inflation, consumer prices (annual %)	WBDI
	POP	Population, total (in millions)	WBDI,
	secondary	Secondary school enrolment (% gross)	WBDI, UNESCO Institute for Statistics

Source: Author's elaboration.

The information about the productive structure is from the World Bank Development Indicators series (WBDI), taking into account manufacturing as a share of GDP and manufacturing value added at constant prices. This last variable is presented in logarithms to keep consistency with the scales of the rest of the variables. The rest of the macroeconomic control variables (GDP per capita, population, inflation and education levels) are also from the WBDI. Private credit information data is available for the non-financial sector, including NFCs, households and non-profit institutions serving households. Credit to residents is provided by domestic banks, all other sectors of the economy and non-residents. Regarding financial instruments, credit covers loans and debt securities (together with bonds and short-term papers). Credit statistics from the BIS include, for most countries, the separation of private credit into its components (firm and household credit) after the 1990s; an overview of data availability can be found in Appendix B (Table 1).

4.4.2 Methodology and tests

The chapter estimates the relationship between the productive structure (Y_{it}), approximated by the share of manufacturing over GDP ($manuf_{it}$) and different credit types ($NFCdebt_{it}$ and $housedebt_{it}$), as shown in equation 1.

Following Rodrik (2016), equation (1) includes, as controls, real income levels per capita (GDP_{it}) and country size (POP_{it}), both in their squares, this constitutes the baseline specification of the equation. GDP, and its squared, are associated with the process of "natural" deindustrialisation trend. Then, added to the equation are inflation ($inflation_{it}$) and education levels ($secondary_{it}$). High inflation levels could distort economic decisions, which is why it is a common macroeconomic control variable. In the case of education[44], it could affect the level of productive capabilities of a given country. These two variables are included in the study of Beck et al. (2012), which analyses how household and firm credit affect income inequality and economic growth. Inflation is also included in Beck et al. (2014), Bezemer et al. (2016), and Müller and Verner (2023).

Adding these two additional variables reduces the sample size. The regression model includes country-fixed effects (θ_i) and time-fixed effects (f_t). This is to account for unobserved country-specific characteristics that are constant over time within countries and control for year-specific factors common to all nations, as they could both affect the productive structure. u_{it} is the error term which represents the residual variation in the dependent variable after accounting for the independent variables (X_{it}) and the fixed effects ($\theta_i$and f_t). The error is assumed to be normally distributed.

Equation (1) is estimated using fixed effects estimators and heteroscedasticity consistent standard errors. Endogeneity could arise if countries with less credit access,

44 The variable school enrolment at the secondary level is in gross terms, meaning that the enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to that level of education.

or policies that support credit for firms, are the same countries with fewer opportunities for technological upgrading and investing in R&D for manufacturing. For example, these countries are those that have less developed property rights or suffer from political instability. Furthermore, countries with strong manufacturing lobbies may exert pressure for preferential credit conditions. To mitigate this problem, the regressions include country-fixed effects. Nevertheless, further studies are needed to analyse the links between credit and manufacturing policies, including historical factors and case studies of different countries.

$$Y_{it} = \alpha + \beta_1 housedebt_{it} + \beta_2 NFCdebt_{it} + \gamma_1 GDP_{it} + \gamma_2 GDP_{it}^{\ 2} + \gamma_3 POP_{it} + \gamma_4 POP_{it}^{\ 2} + \gamma_5 inflation_{it} + \gamma_6 secondary_{it} + \theta_i + f_t + u_{it} \quad (1)$$

Derived from the four channels identified in the literature in sections 4.2.1 and 4.2.2, it is expected that if the *productive channel* is significant, β_2 will be positive, as firm credit will enable productive capabilities. Second, the increase in household credit has two opposite effects: the first is related to the *consumer channel*, which crowds out productive credit, and the second is related to the *household investment* channel, which may have a positive effect as households spend on productive activities (micro-entrepreneurs investing in their businesses or education). The overall sign of β_1 will depend on what effect predominates. Lastly, the *financialisation channel* indicates that the increase of household credit could be detrimental to structural change because its use for non-productive purposes could lead to financial instability. β_1 is expected to be negative. β_2 could also be negative depending on the magnitude of the shareholder value orientation and the use of credit for short-term purposes vs. uses of credit for productive reasons. The coefficients must be examined cautiously as the pooling restriction means that the same coefficient is identical across heterogeneous nations.

Appendix B, Table 2 contains appropriate tests used for multicollinearity and Table 3 panel root analysis. Latter tests, were conducted using the Fisher estimator, which is recommended for unbalanced panels. The null hypothesis of panels containing a unit root at the 5% was rejected.

Below, Table 4-3 summarizes the descriptive statistics for the full sample, developed countries and EMEs. Developed countries present lower levels of manufacturing as a share of GDP. In terms of credit, as shown in the graphs, developed countries exhibit higher consumer and firm indebtedness levels.

Table 4-3: Descriptive Statistics.

	Full sample			Developed countries			EMES		
	Obs.	Mean	Std. dev.	Obs.	Mean	Std. dev.	Obs.	Mean	Std. dev.
manuf	1,794	17.288	6.162	1,004	15.982	5.718	790	18.948	6.309
logVACman	1,765	24.562	1.327	1,017	24.715	1.450	748	24.353	1.107
NFCdebt	1,484	80.893	45.613	1,080	92.488	44.762	404	49.897	31.116
housedebt	1,502	46.494	29.027	1,098	55.182	27.296	404	22.880	18.581
GDP	2,408	22.434	19.541	1,514	31.921	18.665	894	6.369	5.290
POP	2,666	86.755	218.059	1,674	32.191	53.027	992	178.830	331.072
inflation	2,429	14.320	99.334	1,619	5.449	14.483	810	32.051	169.475
secondary	1,800	89.845	25.622	1,152	99.724	19.885	648	72.281	25.281

Source: Author's calculations based on data as reported in Table 4-2.

Then, Table 4-4 presents the correlation between the variables; all correlations are below 0.65, but for household debt and GDP, which is slightly above it. NFC credit and household credit are negatively correlated with the share of manufacturing over GDP. In addition, the Variance Inflation Factor test (VIF) is conducted for the variables included in Table 4-2 and provided in Appendix B (Table 2). The values are below the standard threshold of 10.

Table 4-4: Pairwise correlations, full country sample.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) manuf	1						
(2) NFCdebt	-0.200***	1					
(3) housedebt	-0.260***	0.538***	1				
(4) GDP	-0.390***	0.633***	0.656***	1			
(5) POP	0.115***	-0.033	-0.082***	-0.261***	1		
(6) secondary	-0.392***	0.395***	0.485***	0.566***	-0.339***	1	
(7) inflation	0.117***	-0.303***	-0.410***	-0.099***	0.014	-0.161***	1

Source: Author's calculations based on data as reported in Table 4-2.
Notes: *** *p<0.01, ** p<0.05, * p<0.1*

4.5 Results

4.5.1 Main regressions

Based on the methodology previously described, Table 4-5 reports the results of the baseline regression and Table 4-6 adds extra controls. Column (1) presents the results for the full country sample, column (2) for developed countries and (3) for emerging countries.

Table 4-5: Panel fixed effects regressions. Dependent variable: manufacturing over GDP.

	(1) All countries	(2) Developed countries	(3) EMEs
housedebt	**-0.068****	**-0.072****	-0.008
	(0.029)	**(0.032)**	(0.031)
NFCdebt	0.006	0.011	-0.001
	(0.010)	(0.010)	(0.022)
GDP	0.329	0.371*	-1.162*
	(0.225)	(0.211)	(0.635)
GDP^2	-0.002	-0.002*	0.045*
	(0.001)	(0.001)	(0.022)
POP	-0.026	0.221	-0.112
	(0.056)	(0.305)	(0.064)
POP^2	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)
Time fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
N	1211	836	375
R2	0.560	0.641	0.451

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

For the baseline specification, Table 4-5 shows that household debt has a negative and statistically significant effect on manufacturing for the full sample and for developed countries (at the 5% level). The results align with previous empirical works that pointed out that household credit is not generally associated with positive economic effects. Firm credit does not affect the share of manufacturing in developed economies or for the entire sample. Surprisingly, in the case of EMEs, neither of the credit types

are significant in explaining manufacturing levels. This could be related to the fact that this country group includes countries that are very different in terms of productive capacities and other characteristics regarding credit markets. Then, Table 4-6 presents the results adding more control variables for the entire sample in column (1), for developed countries in column (2) and for developed countries excluding the two major financial centres in the sample (Luxembourg and Hong Kong) in column (3), following Bruno and Shin (2015). Finally, column (4) presents the results for EMEs.

Table 4-6: Panel fixed effects regressions. Dependent variable: manufacturing over GDP.

	(1) All countries	(2) Developed countries	(3) Developed countries without fin cent.	(4) EMEs
housedebt	**-0.064****	**-0.071****	**-0.076****	-0.062
	(0.029)	**(0.028)**	**(0.027)**	(0.036)
NFCdebt	0.006	0.013	0.026	0.001
	(0.012)	(0.010)	(0.015)	(0.022)
GDP	0.474*	0.547***	0.630***	-0.472
	(0.242)	(0.183)	(0.217)	(1.162)
GDP²	-0.003**	-0.003***	-0.004**	0.028
	(0.002)	(0.001)	(0.002)	(0.041)
POP	-0.049	0.199	0.163	-0.158*
	(0.070)	(0.254)	(0.245)	(0.084)
POP²	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
inflation	0.010	-0.353***	-0.313***	0.063***
	(0.028)	(0.089)	(0.086)	(0.019)
secondary	0.025	-0.010	-0.006	0.038
	(0.024)	(0.016)	(0.018)	(0.032)
_cons	6.547	2.862	2.001	37.131***
	(4.510)	(5.551)	(6.042)	(11.481)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	1002	711	665	291
R2	0.540	0.660	0.665	0.566

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

The results remain coherent with the previous table. For the entire sample, and for developed countries, household debt maintains its negative and significant effect on

the share of manufacturing (at the 5% level). When excluding the financial centres, Hong Kong and Luxembourg, household debt still significantly and negatively affects the share of manufacturing. The effect of firm credit on the share of manufacturing is positive but not significant for this group. Results seem to confirm the *consumer and financialisation channels* (in relation to household debt), as in both cases, the productive structure was adversely impacted by household credit. In the case of EMEs, both credit types are not significant. Then, Table 4-7 illustrates the results using the lagged values of all independent variables by one period in an attempt to mitigate reverse causality. The results remain coherent with the ones presented above.

Table 4-7: Panel fixed effects regressions. Dependent variable: manufacturing over GDP using, lagged variables (t-1).

	(1) All countries	(2) Developed countries	(3) Developed countries without fin cent.	(4) EME countries
L.housedebt	**-0.059****	**-0.068****	**-0.073****	-0.050
	(0.028)	**(0.028)**	**(0.027)**	(0.041)
L.NFCdebt	0.010	0.015	0.030	0.012
	(0.013)	(0.012)	(0.019)	(0.021)
L.GDP	0.428*	0.485**	0.543**	-0.478
	(0.241)	(0.186)	(0.225)	(1.294)
L. GDP^2	-0.003*	-0.003**	-0.003**	0.028
	(0.002)	(0.001)	(0.002)	(0.043)
L.POP	-0.052	0.198	0.175	-0.143
	(0.063)	(0.246)	(0.244)	(0.082)
L. POP^2	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
L.inflation	0.001	-0.369***	-0.336***	0.060**
	(0.030)	(0.101)	(0.096)	(0.022)
L.secondary	0.026	-0.008	-0.006	0.045
	(0.022)	(0.016)	(0.018)	(0.032)
_cons	8.810**	5.561	4.743	34.057**
	(4.274)	(5.415)	(6.050)	(11.725)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	1005	717	672	288
R2	0.505	0.630	0.637	0.517

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Then, Table 4-8 divides emerging countries into Latin America and emerging Asia. In the case of other emerging countries, the number is not large enough to add another regional division. Given the amount of literature dedicated to comparing the industrial performance of Asian countries vs Latin American countries (Palma, 2009; Khan and Blankenburg, 2009; Palma, 2019), this division seems to contribute further to this literature.

Table 4-8: Panel fixed effects regressions. Dependent variable: manufacturing over GDP.

	(1) EMEs	(2) LA	(3) Emerging Asia
housedebt	-0.062	**-0.655*****	**-0.150*****
	(0.036)	**(0.107)**	**(0.028)**
NFCdebt	0.001	**0.157****	-0.009
	(0.022)	**(0.036)**	(0.065)
GDP	-0.472	3.056**	2.593
	(1.162)	(0.826)	(1.478)
GDP^2	0.028	-0.124**	-0.135*
	(0.041)	(0.025)	(0.060)
POP	-0.158*	-0.317	-0.364**
	(0.084)	(0.231)	(0.094)
POP^2	0.000	0.001	0.000**
	(0.000)	(0.001)	(0.000)
inflation	0.063***	-0.116	0.157
	(0.019)	(0.058)	(0.083)
secondary	0.038	0.027	0.019
	(0.032)	(0.079)	(0.028)
_cons	37.131***	16.789	106.974***
	(11.481)	(10.334)	(18.723)
Time fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
N	291	85	82
R2	0.566	0.859	0.911

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Table 4-8 shows that in both emerging regions, household debt has a significant and negative effect on the share of manufacturing (significant at 1%). The magnitude is larger in the case of Latin America, and in the case of firm credit it positively impacts manufacturing activities only in that region (significant at 5%). The results remain the same for emerging Asia when removing China from the sample, though the significance decreases (table can be found in Appendix B, Table 4). The significance of

regional context in the estimation is evidenced by the higher R^2 coefficient observed in columns (2) and (3), compared to the aggregated results in column (1). This difference suggests that the regional-level analysis plays a role in accurately modelling and understanding the underlying relationships within the data.

For the case of Latin America, the results also highlight the importance of the *productive channel* as there is a positive association between firm debt and manufacturing. This could be related to the fact that in comparison to other regions, Latin America present some disadvantages for firms to access credit (higher collateral needed, and small companies face more barriers to credit access) in a financial system that is not very deep, lacks financial instruments for investment, and is oriented to the short term - where the majority of firms are financed by internal or informal resources (see Cipoletta and Matos, 2018). In this context, a credit surge for firms could positively impact manufacturing activities. Similarly to the previous regional division, the results are introduced below lagging one period of all the independent variables (Table 4-9), finding similar results as those in Table 4-8.

Table 4-9: Panel fixed effects regressions. Dependent variable: manufacturing over GDP using, lagged variables (t-1).

	(1) EME countries	(2) LA	(3) EME Asia
L.housedebt	-0.050	**-0.592****	**-0.128*****
	(0.041)	**(0.121)**	**(0.016)**
L.NFCdebt	0.012	**0.119****	0.043
	(0.021)	**(0.022)**	(0.074)
L.GDP	-0.478	0.697	2.821**
	(1.294)	(1.000)	(0.841)
L. GDP^2	0.028	-0.036	-0.140
	(0.043)	(0.033)	(0.090)
L.POP	-0.143	-0.246	-0.370**
	(0.082)	(0.198)	(0.096)
L. POP^2	0.000	0.000	0.000**
	(0.000)	(0.000)	(0.000)
L.inflation	0.060**	-0.046	0.007
	(0.022)	(0.042)	(0.099)
L.secondary	0.045	0.004	-0.005
	(0.032)	(0.042)	(0.030)
_cons	34.057**	30.221*	103.187***
	(11.725)	(10.212)	(16.023)
Time fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
N	288	85	79
R2	0.517	0.889	0.907

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

4.5.2 Robustness checks

As a robustness check Table 4-10, displays the results for the econometric estimations for the log of value added of manufacturing at constant prices. As before, column (1) presents the results for the entire sample, column (2) for developed countries, column (3) shows the results without the financial centres, and column (4) for emerging countries.

Table 4-10: Panel fixed effects regressions. Dependent variable: log of manufacturing value added, constant prices 1960-2021.

	(1) All countries	(2) Developed countries	(3) Developed countries without HK and Lux.	(4) EMEs
housedebt	-0.001	**-0.003***	**-0.004*****	-0.001
	(0.002)	**(0.002)**	**(0.001)**	(0.003)
NFCdebt	0.001	0.001	**0.002***	-0.000
	(0.002)	(0.002)	**(0.001)**	(0.001)
GDP	0.097***	0.094***	0.141***	0.260***
	(0.029)	(0.025)	(0.017)	(0.074)
GDP^2	-0.001**	-0.001***	-0.001***	-0.005
	(0.000)	(0.000)	(0.000)	(0.003)
POP	0.012*	0.050	0.025	0.004
	(0.007)	(0.037)	(0.026)	(0.004)
POP^2	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
inflation	-0.006**	-0.033***	-0.020***	0.000
	(0.003)	(0.010)	(0.006)	(0.001)
secondary	0.003	-0.001	0.001	0.004
	(0.002)	(0.002)	(0.001)	(0.003)
_cons	20.525***	20.178***	20.027***	22.366***
	(0.459)	(0.728)	(0.469)	(0.364)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	1000	714	668	286
R2	0.806	0.831	0.893	0.944

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

For developed countries, household debt has a significant and negative effect on manufacturing value added (at 10%). When excluding the two financial centres, Hong Kong and Luxembourg, the effect is stronger, and more robust (1% of significance). Moreover, the effect of firm credit on manufacturing value added is positive, reflecting that the *productive channel* positively influences manufacturing when taking out the more financialised environments. In financial centres, resources, legislation and general conditions for manufacturing activities are expected to be less favourable. In the case of emerging countries, as in the previous regression, both types of credit do not exhibit a significant sign. Below, Table 4-11 divides emerging countries into Latin America and Asia.

Table 4-11: Panel fixed effects regressions Estimations for the log of manufacturing value added, constant prices.

	(1) EMEs	(2) LA	(3) Emerging Asia
housedebt	-0.001	**-0.019****	-0.005
	(0.003)	**(0.004)**	(0.003)
NFCdebt	-0.000	**0.005***	**-0.004***
	(0.001)	**(0.002)**	**(0.001)**
GDP	0.260***	0.363***	0.262***
	(0.074)	(0.039)	(0.042)
GDP^2	-0.005	-0.011***	-0.006*
	(0.003)	(0.001)	(0.002)
POP	0.004	-0.001	0.008
	(0.004)	(0.008)	(0.003)
POP^2	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
inflation	0.000	-0.004*	0.001
	(0.001)	(0.001)	(0.001)
secondary	0.004	0.002	0.001
	(0.003)	(0.002)	(0.001)
_cons	22.366***	22.722***	22.778***
	(0.364)	(0.545)	(0.689)
Time fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
N	286	85	77
R2	0.944	0.979	0.995

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

For the regional divisions, Latin America displays a similar pattern, showing positive and notable effects of firm credit (10% significance level) and adverse effects of household credit (5% significance level). In the case of Emerging Asia, the effect of household debt is negative but insignificant. In the case of firm credit, the effect is negative, and this time significant (at the 5% level).

Then, the regressions were conducted for manufacturing as a share of GDP including a region specific linear and quadratic time term. The findings remain consistent, showing a negative and significant effect of household credit on manufacturing in developed countries, emerging Asia and Latin America. For firm credit, the results remain positive but insignificant in Latin America; results can be found in Appendix B, Table 5.

Finally, as detailed when describing the database, credit statistics from the BIS, for most countries, include the separation of private credit into its components (firm and household credit) after the 1990s; that is why, in Appendix B (Tables 6 and 7), the regressions using a shorter period, 1995-2021, are used to confirm that countries with more available information do not drive the results.

4.6 Conclusions

The global rise in debt and the increase in the importance of household credit in the last decades are not neutral regarding economic development. The shift favoured purchasing already-owned real estate and financial assets instead of serving as a source of credit for the productive system, where too much of the "wrong sort of debt" harmed the real economy and financial stability. The new reality is not only present in rich countries; it also affects emerging economies. This chapter investigated the effects of household credit and firm credit on the productive structure as an influencing factor of economic diversification using a database of 43 countries from the early 1960s to 2021. The study sought to compare the different trajectories for the entire sample as well as for countries grouped in developed and emerging, and for regional classifications. The chapter confirms that household debt negatively affects the share of manufacturing over GDP in the entire sample— and in developed countries, emerging Asia, and Latin America, with a greater impact observed in the latter. Latin America also demonstrates the advantages of lending to businesses for manufacturing endeavours. The fact that firm credit is positively linked to manufacturing is not surprising and, in a way, expected and in line with previous works. The positive effect could also be related to the difficulties in obtaining credit documented in the literature in the case of Latin American firms, so when there is an increase in credit for constrained firms it translates into improvements in the productive structure. The development strategy adopted in the region after the 1980s discouraged manufacturing while promoting the financial sector. Financial liberalisation and

financialisation strategies resulted in agents piling up large amounts of debt, particularly those not oriented to productive purposes. As discussed in the chapter, particularly concerning emerging economies, the position of these countries within the global financial system enables capital inflows to expand the availability of credit for real estate and construction. This, in turn, can have adverse effects on productive investment. On the contrary, as Turner (2016) and others have argued, countries with successful industrialisation strategies, especially those in Asia, managed the financial markets by orienting credit towards productive firms and controlling capital flows.

The fact that some results are not consistently significant could be explained because the causal determination of the share of manufacturing is complex and heterogeneous among nations and over time, and depends not only on credit availability and credit policies. Certain variables may have opposing effects on manufacturing, and the regression analysis may yield statistically insignificant coefficients when averaged for a region. For future research, including historical country case studies in relation to industrialisation and credit policies could help to understand the overall tendencies. What is more, it will be beneficial to dig deeper and investigate firm credit within the different industries to analyse which sectors in which countries are more constrained and what the effects on the productive structure are.

Chapter 5 : Premature deindustrialisation and financialisation, two opposite trends?

5.1 Introduction

Industrialisation, in particular manufacturing, has been considered the engine of economic growth, and it is seen to be the most fruitful sector in terms of job creation and innovation (Kaldor, 1966b). Even amongst mainstream economists, the concern for industrialisation[45] has seen a recent revival in the face of —sometimes premature— deindustrialisation processes in many developing and emerging economies (see Chang and Andreoni, 2020). The importance of the sector is picked up in the UN Agenda 2030 for Sustainable Development as the increase in industry jobs and value-added is included among its primary goals, or by the fact that, after the 2009, industrialisation was promoted as a way of helping countries to recover faster from the financial crisis (European Commission, 2014). According to UNIDO (2017), countries with greater manufacturing sectors tend to show lower inequality and poverty levels. One important caveat is that manufacturing expansion has historically been associated with production practices that harmed the environment, including pollution, overexploitation of natural resources, and high carbon emissions (UNCTAD, 2016). In the current era, as highlighted by Mazzucato (2023), industrialisation requires a strategic approach that not only enhances value-added, but also accomplishes societal

45 As van Neuss, (2019) notes, structuralists define "manufacturing" as any activity that is neither agricultural, the extraction of raw materials (primary sector activity), nor the provision of services (the tertiary sector). According to the definition, manufacturing is a secondary sector. In statistical classifications of economic activities, manufacturing, mining and quarrying, and construction are all included under the term "industry". This paper emphasises the role of manufacturing, even when discussing the industry in general or industrialisation following the structuralist terminology.

and environmental outcomes, aligning economic growth with sustainability and inclusivity.

Historically, countries that achieved high living standards did so by building a robust manufacturing base, where the terms “industrialised country” and “developed country” are used synonymously (McMillan and Rodrik, 2011; Szirmai, 2012; Rodrik, 2013b). Szirmai and Verspagen (2015) point out that there is empirical evidence that manufacturing drives economic growth. That is explained, as discussed in Chapter 2, by the fact that the manufacturing sector exhibits higher productivity growth than other sectors and, at the same time, the productivity increases are translated into wages with a higher elasticity associated with Engel’s law (Prebisch, 1949; Hirschman, 1958; Szirmai, 2012). Additionally, manufacturing is portrayed as the sector with more capabilities to create positive externalities by generating backward and forward linkages with other economic activities (Hirschman, 1958). Besides, the manufacturing sector presents higher capital accumulation rates, economies of scale, and the ability to incorporate technology rather than agriculture or at least most services do. On the same wavelength, developing countries’ manufacturing industries exhibit faster productivity growth, which could help to catch up to the productivity levels of rich nations (Rodrik, 2013b) and reduce commodity dependence (UN.ECA, 2016).

Kuznets (1973) argues that economic development is associated with structural change, which includes switching labour from agriculture to manufacturing and then away from it to the service sector. There is historical evidence of labour transitioning from agriculture to manufacturing as the economy matures; in the US, for example, the labour share in agriculture went from 53.5% in 1870 to less than 7% in 1960 (Kuznets, 1973, pp. 248). In a way, deindustrialisation is seen as a natural phenomenon of economic development. Developed countries, after reaching their highest point in their industrialisation processes with labour shares of around 40% in the manufacturing sector in the 1960s, then fell into a period of deindustrialisation (Dosi et al., 2021, pp.2). These countries started to deindustrialise after reaching a peak in the share of manufacturing to the total economy (in terms of jobs or in terms of value added). According to Dosi et al. (2021), today the overall share of the manufacturing sector in rich countries is between 10-25% (Dosi et al., 2021, pp.2).

Recent studies show that deindustrialisation processes are as well happening in developing countries. However, in contrast to developed economies, these are occurring prematurely, as the switch of labour and output from manufacturing to services takes place at lower levels of income per capita, as opposed to advanced economies (Rodrik, 2016; Felipe et al., 2018; Palma, 2019). According to Tregenna (2015), when a country deindustrialises prematurely, the positive externalities of manufacturing on other sectors, and the broader economy, do not materialise fully regarding the diffusion of skills or the capacity to learn by doing. In addition, premature deindustrialisation may imperil the services sector's ability to function as a substitute growth engine (Akyüz, 2005). Authors have pointed out that this phenomenon is due to the reorganisation of labour and the role of China as the factory of the world (Palma, 2019), a statistical effect of how jobs are counted across sectors (Tregenna, 2015), the lack of industrial support for industrial policies or the fact that financial inflows could result in a type of Dutch disease that affect manufacturing activities (Palma, 2005). However, this literature has not systematically considered the relation between deindustrialisation (and premature deindustrialisation) processes and financialisation. Conversely, the paper by Pérez Caldentey and Vernengo (2021) is one exception. They point out that the process of premature deindustrialisation was, in some EMEs, accompanied by 'premature financialisation', which means that countries transitioned to an economy more centred around the financial sector and financial interests without having a fully developed industrial sector (Pérez Caldentey and Vernengo, 2021, pp.6). The characterisation in their paper is made for the case of Latin America and they do not empirically analyse the relationship between both trends (financialisation and industrialisation).

This chapter aims to analyse financialisation in an analogue manner to how studies in the literature investigated deindustrialisation worldwide, with a particular focus on employment and value-added over time. Using the same database and econometric technique as the IMF working paper by Kruse et al. (2022), based on Rodrik's (2016) work, this chapter aims to replicate their deindustrialisation analysis adding financialisation trends for the same geographic areas. By allowing comparability, it seeks to dialogue with the literature by investigating if premature deindustrialisation is linked with premature financialisation.

As stated, both phenomena are analysed by using a dataset that contains systematic information on employment and value-added of the different economic sectors in the economy: the Groningen Growth and Development Center/ United Nations University World Institute for Development Economics Research (GGDC/UNU-WIDER) Economic Transformation Database (ETD). The ETD database includes information on employment shares and value-added of manufacturing and the financial sector for the period 1990-2018 (used in Kruse et al., 2022). In a second step, and to cover a more extended period, the chapter uses the GGDC-10 database that contains data from 1950-2012 (used in Rodrik, 2016). Both databases include emerging countries from different regions (Emerging Asia, Latin America, and Sub-Saharan Africa) and advanced countries (advanced Asia in both databases). The analysis has an emphasis on the evolution of employment shares, as Felipe et al. (2018) suggest that employment in the manufacturing sector provides a more accurate predictor of economic growth than value added.

The investigation analyses deindustrialisation (and financialisation) over time, using Ordinary Least Squares (OLS) regressions for both databases, including period dummies and controlling for income, population and country fixed effects. Results confirm that for EMEs, premature deindustrialisation and premature financialisation are only present in Latin America. The manufacturing sector has been increasing in size in Sub-Saharan Africa in the last decades while increasing financialisation simultaneously. Meanwhile, emerging Asia shows fewer signs of domestic financialisation while developing its manufacturing industries.

The sections of the chapter proceed as follows: Section 5.2 introduces the main aspects discussed in the literature regarding deindustrialisation, drivers and consequences. Section 5.3 analyses deindustrialisation and financialisation trends for the period of 1950-2012 for three emerging regions (Latin America, Asia, Sub-Saharan Africa) and developed Asia. Section 5.4 introduces the datasets, variables, and the econometric model. Section 5.5 provides the results regarding industrialisation and financialisation conditional on GDP levels and demographics, and section 5.6 concludes.

5.2 Deindustrialisation trends

Deindustrialisation is generally measured as the decline in manufacturing jobs in total employment and/or the fall in manufacturing output as a share of GDP[46] (see, for example, Rowthorn and Ramaswamy, 1997; Palma, 2005; Tregenna, 2015). The literature on deindustrialisation documents an inverted U-shape between manufacturing and income, suggesting that manufacturing rises while countries develop but, subsequently falls after reaching a certain threshold (Palma, 2005; Rodrik, 2016).[47]. According to this literature, the majority of the world's industrialised economies have entered a new post-industrial stage of development characterised by decades of deindustrialisation (UNCTAD, 2016). For many, this is a source of concern since it is linked to the loss of high-quality jobs (Palma, 2005), social networks and levels of unionisation (Tregenna, 2009), a rise in income inequality (UNIDO, 2017), and more broadly, democratic quality (Rodrik, 2013a). It is also associated with a decrease in income levels (Szirmai and Verspagen, 2015), and a reduction in the capacity to innovate, as most of the R&D and patents originate in this sector (Rodrik, 2016). As Scheiring et al. (2023) indicate, when capital leaves such once industrialised areas, deindustrialisation processes further negatively impact physical infrastructure and services, such as transportation or health. Some of these were supplied by the factories or the local government through taxation of manufacturing activities.

As indicated, industrial growth and manufacturing have been closely tied to economic development and GDP growth due to their positive linkages with other sectors and their role in driving technological advancement and productivity gains. However, EMEs with limited capacity to create new technologies face the challenge of adapting existing ones (UNCTAD, 2016). Additionally, local innovation and skill development could be restricted in the context of higher participation in GVCs as technology-intensive inputs, product design, and production processes are often controlled by

46 Another aspect to bear in mind is that manufacturing is quite a heterogeneous sector, so zooming into value-added, export orientation, or the capacity to generate interlinks is vital for growth, employment and prosperity.

47 Depending on the samples, prices used, and period in time, the turning points are around a GDP per capita of US$ 12.000 or US$ 10.000 (see Tregenna et al. 2021, pp. 379).

GVCs (UNCTAD, 2016). In this line, Coveri and Zanfei (2023) find that value capture by EMEs in GVCs is highly restricted because these countries mainly carry out lower-end production. The authors describe a global economic hierarchy that has solidified since the early 2000s, though China and India have emerged as outliers, likely due to advancements in their national innovation systems.

According to Palma (2019), deindustrialisation is not necessarily a worrying phenomenon for the neoclassical theory. The decrease in manufacturing jobs is irrelevant if other economic sectors could absorb the labour force released from it. Theoretically, the sector driving economic growth is not meaningful, for instance, in the context of Solow models (Solow, 1957). Palma (2019) indicates that even the new growth models are indifferent to the economic sector, emphasising the importance of the activity (technological or human capital) (see, for example, Romer, 1990; Krugman, 1994). As stated by this theory, deindustrialisation is not necessarily harmful if the resources are reallocated to more R&D-intensive activities. Meanwhile, from Post-Keynesian and Latin American structuralist theories, the activity is less central than the sector (Prebisch, 1949; Hirschman, 1958; Kaldor, 1966b; Palma, 2005; Szirmai, 2012). Manufacturing is a dynamic sector that generates spillover effects and economies of scale (Hirschman, 1958), and it collaborates towards balance of payments sustainability (Prebisch, 1949). Hence, deindustrialisation poses risks for the entire economy.

Rodrik (2016) indicates that deindustrialisation in developed countries is especially evident when looking at employment because when using manufacturing value added as a share of GDP, the results highly depend on whether the ratio is calculated using current or constant prices[48]. Once price effects are taken into account, the decline in the share of manufacturing is not so critical; in the US scenario, it has remained almost constant since the 1950s, while the decrease in jobs has been of entity. Palma (2005) highlights the drastic deindustrialisation process of the European Union, whose manufacturing employment fell about one-third from 1970 to 2000. In addition, starting from the 1970s, some developing nations, except for some Asian countries,

48 When comparing the shares of different economic activities to GDP, the results rely additionally on the relative prices of manufactured goods versus other sectors, such as services.

have begun to deindustrialise rapidly in terms of employment and value-added, even without reaching the same income per capita levels as rich countries.

Some reasons are pointed out in the literature as drivers for deindustrialising. First, Rowthorn (1994) defines the process of deindustrialisation as a decline in manufacturing jobs after a certain level of income per capita. So, deindustrialisation is seen as a natural process of economic development and reaching that threshold is indicated as the first reason (driver). Second, related to the transnationalisation and offshoring led by TNCs, global production has seen a reorganisation of labour, shifting employment, mainly to China (seen as exploiting the comparative advantage of the abundance of labour) (Palma, 2019). Another cause is related to the reduction in income elasticity of the demand for manufactured products, increasing the demand for services (labelled as "preference-driven" structural change) as countries become richer (van Neuss, 2019, pp. 318). Added to that, labour-saving technology increases productivity without increasing the number of jobs ("technology-driven") (van Neuss, 2019, pp. 318). A third aspect, is related to the statistical computation of jobs within sectors. Certain activities that used to be computed under manufacturing are now done under services; this mainly includes manufacturing-related activities like transport, cleaning or recruitment. Because of outsourcing, jobs previously registered in manufacturing have now been classified as services without a real change in the sectoral composition of employment; denominated as 'statistical illusion' (for a discussion, see Tregenna, 2015, pp.30). For a detailed overview of the above reasons, see van Neuss (2019). Another driver added by Palma is related to the Dutch disease effect. The effect was first used to describe the manufacturing sector's challenges when discovering new natural resources in a given country. However, the concept is extended to capital inflows derived from exports from financial services (Switzerland, Luxembourg and Hong Kong) or tourism (Greece, for example). In those cases, the decline in manufacturing employment was more pronounced than what would have been predicted from other factors previously outlined (Palma, 2005; Palma, 2019).

As indicated by Özçelik and Özmen (2023) the literature on the drivers of deindustrialisation in EMEs is relatively small, and they considered mainly the same reasons as in rich countries (the increase in income per capita). However, some authors attributed a role to policy measures in relation to trade and tariff

liberalisation, before reaching maturity in their manufacturing sectors, and overvalued exchange and interest rates which could have contributed to deindustrialisation. Liberalisation is more likely to be a factor accelerating deindustrialisation in EMEs rather than in rich economies (Tregenna, 2015). Latin American countries moved from import-substituting industrialisation (ISI) strategies led by the State to a Washington Consensus type of model (opening to trade and finance). As a result, they lacked a targeted industrial policy, leading to a 'policy-induced non-creative destruction' (Palma, 2019, pp. 902). Palma (2005) indicates, especially in countries of the Southern corn, that the change was significant and rapid, where they returned to a Ricardian position of static comparative advantages when ending industrial and trade policies. As claimed by Palma, Brazil is one of the most extreme cases of deindustrialisation, "Brazil's relative decline is the most astonishing: in the mid-seventies Brazilian manufacturing production was 60% larger than the combined production of India, Korea, Taiwan, Malaysia, Thailand, Singapore and Indonesia. Today it is approximately just 15% of these countries' production. This is barely by chance; an effort has to be made to experience this fall" (Palma, 2019, pp. 945, translated from Spanish).

According to McMillan et al. (2014), the different trajectories in manufacturing between Asian countries and nations from Africa and Latin America are related to the successful role played by industrial policies. The extent of the transformation is illustrated by the fact that, for example, according to Chang (2006), at the beginning of the 1960s, Japan, the wealthiest country in the region, had a similar per capita income level as Chile, while South Korea, less than half of Ghana. Nowadays, East Asia is one of the richest regions of the world and displays good records in terms of other indicators of human development (Chang, 2006, pp.1). The explanation behind this change is not without controversy within development economics (de Medeiros, 2020). Neoclassical economists (e.g. Ranis and Fei, 1975; Balassa, 1982) and international institutions, such as the World Bank (1993), attribute the industrial success of East Asian countries to market-friendly policies, such as to free trade, substantial levels of investment in human capital or prudent macroeconomic management. This perspective has been contested by developmental economists (for ex., Amsden, Chang and Wade). According to this view, East Asia shared significant investment and exporting levels, diversification of their productive structures and high

levels of technological innovation. They argue that these countries did not follow Washington Consensus policies and that the transformation was possible due to strategic industrial and trade policies, capital controls, and developmental macroeconomic strategies (Wade, 1990; Chang, 1993; Amsden, 2001; Chang, 2002). Achieving structural change required an active state to protect infant industries from international competition through tariffs and other barriers (Wade, 1990; Chang, 1993), particularly in the catching-up phase (Chang, 2002). The state in these countries not only implemented innovation policies and enhanced physical infrastructure, but also played a crucial role in managing conflicts between economic groups (Chang and Hope, 2021). Some capitalist groups needed to be disciplined, as explained by Amsden (2001), using controlling mechanisms like subsidies linked to performance or the option to sell products in protected domestic markets if firms met specific exporting targets. Countries like Korea, India and Taiwan demanded a certain level of product complexity and the incorporation of increasing levels of technology. In the case of Latin America, fewer controlling mechanisms explain higher levels of inefficiency (Rodrik, 2004).

Another aspect linked to successful strategies is in relation to the role of the state and the ownership of the companies. Amsden (2008) highlights, for example, the active role followed by the Korean government in terms of closing its markets to competitors, a significant presence of the public enterprise sector, banning the possibility of domestic firms being bought by foreign companies and placing a great emphasis on education and expanding engineering careers. Import substitution came accompanied by an export-led strategy. Skills gained in textiles and light manufacturing became the basis for electronics and heavy industries. These industries needed managerial know-how and were able to create salaried professionals. In addition, by giving firms incentives, including low-cost credit and tariffs, the government attracted investment and entrepreneurs to those activities. Similarly, in Taiwan and Singapore, the role of the state was key in coordinating a catch-up strategy and prioritising sectors and activities.

East Asian countries imposed limits on consumption rates, especially luxury consumption, and planned an import replacement strategy. High investment levels needed to be managed while importing capital and intermediate goods for production

and promoting exports (Wade, 2018). Wade (2012) argues that Korea and Taiwan have built an indigenous process of developing productive capabilities linked to design, innovation and commercialisation. He makes the case that for some other Asian countries, the process was not that deep and that, in the case of Latin America, they depended more heavily on MNCs' technology. Additionally, Amdsen (2001) argues that denationalisation occurred in Latin America, where foreign-owned firms crowded out large national ones, as MNCs arrived early on time and took advantage of sectors with economies of scale (first mover advantage, Amsden, 2001, pp. 193). Fewer controls were imposed on TNCs in Latin America. On the contrary, TNCs were heavily restricted in East Asia. Chang (2006) states that FDI was also highly regulated and limited in East Asia; TNCs were closely monitored because the countries wanted to develop local capabilities and not take the technological and financial packages TNCs wanted to offer due to long-term development concerns. In addition, capital movements were controlled in these countries, and the banking sector had a large public presence. In Korea, banks were nationalised, and banking institutions were created to support firms (Chang and Kozul-Wright, 1994). Development banks played a significant role in successful industrial strategies (Amsden, 2001).

Other interpretations of the successful experiences of East Asian countries are based on the fact that these countries maintained price competitiveness in the manufacturing sector due to a competitive real exchange rate when compared to other developing countries. Bresser-Pereira (2016), as an exponent of New Developmentalism[49], particularly emphasizes this argument. For him, overvaluation of the exchange rate explains low levels of investment because the expected rate of profit falls, and for firms, it is difficult to access external demand. For this vision, internal markets are subsidiary to external ones. That contrasts with the authors previously mentioned (Chang or Amsden), as they considered that both markets were complementary and that structural change requires active policies that exceed macroeconomic prices (de Medeiros, 2020).

49 Classical developmentalism refers to structuralist authors and developmental and institutionalist ones, such as those previously mentioned here, such as Amsden, Wade, Chang, and Mazzucato, as de Medeiros (2020) explained.

More recent intakes on the role of the developmental state associated with industrialisation, view the state as entrepreneurial, adopting a mission-oriented approach to shaping markets and enhancing innovative private industries (Mazzucato, 2013). In this vision, the state is a key driver of innovation, creating markets and incentivising the private sector; not just having a de-risking role and fixing market failures (Mazzucato, 2016). The entrepreneurial state agenda challenges the traditional view that entrepreneurs are solely found within the private sector and that policymaking operates separately from the entrepreneurial processes. There are examples in which the state initially invested in a new activity and took risks before the private sector did (Mazzucato and Penna, 2016). The private sector then follows after some risks and uncertainty have been reduced by the state. The state is a facilitator, investor and capitalist (Rodrik, 2015).

Gabor (2021) argues that states are increasingly pressured to de-risk assets for global institutional investors, ensuring profitability and reinforcing financialised capitalism. In this setting, it is difficult for states to have an independent vision, reducing their autonomy for conducting active industrial policies and constraining their role as providers of infrastructure through public-private partnerships.

When considering developing countries, the discussion includes countries that are deindustrialising, but, at premature stages. This is because "deindustrialization begins at a lower level of GDP per capita and/or at a lower level of manufacturing as a share of total employment and GDP than is typically the case internationally" (Tregenna, 2015, pp. 2). The inverted U-shape that rich economies experienced concerning industrialisation starts at a lower level of income per capita when considering premature deindustrialisation. Moreover, the peak or turning point takes place at a lower share of manufacturing value-added or employment relative to GDP or total employment. The characterisation of premature deindustrialisation is not a rigorous or comprehensive analytical definition, but a suggestive empirical statistical pattern those authors have used to recognise premature deindustrialisation instead. Moreover, the "definition" is based on the level of activity in the industry that countries experienced previously and compared against it. As Palma (2005, 2019) indicates, nowadays, countries are experimenting deindustrialisation at lower levels, especially

after the 1980s. This means that what was considered as a case of deindustrialisation in the past may not be classified as such today.

Premature deindustrialisation is also not an uncontested reality. A recent study by Kruse et al. (2022) questions the premature deindustrialisation hypothesis for some countries. By updating the study of Rodrik (2016) and using the new ETD, they found that when looking at the share of manufacturing employment, there is presently an industrial 'renaissance' in some low-income countries in Asia and sub-Saharan Africa, indicating that it is not accurate to generalise trends within regions (Kruse et al., 2022, pp.2). They show that Ghana and Nigeria had two peaks of industrialisation, indicating that the shape of manufacturing could not be an inverted U-shape as usually portrayed in the literature.

In addition, it is necessary to dig deeper into deindustrialisation trends, identifying the specific manufacturing activities that are declining and their technological intensity. Taking this into consideration makes the discussion more complex and could lead to the possibility that deindustrialisation does not mean the same for EMEs and rich countries. Rich countries are still keeping high-technological activities within its manufacturing industries[50]. As Dosi et al. (2021) argue, there are varieties of deindustrialisation rooted in the industrialisation pattern of countries in terms of the technological content of the industries. Manufacturing is a large sector producing a wide range of products, and it is not the same in terms of capabilities and returns to scale producing "potato chips or microchips" (Dosi et al., 2021, pp.3). Using a technological classification (from Pavitt, 1984), they divide industries into science-based industries, scale-intensive and supplier-dominated. Science-based industries, mainly located in advanced countries, do not show signs of deindustrialisation, boosting employment share and value-added. This sector is the most innovative. Nonetheless, their relative contribution to employment is relatively small compared to scale-intensive and supplier-dominated types. These last two categories are related to premature deindustrialisation. They are associated with rapid employment absorption

50 The databases used here do not allow for an analysis considering technological levels within the manufacturing sector.

in the first stages, but then, they lose influence in employment and value-added. These activities are mainly located in EMEs.

Four recent empirical papers test the importance of some of factors associated with industrialisation/deindustrialisation like the role of policy, financial liberalisation or trade openness. Here it is key to point out that there is some overlap in the reasons for industrialisation and deindustrialisation. For instance, industrial policies that do not safeguard productive capabilities may lead to deindustrialisation or active ones to industrialisation.

The first one is the paper of Haraguchi et al. (2019); they analyse the drivers of industrialisation for developing countries over two periods, 1970-1990 and 1991-2014, concluding that some economic conditions are relevant for successful industrialisation like factor endowments, education, demography or location. Policymakers have a crucial role in managing trade and capital openness (capital account openness reports detrimental consequences after the 1990s), promoting investments, and securing institutional and macroeconomic stability (including an undervalued exchange rate).

The second study by Tregenna et al. (2021) further examines the drivers of manufacturing from 1970 to 2014, using a database of 43 countries, including EMEs and developed ones. They find for the entire sample, an inverted U-shape with GDP per capita. Plus, capital account openness (using the Chinn-Ito index), resource rents to GDP and exchange rate negatively contribute to manufacturing as share of GDP (nominal prices). In Asia, the pattern is slightly different (for example, exhibiting a linear relationship between GDP and manufacturing and a positive relationship with capital account openness)[51].

The third study, the one by Özçelik and Özmen (2023), considers trade openness, financial globalisation and GDP per capita, and its square as the main drivers of deindustrialisation for a panel of 80 countries containing developed and EMEs over

51 The results are not significant for Latin America. In Sub-Saharan Africa, they show an inverted U-curve, exhibiting signs of deindustrialisation. Natural resources exert a detrimental effect, but the drivers are not significant.

1970-2011. They found a premature deindustrialisation pattern for African and Latin American countries but not for East Asia. They show that financial openness (gross assets and liabilities over GDP) contributes to industrialisation in countries that do not have capital availability (developing economies and African economies), but have a detrimental effect in Latin America and East Asia. Opening trade in countries without a strong manufacturing base seems detrimental in developing economies, particularly for developing African economies. Finally, Botta et al. (2023), covering a total of 36 countries, advanced and emerging, over the period 1980 to 2017, show that capital bonanzas (non-FDI capital inflows) are related to a decrease in manufacturing activities (employment share) in emerging economies. All these studies show some negative interlink between financialisation (measured partially through different indicators) and manufacturing activities.

As discussed above, deindustrialisation has negative consequences for every country regarding job security, union density, and income levels. Nevertheless, according to Tregenna (2015), when a country deindustrialises prematurely, the manufacturing externalities on other sectors and the economy do not fully materialise regarding the diffusion of skills, the capacity to learn by doing, or the linkages with other sectors. Furthermore, it might jeopardise the services sector's ability to promote economic development (Akyüz; 2005). The dynamics in the service sector are far more complex in fully industrialised countries; the type of services replacing manufacturing in those countries prematurely deindustrialising are relatively low-skilled and low-productivity, with less ability to create interlinks with other activities and increase general productivity in the country. According to Akyüz (2005, pp. 33) it is a fallacy to suggest that middle-income countries could converge with advanced countries by expanding the service sector before first raising industrial productivity and GDP per capita. Middle-income countries' shift to services before achieving industrial maturity has been characterised by low and volatile economic growth. Industrialisation is crucial for emerging countries to catch up and avoid the middle-income trap.

In sum, the above section has shown that deindustrialisation involves many developed countries, but also, emerging ones (especially when looking at job shares). The drivers of this transition include, in some cases, financial indicators. However, there is little investigation of how premature industrialisation processes interact with the process

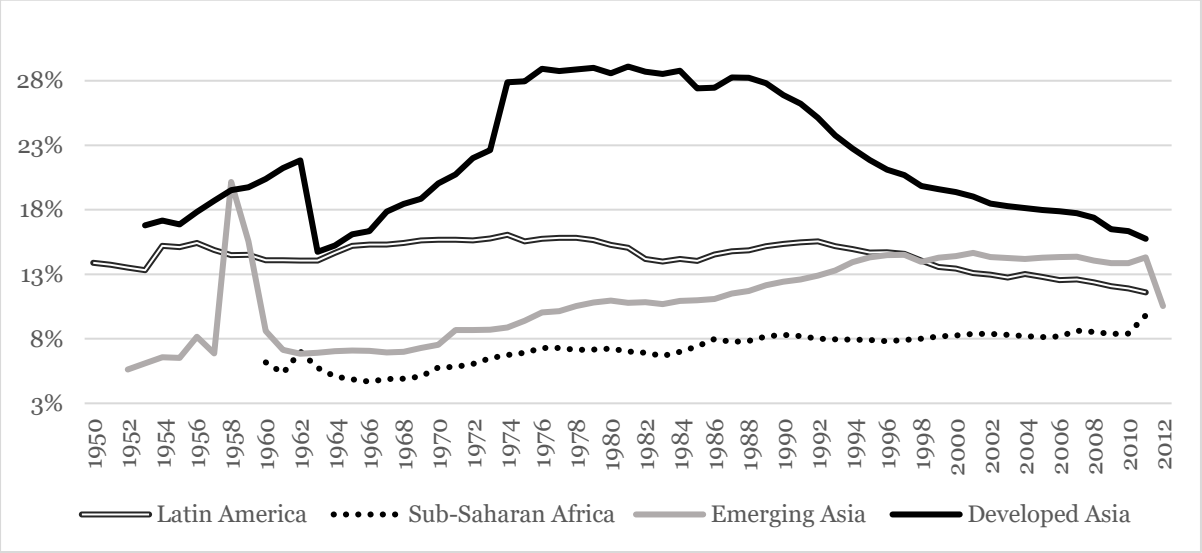
of financialisation. As indicated above, one exception is Caldentey and Vernengo (2021). They define 'premature financialisation' as a process in which countries transition into a productive structure centred upon the financial sector without fully industrialising. In a similar manner of premature deindustrialisation, this phenomenon affects developing and middle-income countries, as rich nations first obtain a certain level of social development derived from manufacturing before opening up their economies to finance/financialisation (Pérez Caldentey and Vernengo, 2021, pp.6). They consider that in Latin America, local elites pushed for financial liberalisation, harming industrial interests in general in the region. Still some companies benefited from higher levels of financialisation. The characterisation presented in their paper is made from a theoretical perspective. This chapter will econometrically investigate whether financialisation is linked with deindustrialisation for different emerging regions. It will contribute to the literature on both deindustrialisation and financialisation as it tries to link financialisation with regressive structural change. In order to do that, the next section will start by showing the evolution of shares from the manufacturing and the finance, insurance and real estate (FIRE) sectors from 1950 to 2011.

5.3 Trend evolutions

As stated in Section 5.2, deindustrialisation could be measured by the share of workers or value-added in the manufacturing sector. In a similar manner, the empirical strategy will analyse financialisation by the evolution of workers engaged in the financial sector and value-added in that sector. Figures 5-1 and 5-2 show the evolution in employment of both sectors over time with one of the two databases used in this chapter, the GGDC-10 sector database, which covers a longer period. Figure 5-1 illustrates the employment share in manufacturing for Latin America, Sub-Saharan Africa, emerging Asia and developed Asia. Figure 5-2 indicates the employment share of the financial and real estate sector (FIRE). The regions and countries included in the figures are the same as in Kruse et al. (2022), which groups countries following the

IMF country classification.[52] Section 5.4 provides more details of the countries included in the regions. Analogously, Figures 5-3 and 5-4 present the value-added of manufacturing and FIRE sectors respectively, over the total, in real terms.

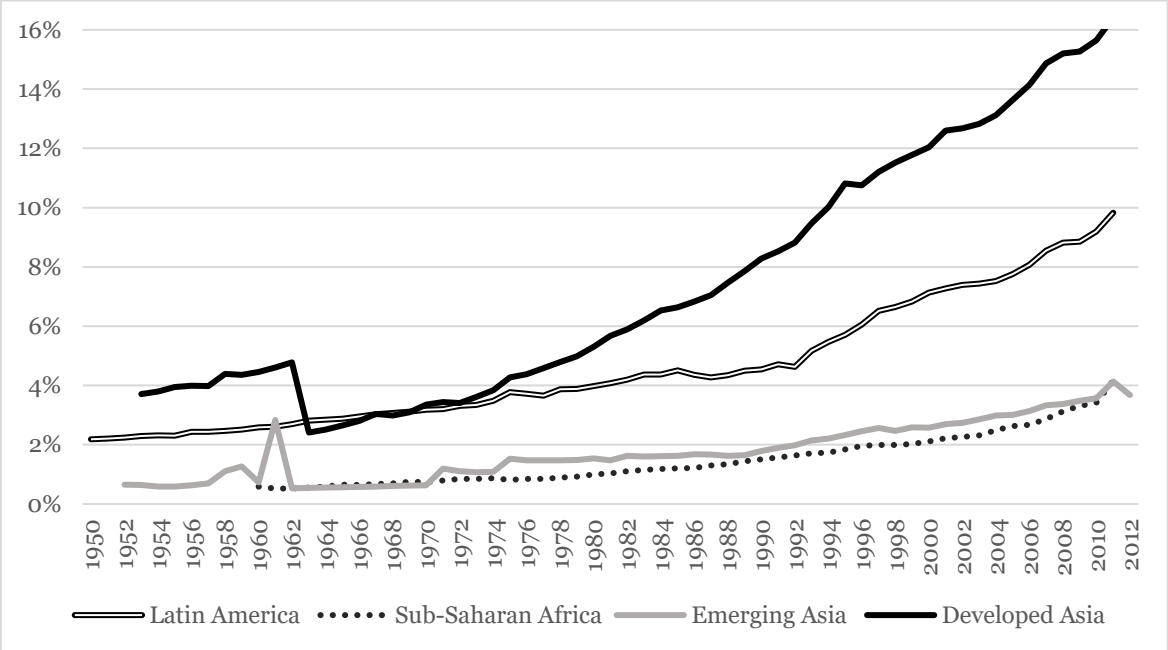
Figure 5-1: Employment share in manufacturing (% of total employment) by region.



Source: Author's elaboration using the GGDC-10 sector-database (Timmer et al., 2014).
Notes: Countries included in each region are detailed in Table 5-2.

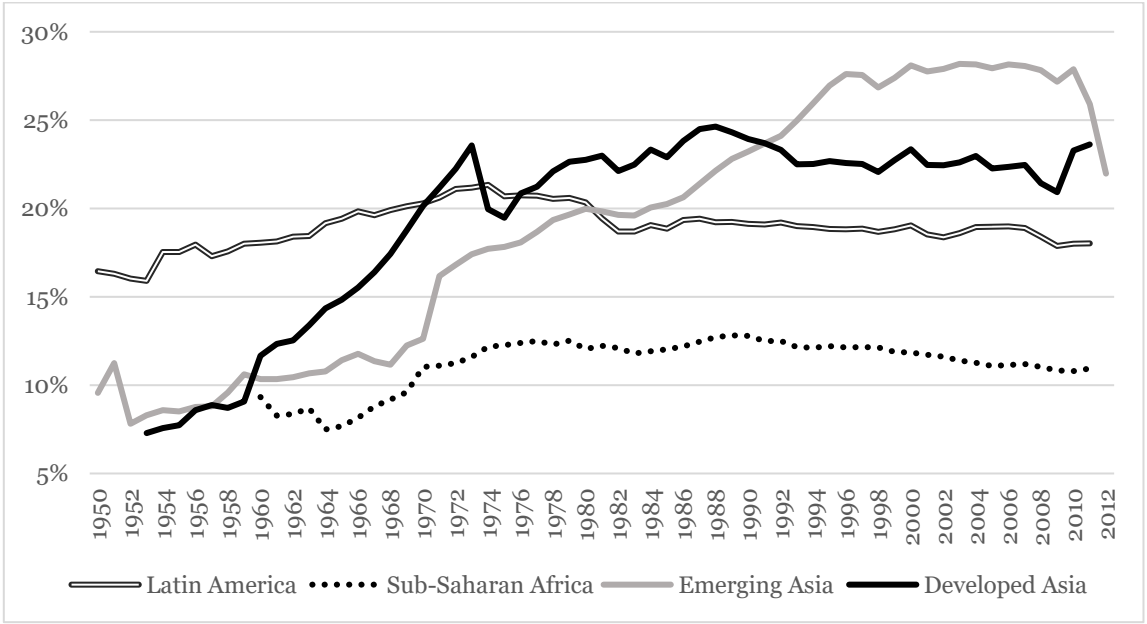
52 This country classification is the same used in Chapters 3 and 4.

Figure 5-2: Employment share in the FIRE (% of total employment) sector by region.



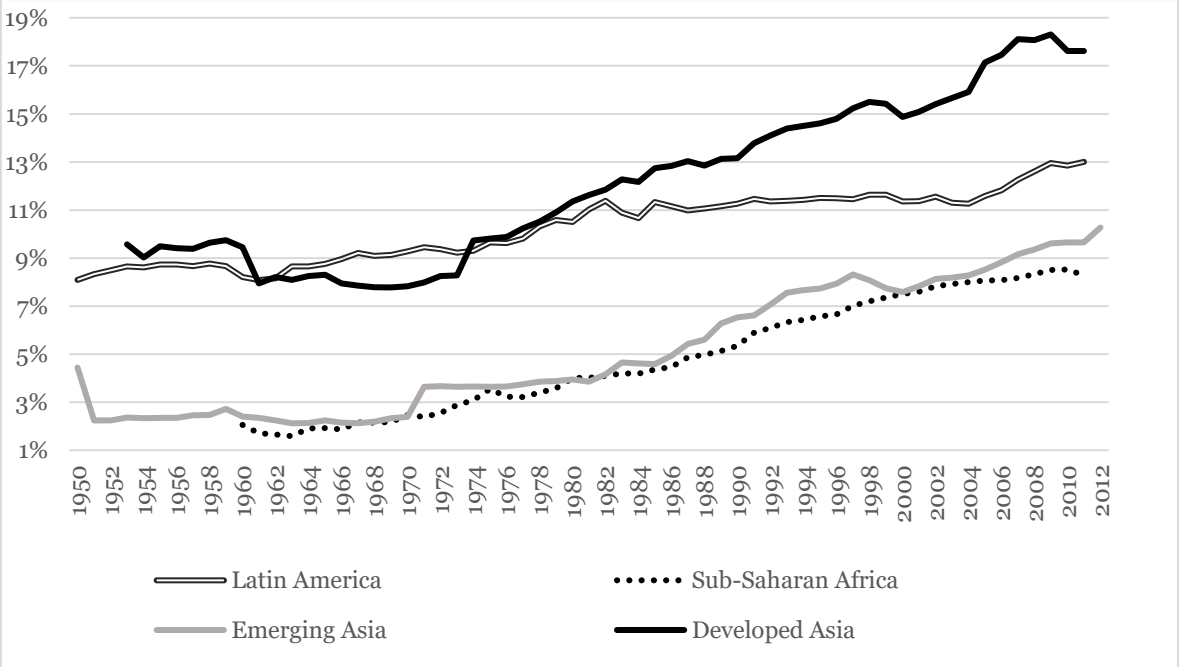
Source: Author's elaboration using the GGDC-10 sector-database (Timmer et al., 2014).
Notes: Countries included in each region are detailed in Table 5-2.

Figure 5-3: Value added in manufacturing (% of total, real) by region.



Source: Author's elaboration using the GGDC-10 sector-database (Timmer et al., 2014).
Notes: Countries included in each region are detailed in Table 5-2.

Figure 5-4: Value added in FIRE (%, real) by region.



Source: Author's elaboration using the GGDC-10 sector-database (Timmer et al., 2014).
Notes: Countries included in each region are detailed in Table 5-2.

Figure 5-1 shows that the share of manufacturing employment in Latin America has fallen over the last 30 years, especially after the 1970s. As some authors have pointed out, this region successfully followed an import substitution strategy in the 1950s and 1960s, increasing the share of the manufacturing sector and, therefore, taking advantage of the economic crisis of 1929 and the rich world closing to trade during the interwar period. As a result, in 1950 Latin America was the most industrialised region in the developing world (Szirmai, 2012). However, the manufacturing sector started to decline after 1975, aggravated after that by the spread of a neoliberal policy agenda and the conditionalities and structural adjustment programmes from the World Bank and IMF, adopted in the context of the debt crisis of the 1980s (UNCTAD, 2016; Palma, 2019). Similarly, the evolution of manufacturing in terms of value-added has had a steady increase in the ISI period, and a decline afterwards (Figure 5-3). Opening up the economies resulted in balance of payments problems and reliance on foreign financial flows (at that time mainly in the form of external debt). Figure 5-2 shows how, in Latin America deindustrialisation was accompanied by an important increase in the FIRE sector's employment share since the 1980s (Figure 5-2), and in value-added (Figure 5-4).

Trends show a spectacular industrialisation process in developed Asia, especially in the 1970s and 1980s, usually called under the name of late industrialisers, in comparison with the US or UK. During the industrialisation period, countries such as Korea, Taiwan and Singapore (included here in developed Asia) pursued active industrial and credit policies, climbing the ladder (Chang, 2002). Those countries could continuously increase income per capita level, value-added and productivity in the sector, export linkages and spillovers, in a way that Latin America could not do, not even the maquiladora sector in Mexico (Palma, 2005). In emerging Asia, the process of deindustrialisation started in the 1980s; productivity increases and labour-saving technology could be behind the decrease in jobs, as value-added remains quite flat (Figure 5-3). As shown in Figures 5-2 and 5-4, at the same time, financialisation began to increase substantially in terms of employment and terms of value-added.

Emerging Asia started the process of industrialisation later on and managed to surpass Latin America in terms of employment and value-added. Countries such as China, Malaysia or India were successful with their industrialisation agendas (Storm, 2015; Palma, 2019). The increase in value-added is particularly important in this region (Figure 5-3). Besides, employment in the FIRE sector in this region increased mildly.

Sub-Saharan Africa is the region less industrialised in terms of employment, with a slight increase in value-added from mid 1960s and 1970s, and a decrease afterwards. Both Latin America and Africa, have been pointed out as two regions that deindustrialised prematurely at lower levels than their advanced counterparts (Palma, 2005; Tregenna, 2011). Moreover, South Africa has been mentioned in the literature as an example of early deindustrialisation (Palma, 2019). In terms of the financial sector, it shows a mild increase since the 1980s in employment and in value-added.

Overall, this section has shown that the pattern of industrialisation in the Asian regions differs from the one in Latin America and Sub-Saharan Africa, with the former displaying successful strategies and truncated in the latter. The picture is mixed regarding financialisation, with a less evident financialised pattern in emerging Asia than in developed Asia, a mild increase in Africa, and a more evident one in Latin America. Section 5.4 will introduce the empirical investigation of both trends and describe the databases; countries included in the samples, and econometric technique.

5.4 An empirical investigation into deindustrialisation and financialisation trends in emerging countries

As indicated in the introduction, the empirical strategy will firstly follow the paper of Kruse et al. (2022), which is also an update on the work done by Rodrik (2016). Thus, as in the Kruse et al. (2022) paper, the GGDC/UNU-WIDER Economic Transformation Database (ETD) is used. It provides annual information on sectorial employment (employees, in thousands) and gross value added at real prices (2015 prices) for 51 economies from 1990–2018, providing better coverage of developing countries in comparison to the previous version (GGDC-10). The database ensures international consistency using the System of National Accounts and the International Standard Industrial Classification (ISIC) revision 4. The chapter analyses deindustrialisation and financialisation trends, looking at employment and complementing them with real value-added trends. Following that paper, the 51 countries included in the sample are divided into Developing Asia, Advanced Asia, Latin America, Middle East and Northern Africa (MENA) and Sub-Saharan Africa (SSA), according to Table 5-1 and using the IMF (2020) country classification.

Table 5-1: Country classification, countries from ETD.

Advanced Asia	Emerging Asia	Latin America	MENA	SSA
Hong Kong (China), Israel, Japan, Korea (Rep. of), Singapore, Chinese Taipei	Bangladesh, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Viet Nam	Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru	Egypt, Morocco, Tunisia, Turkey	Botswana, Burkina Faso, Cameroon, Ethiopia, Ghana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, Zambia

Source: Author's elaboration.

As Kruse et al. (2022) indicate, the countries included in the above classification are representative of regional income shares; they represented more than 70% of the GDP in their respective regions in 2018. Asian countries included in the sample account for 98% of the total GDP of the region; in Latin America, it corresponds to 82%; in Sub-Saharan Africa, it accounts for 73%; in the MENA region, it is less than 40%.

The model estimates deindustrialisation (and financialisation) trends over time, including period dummies and controlling for income, population and country fixed effects, following the equation used by Kruse et al. (2022), which, at the same time, follows the investigation used by Rodrik (2016)[53], in order to have comparable results:

$$Sectorshare_{it} = \beta_0 + \beta_1 \ln POP_{it} + \beta_2 (\ln POP_{it})^2 + \beta_3 \ln GDP_{it} + \beta_5 (\ln GDP_{it})^2 + \gamma D_t + \alpha_i + \varepsilon_{it} \quad (1)$$

$Sectorshare_{it}$ are the share of manufacturing and FIRE sector respectively in a given country (i) at time (t). The regression expresses the share of employment and value-added (over the employment and total value added in real prices) for a given economy for both sectors. $ln\ POP_{it}$ is the natural logarithm of population and its squares $(ln\ POP_{it})^2$. $ln\ GDP_{it}$ is the natural logarithm of real income per capita and its squares $(ln\ GDP_{it})^2$ (prices of 2011, in USD). Population and GDP are two variables usually included in the studies because it analyses whether deindustrialisation is happening more than expected according to economic growth and population levels. The information on income and population is from the Maddison-2020 database (Bolt and van Zanden, 2020). D_t are decade dummies, these are included to reflect deindustrialisation/financialisation patterns over time. One for the decade of the 1990s (*dec90*), one for the 2000s (*dec00*), and the last one for the period 2010-2018 (*dec10*). The estimated coefficients indicate the sector share of each period in relation to the 1990s, which is omitted in the regression. α_i are the country fixed effects, which could lead to different levels of industrialisation (financialisation), like natural resources, history or institutions. Equation (1) is estimated using OLS with country

53 This equation, as Kruse et al. (2022) point out, was introduced by Chenery et al. (1986).

fixed effects and robust standard errors. The main coefficients to analyse from the regression are the ones of the decade fixed effects, the 2000s and 2010s.

In the second step, the estimations are complemented with the Groningen Growth and Development Center 10-sector database (GGDC-10), which includes sectoral information on the same variables (sectoral employment and value added in nominal and real terms), but for a longer time period. Thus, although not directly comparable with previous estimations, this database allows us to generate a more extended historical view of (de)industrialisation and financialisation trends in emerging regions[54]. In particular, emphasis is placed on comparing employment shares.

The GGDC-10 database covers the period between the end of the 1940s/early 1950s until 2012 and includes 42 countries (advanced and emerging countries); in the case of some countries, the available information covers a shorter period. Even though the GGDC-10 contains more countries than the ETD, in order to keep consistency and make the results as comparable as possible, the countries included in the investigation are those present in the Kruse et al. (2022) paper that utilises the ETD, which has a focus on EMEs. For those countries, the maximum timespan available is from 1950 until 2012 (see Table 1 in Appendix C for details).

The GGDC-10 contains sectoral information on value added in constant prices (at 2005 prices, national prices) and employment using the International Standard Industrial Classification (ISIC) revision 3.1. The focus is on the manufacturing sector and Business services. The latter comprises financial mediation, renting, and business activities (excluding owner-occupied rents)[55]. Data of population and income per capita is taken from the Maddison-2020 update[56]. The GGDC-10 database, as the timespan is larger, D_t, the dummies cover the decade starting in the 1950s until the

54 It is not possible to merge this older database with the new one; as explicitly stated in the ETD, the new one is not an update from the previous version.

55 A caveat must be made here: the industrial classification used in this database is revision 3.1, and the ETD uses revision 4.

56 Rodrik uses a previous version of the Maddison database, but according to the manual of Maddison-2020, the new update corrects previous mistakes (Bolt and van Zanden, 2020). For this reason, the updated version is used in this chapter.

last one including 2000-2012 (*dec50, dec60, dec70, dec80, dec90, post00*). Regarding Sub-Saharan Africa, there is no information for the 1950s.

Table 5-2: Country classification, countries from GGDC-10 database.

Advanced Asia	Emerging Asia	Latin America	MENA	SSA
Hong Kong (China), Japan, Korea, Singapore, Chinese Taipei (Taiwan)	China, India, Indonesia, Malaysia, Philippines, Thailand	Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru	Egypt, Morocco	Botswana, Ethiopia, Ghana, Kenya, Malawi, Mauritius, Nigeria, Senegal, South Africa, Tanzania, Zambia

Source: Author's elaboration.

Table 5-3 presents the description of the variables for both panels, and Table 5-4 presents the summary statistics.

Table 5-3: Variables and sources.

Variable	Source
Share of real value added of manufacturing (and FIRE sector) over the total value added (2011 prices)	ETD
Share of real value added of manufacturing (and FIRE sector) over the total value added (2005 prices)	GGDC-10
Employment share of manufacturing (and FIRE sector) to total employment	ETD/ GGDC-10
Log of GDP per capita (prices of 2011 in US$)	Maddison-2020 database
Log of Population, total (in millions)	Maddison-2020 database

Source: Author's elaboration.

Table 5-4: Variables and sources.

GGDC-10

Variable	Obs.	Mean	Std. dev.	Min	Max
Manufacture employment (share)	1639	0.128	0.074	0.006	0.453
Manufacture value added (share)	1713	0.171	0.077	0.006	0.386
FIRE employment (share)	1639	0.035	0.037	0.001	0.218
FIRE value added (share)	1713	0.081	0.052	0.000	0.280
lnPOP	1886	16.933	1.623	13.116	21.019
lnGDP	1886	8.353	0.978	6.335	11.047

ETD

Variable	Obs.	Mean	Std. dev.	Min	Max
Manufacture employment (share)	1479	0.113	0.062	0.009	0.315
Manufacture value added (share)	1479	0.154	0.064	0.010	0.336
FIRE employment (share)	1449	0.017	0.025	0.000	0.204
FIRE value added (share)	1479	0.110	0.058	0.000	0.467
lnPOP	1479	17.098	1.472	13.875	21.049
lnGDP	1479	8.602	1.070	6.550	11.133

Source: Author's calculations based on data as reported in Table 5-3.

What is more, as an extra exercise and because the GGDC-10 database contains information for several advanced countries[57], the regression is run for them to further examine trend evolutions in the same period (1950-2012). The regressions are included in the Appendix C.

5.5 Results

Table 5-5 shows the results for manufacturing employment share using the ETD and following equation (1). The first column, column (1), presents the results for the entire sample, column (2) for Advanced Asia, column (3) for Emerging Asia, column (4) for Latin America and finally, columns (5) and (6) introduce the results for Sub-Saharan

57 Advanced countries included in the database are Denmark, France, West Germany, Italy, Netherlands, Spain, Sweden, the UK, and the US.

Africa with and without Mauritius respectively. Mauritius is treated this way following both Kruse et al. (2022) and Rodrik (2016) as it has a higher GDP per capita than the rest of the region's countries and has a distinctive pattern of industrialisation/deindustrialisation. Furthermore, Mauritius is considered the financial hub of the region. For the MENA region, the results are included in the full sample (column 1) but are not reported separately as it only contains information on two countries[58].

58 The same procedure is followed in Kruse et al. (2022).

Table 5-5:Estimations following equation (1). Dependent variable: manufacturing employment share.

	(1) Full sample	(2) Advanced Asia	(3) Emerging Asia	(4) LA	(5) SSA	(6) SSA excl. Mauritius
lnPOP	-0.200***	0.854	0.140*	-0.596***	-0.017	0.056
	(0.047)	(0.617)	(0.078)	(0.103)	(0.080)	(0.073)
$lnPOP^2$	0.006***	-0.032	-0.005**	0.018***	0.002	-0.001
	(0.001)	(0.020)	(0.002)	(0.003)	(0.002)	(0.002)
lnGDP	0.386***	0.636	0.300***	0.965***	0.323***	0.232***
	(0.021)	(0.432)	(0.040)	(0.110)	(0.040)	(0.032)
$lnGDP^2$	-0.023***	-0.030	-0.016***	-0.056***	-0.022***	-0.017***
	(0.001)	(0.021)	(0.002)	(0.006)	(0.003)	(0.002)
dec00	**-0.005*** **	**-0.035*** **	0.004	**-0.011*** **	-0.002	**0.004***
	(0.002)	**(0.006)**	(0.003)	**(0.003)**	(0.003)	**(0.003)**
dec10	-0.002	**-0.045*** **	**0.010*** **	-0.008	0.005	**0.019*** **
	(0.003)	**(0.007)**	**(0.005)**	(0.005)	(0.006)	**(0.004)**
_cons	0.188	-8.392	-2.071***	0.790	-1.170	-1.301*
	(0.410)	(6.478)	(0.725)	(0.881)	(0.721)	(0.668)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	51	6	14	9	18	17
N	1479	174	406	261	522	493
R2	0.907	0.872	0.921	0.886	0.894	0.836

Source: Author's estimations based on data as reported in Table 5-3.

Notes: Robust standard errors in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.01. R2 is the coefficient of determination. N is the number of observations.

The main coefficients to analyse from the table are the ones of the decade fixed effects, the 2000s (*dec00)* and 2010s (*dec10*), which have to be interpreted in relation to the 1990s, that is, the omitted dummy. The results from Table 5-5 show that for the entire sample (column 1) the 2000s-time dummy is significant (at 1%) and negative, indicating a deindustrialisation trend. In advanced Asia (column 2), the deindustrialisation trend is confirmed for both decades (the 2000s and 2010s). The opposite effect is found in emerging Asia, with a positive and significant effect in the 2000s (column 3). These findings imply that emerging Asia defied the global deindustrialisation trend, even when considering the expected levels according to its income and demographics. As found in several other studies, deindustrialisation is evident in Latin America and is visible in the decade of the 2000s. The employment share is 1.1% points lower in the 2000s comparing to the 1990s. Finally, when excluding Mauritius, Sub-Saharan Africa reflects a positive manufacturing process for both decades. The appendix shows the results for value added in real terms in the manufacturing sector (Table 2, Appendix C). The positive industrial trend in Sub-Saharan Africa is also confirmed in terms of real value added in manufacturing (Table 2 Appendix C, for the decade of the 2000s). This explains the reference to an industrial 'renaissance' made by Kruse et al. (2022). The effects of value added are not significant when considering Latin America. In developed Asia, the dummies are not significant and in emerging Asia, value added is negative (and statistically significant) for the decade of 2010s.

Table 5-6 presents the share of employment in the FIRE sector for the same country categories.

Table 5-6:Estimations following equation (1). Dependent variable: FIRE employment share.

	(1) Full sample	(2) Advanced Asia	(3) Emerging Asia	(4) LA	(5) SSA	(6) SSA excl. Mauritius
lnPOP	0.048***	0.296	0.025	0.171***	-0.004	-0.011
	(0.011)	(0.365)	(0.022)	(0.024)	(0.011)	(0.011)
$lnPOP^2$	-0.001***	-0.010	-0.001	-0.004***	0.000	0.000
	(0.000)	(0.012)	(0.001)	(0.001)	(0.000)	(0.000)
lnGDP	-0.056***	-0.353	-0.023***	-0.084***	-0.038***	-0.028***
	(0.007)	(0.249)	(0.006)	(0.028)	(0.006)	(0.005)
$lnGDP^2$	0.004***	0.018	0.002***	0.005***	0.003***	0.002***
	(0.000)	(0.012)	(0.000)	(0.002)	(0.000)	(0.000)
dec00	**0.002*** **	**0.009*** **	0.000	-0.001	**0.001*** **	**0.000** **
	(0.000)	**(0.003)**	(0.000)	(0.001)	**(0.000)**	**(0.000)**
dec10	**0.003*** **	**0.012*** **	**0.002*** **	-0.001	**0.003*** **	**0.002*** **
	(0.001)	**(0.005)**	**(0.001)**	(0.002)	**(0.001)**	**(0.000)**
_cons	-0.196**	-0.381	-0.192	-1.315***	0.172*	0.183*
	(0.092)	(3.880)	(0.220)	(0.213)	(0.103)	(0.103)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	51	6	14	9	18	17
N	1449	174	376	261	522	493
R2	0.949	0.901	0.886	0.812	0.949	0.956

Source: Author's estimations based on data as reported in Table 5-3.

Notes: Robust standard errors in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.01. R2 is the coefficient of determination. N is the number of observations.

Results indicate that, when compared to the 1990s, the FIRE sector employs a larger share of workers for the entire sample in the 2000s and 2010s. That is consistent with the increase in financialisation worldwide. In line with the switch from manufacturing to services, advanced Asia sees an increase in the share of employment in the sector in both decades. The same effect is present in emerging Asia for the decade 2010s and in Sub-Saharan Africa, including and excluding Mauritius for both decades. This is, in a way, interesting because both regions manage to increase manufacturing levels while increasing financialisation. In Latin America, both decades present negative but not significant signs. When looking at the share of the FIRE sector in terms of value added, Table 3 in Appendix C illustrates weaker results. In the case of Sub-Saharan Africa, including Mauritius, the results, as with employment, show a positive and significant increase in value added for the last decade. In the Latin American region, the results in value added in the FIRE sector are negative and significant in the 2000s. In advanced Asia, value added is negative for both decades and in emerging Asia they are not significant.

Then, Tables 5-7 and 5-8 show the historically extended results using the GGDC-10 database for the manufacturing sector regarding employment and value-added and Tables 5-9 and 5-10 for the FIRE sector respectively. As above, column (1), introduces the results for the entire sample, column (2) for Advanced Asia, column (3) for Emerging Asia, column (4) for Latin America and finally, columns (5) and (6) introduce the results for Sub-Saharan Africa with and without Mauritius. In this case, the principal coefficients of the tables are those of the decades from the 1960s until the post-2000s, which have to be interpreted in relation to the omitted time dummy (of the 1950s).

Table 5-7:Estimations following equation (1). Dependent variable: manufacturing employment share.

	(1) Full sample	(2) Developed Asia	(3) Emerging Asia	(4) LA	(5) SSA	(6) SSA excl. Mauritius
lnPOP	0.022	1.352***	0.063	0.173***	0.096***	0.176***
	(0.030)	(0.465)	(0.082)	(0.033)	(0.034)	(0.025)
$lnPOP^2$	-0.000	-0.055***	-0.003	-0.002*	-0.002**	-0.004***
	(0.001)	(0.017)	(0.002)	(0.001)	(0.001)	(0.001)
lnGDP	0.343***	0.858***	-0.027	0.962***	-0.166***	-0.060**
	(0.037)	(0.089)	(0.072)	(0.097)	(0.051)	(0.028)
$lnGDP^2$	-0.018***	-0.038***	0.005	-0.054***	0.011***	0.004**
	(0.002)	(0.005)	(0.004)	(0.005)	(0.003)	(0.002)
dec60	**-0.011****	**-0.033****	0.003	**-0.032****	n.a.	n.a.
	(0.005)	**(0.009)**	(0.020)	**(0.004)**		
dec70	**-0.015****	-0.005	0.016	**-0.056****	-0.001	-0.003
	(0.006)	(0.017)	(0.022)	**(0.006)**	(0.003)	(0.003)
dec80	**-0.019****	-0.006	0.022	**-0.089****	-0.004	**-0.021****
	(0.007)	(0.028)	(0.024)	**(0.008)**	(0.006)	**(0.005)**
dec90	**-0.028****	**-0.068****	0.033	**-0.103****	-0.009	**-0.036****
	(0.009)	**(0.032)**	(0.026)	**(0.010)**	(0.009)	**(0.007)**
post00	**-0.053****	**-0.101****	0.022	**-0.135****	**-0.018***	**-0.038****
	(0.011)	**(0.039)**	(0.028)	**(0.012)**	**(0.011)**	**(0.008)**
_cons	-1.782***	-12.221***	0.014	-6.338***	-0.310	-1.444***
	(0.340)	(3.391)	(0.971)	(0.488)	(0.366)	(0.243)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	32	5	6	8	11	10
N	1639	238	285	486	524	481
R2	0.816	0.656	0.832	0.795	0.904	0.892

Source: Author's estimations based on data as reported in Table 5-3.

Notes: Robust standard errors in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.01. R2 is the coefficient of determination. N is the

Table 5-7 shows that manufacturing jobs decrease significantly over time for the entire sample. As shown in Rodrik (2016), deindustrialisation is evident and strong when analysing Latin America and Sub-Saharan Africa, especially when excluding Mauritius (a strong exporter of manufactured goods). Comparing both regions, the results are more pronounced in Latin America. The trend even becomes stronger over time. The data for emerging Asia do not point to a decline in manufacturing activities. In advanced Asia, deindustrialisation is evident later, in the 1990s and onwards. In the rest of the advanced countries, the estimated coefficients are negative and significant from the 1970s (at 1%); this aligns with the well-documented trend in the literature of deindustrialisation in employment terms in the developed world (Appendix C, Table 4).

Table 5-8 contains the results for manufacturing value added, illustrating that for the full sample, value added in this sector increased for the entire period. That contrasts with the trend observed in employment share within the sector, which could point towards more automated and capital-intensive processes. In Latin America, deindustrialisation trends are also found in terms of value added, with negative and significant results for time dummy variables from the 1970s and onwards, and with more substantial effect over time. Sub-Saharan Africa, excluding Mauritius, also shows negative results with this indicator for the 1990s and post 2000s. For these regions, deindustrialisation is present when looking at both indicators. Value added in emerging Asia increased overall decades. Meanwhile, value added in advanced Asia decreased consistently over decades, where the decline in manufacturing employment is only evident in the last decades. For the other advanced countries, the effects of deindustrialisation are weaker when looking at value added than those in employment as stated in the literature, and just significant for the 1960s (at 1%) and the post-2000s (at 10%) (See Appendix C, Table 4).

Table 5-8:Estimations following equation (1). Dependent variable: manufacturing value added (real) share.

	(1)	(2)	(3)	(4)	(5)	(6)
	Full sample	Developed Asia	Emerging Asia	LA	SSA	SSA excl. Mauritius
lnPOP	-0.181***	-0.461***	-0.475***	0.258***	-0.060**	-0.016
	(0.032)	(0.114)	(0.111)	(0.029)	(0.027)	(0.026)
$lnPOP^2$	0.004***	0.014***	0.007**	-0.005***	0.002***	0.002**
	(0.001)	(0.004)	(0.003)	(0.001)	(0.001)	(0.001)
lnGDP	0.256***	0.551***	-0.122	0.026	-0.038	0.030
	(0.029)	(0.043)	(0.093)	(0.068)	(0.037)	(0.040)
$lnGDP^2$	-0.011***	-0.026***	0.016***	-0.001	0.004	-0.001
	(0.002)	(0.002)	(0.006)	(0.004)	(0.002)	(0.003)
dec60	**0.014*** **	**-0.029*** **	**0.046*** **	-0.005	n.a.	n.a.
	(0.004)	**(0.007)**	**(0.010)**	(0.004)		
dec70	**0.028*** **	**-0.026** **	**0.095*** **	**-0.011** **	**0.013*** **	**0.010** **
	(0.005)	**(0.013)**	**(0.015)**	**(0.005)**	**(0.004)**	**(0.004)**
dec80	**0.033*** **	**-0.036** **	**0.122*** **	**-0.045*** **	**0.012** **	-0.001
	(0.007)	**(0.017)**	**(0.019)**	**(0.007)**	**(0.006)**	(0.006)
dec90	**0.037*** **	**-0.066*** **	**0.151*** **	**-0.064*** **	0.006	**-0.015***
	(0.008)	**(0.021)**	**(0.023)**	**(0.008)**	(0.008)	**(0.008)**
post00	**0.020** **	**-0.077*** **	**0.142*** **	**-0.082*** **	-0.014	**-0.036*** **
	(0.010)	**(0.021)**	**(0.028)**	**(0.010)**	(0.010)	**(0.010)**
_cons	0.707**	0.964	6.671***	-2.693***	0.530*	-0.173
	(0.317)	(0.912)	(1.251)	(0.383)	(0.276)	(0.280)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	32	5	6	8	11	10
N	1713	261	320	496	530	487
R2	0.837	0.917	0.897	0.884	0.916	0.910

Source: Author's estimations based on data as reported in Table 5-3.

Notes: Robust standard errors in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.01. R2 is the coefficient of determination. N is the number of observations.

Then, Table 5-9 shows that the share of employment in the FIRE sector increased substantially for the entire sample from the 1970s. The results for Latin America indicate a significant and positive effect from the 1990s; this could fit with the explanation of premature financialisation. For Sub-Saharan Africa, the effects are even more substantial earlier (with and without Mauritius), as comparing with the 1960s, all the time dummies show positive effects. On the contrary, emerging Asia managed to escape this trend, decreasing the share of this sector in the total economy. When looking at the case of rich countries, employment in the FIRE sector followed a similar pattern as in Latin America as it increased significantly (1%) in the 1900s and 2000s (Appendix C, Table 4).

Table 5-9:Estimations following equation (1). Dependent variable: FIRE employment share.

	(1) Full sample	(2) Developed Asia	(3) Emerging Asia	(4) LA	(5) SSA	(6) SSA excl. Mauritius
lnPOP	0.071***	-0.359**	-0.081*	0.095***	-0.058***	-0.077***
	(0.011)	(0.157)	(0.044)	(0.018)	(0.015)	(0.015)
$lnPOP^2$	-0.002***	0.015***	0.003**	-0.003***	0.001***	0.002***
	(0.000)	(0.006)	(0.001)	(0.001)	(0.000)	(0.000)
lnGDP	-0.232***	-0.217***	-0.178***	-0.264***	-0.201***	-0.220***
	(0.010)	(0.023)	(0.028)	(0.055)	(0.022)	(0.026)
$lnGDP^2$	0.015***	0.012***	0.011***	0.017***	0.014***	0.015***
	(0.001)	(0.001)	(0.002)	(0.003)	(0.001)	(0.002)
dec60	0.002	0.001	-0.002	-0.001	n.a.	n.a.
	(0.001)	(0.003)	(0.003)	(0.002)		
dec70	**0.004****	**-0.012****	**-0.007*****	-0.004	**0.006*****	**0.006*****
	(0.002)	**(0.006)**	**(0.002)**	(0.003)	**(0.001)**	**(0.001)**
dec80	**0.006*****	**-0.013***	**-0.011*****	0.002	**0.011*****	**0.014*****
	(0.002)	**(0.008)**	**(0.002)**	(0.004)	**(0.002)**	**(0.002)**
dec90	**0.011*****	-0.004	**-0.012*****	**0.009***	**0.015*****	**0.022*****
	(0.003)	(0.009)	**(0.003)**	**(0.005)**	**(0.003)**	**(0.003)**
post00	**0.019*****	0.010	**-0.012*****	**0.021*****	**0.020*****	**0.025*****
	(0.003)	(0.011)	**(0.004)**	**(0.006)**	**(0.004)**	**(0.004)**
_cons	0.306***	3.036***	1.190**	0.244	1.244***	1.491***
	(0.102)	(1.156)	(0.545)	(0.234)	(0.173)	(0.197)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	32	5	6	8	11	10
N	1639	238	285	486	524	481
R2	0.919	0.946	0.887	0.861	0.869	0.876

Source: Author's estimations based on data as reported in Table 5-3.

Notes: Robust standard errors in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.01. R2 is the coefficient of determination. N is the number of observations.

Concerning value added in the FIRE sector, Table 5-10 illustrates that the effect is even more pronounced, positive and significant from the 1980s in Latin America and from the 1970s in Sub-Saharan Africa (including and excluding Mauritius). This may suggest that, particularly when contrasted with emerging Asia, these two developing regions became financialised early on while experiencing premature deindustrialisation. Emerging Asia decreases the share of employment and value added in the FIRE sector, somehow isolating it from financialisation trends. One caveat needs to be made here: the internationalisation of production, mainly through TNCs, has facilitated the extraction and transfer of value from workers from EMEs towards the capitalist core, which is highly connected to global financial capital dynamics (Bonizzi et al., 2022). So, it could be the case that the region does not show, through the indicators considered here, high levels of domestic financialisation but, it could be still contributing to financialised capitalism, by exploiting cheap labour, which facilitates financial capital for headquarters which fed financialisation and led to the deindustrialisation of other emerging regions. Developed Asia increased value-added shares, as well as other advanced countries, showing that the rich world consistently increases participation in this sector (Appendix C, Table 4).

Table 5-10:Estimations following equation (1). Dependent variable: FIRE value added (real) share.

	(1) Full sample	(2) Developed Asia	(3) Emerging Asia	(4) LA	(5) SSA	(6) SSA excl. Mauritius
lnPOP	0.055***	0.385***	-0.026	0.031	0.205***	0.191***
	(0.016)	(0.076)	(0.041)	(0.038)	(0.025)	(0.026)
$lnPOP^2$	-0.001	-0.012***	0.003**	-0.001	-0.005***	-0.005***
	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)
lnGDP	-0.092***	-0.349***	-0.045	-0.056	-0.307***	-0.342***
	(0.012)	(0.022)	(0.043)	(0.082)	(0.033)	(0.044)
$lnGDP^2$	0.006***	0.019***	0.004	0.004	0.019***	0.022***
	(0.001)	(0.001)	(0.003)	(0.005)	(0.002)	(0.003)
dec60	**-0.013*** **	0.006	**-0.019*** **	-0.001	n.a.	n.a.
	(0.002)	(0.004)	**(0.003)**	(0.003)		
dec70	**-0.014*** **	**0.028*** **	**-0.039*** **	0.005	**0.007*** **	**0.007*** **
	(0.003)	**(0.006)**	**(0.005)**	(0.005)	**(0.002)**	**(0.002)**
dec80	**-0.008** **	**0.051*** **	**-0.049*** **	**0.018** **	**0.008*** **	**0.012*** **
	(0.003)	**(0.008)**	**(0.007)**	**(0.007)**	**(0.003)**	**(0.003)**
dec90	0.002	**0.061*** **	**-0.043*** **	**0.021** **	**0.016*** **	**0.021*** **
	(0.004)	**(0.010)**	**(0.009)**	**(0.008)**	**(0.004)**	**(0.005)**
post00	0.007	**0.070*** **	**-0.052*** **	**0.022** **	**0.025*** **	**0.030*** **
	(0.005)	**(0.011)**	**(0.011)**	**(0.010)**	**(0.005)**	**(0.006)**
_cons	-0.300*	-1.402**	-0.454	-0.031	-0.592**	-0.324
	(0.155)	(0.604)	(0.491)	(0.420)	(0.270)	(0.312)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	32	5	6	8	11	10
N	1713	261	320	496	530	487
R2	0.897	0.949	0.906	0.839	0.889	0.886

Source: Author's estimations based on data as reported in Table 5-3.

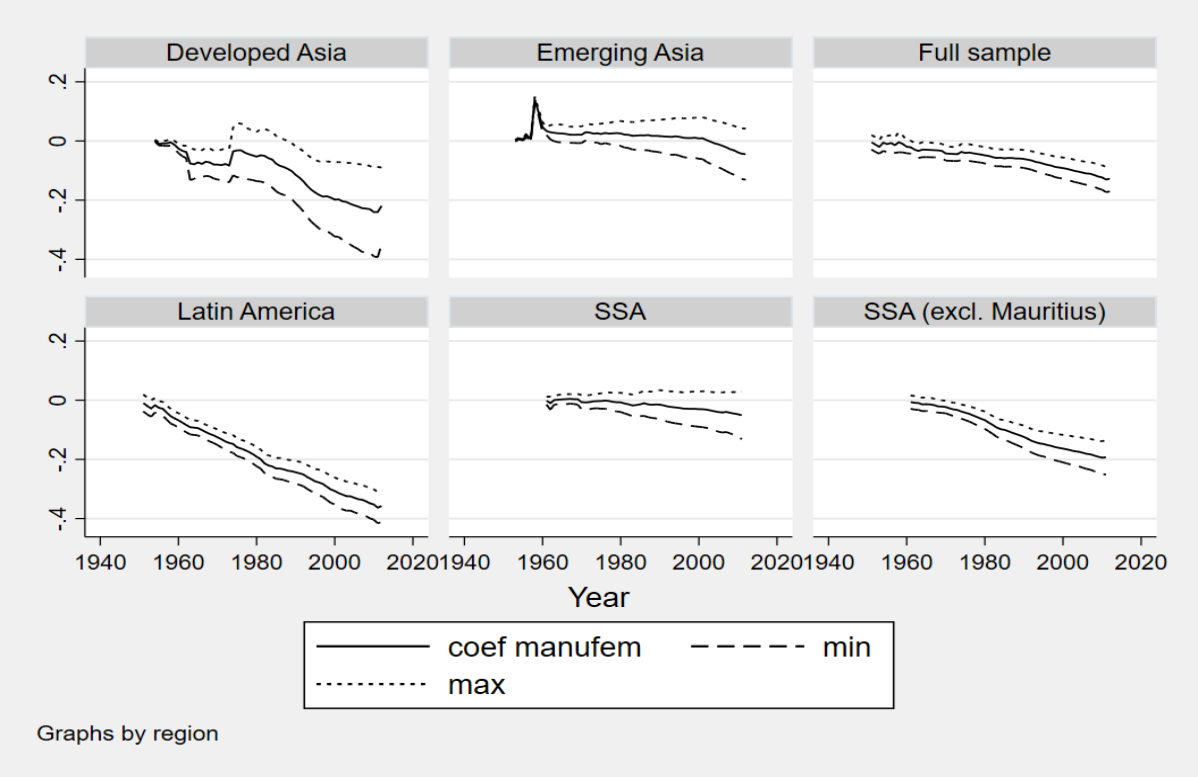
Notes: Robust standard errors in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.01. R2 is the coefficient of determination. N is the number of observations.

As employment in the manufacturing sector is a better predictor of economic growth than value added (Felipe et al., 2018), a closer examination of employment trends in both sectors is presented comparing Tables 5-7 with 5-9 and employing the larger dataset (GGDC-10). The estimates from the full sample show that the average country has a level of manufacturing share that stands 5.3% points lower after the year 2000 than in the 1950s; in the FIRE sector, the effect is 1.9% higher. In the case of Latin America, employment exhibits a continuous pattern of deindustrialisation, where manufacturing employment share for the average country in the region is about 13.5% points lower after the year 2000 than in the 1950s. The findings align with the absence of a cohesive development strategy following the debt crisis of the 1980s, which contributed to prolonged periods of sluggish economic growth (Pérez Caldentey and Vernengo, 2021). This period marked a critical point, during which the failure to implement effective policies hampered economic recovery, setting the stage for enduring structural challenges in subsequent decades. The effect is evident from the 1980s onward, as indicated by the coefficients of the decade-dummies. The effect is even bigger than that observed in developed Asia, where economies effectively had a successful industrialisation process; here, the decline in the manufacturing share is 10.1% points comparing the same time frame (1950s vs. after the 2000s). In Latin America, the increase in employment FIRE sector is 2.1% points higher in the 2000s compared to the 1950s. The region shows a relatively larger deindustrialisation and financialisation effect when compared with the full sample. In the case of South-Saharan Africa (excluding Mauritius), the decrease in manufacturing is also persistent, (manufacturing employment share for the average country in the region is about 3.8% points lower after 2000 than in the 1960s). In this region, the increase in the FIRE sector is also evident and similar in size to the one in Latin America.

A robustness check is conducted using an alternative time specification to ensure the results are coherent to alternative timings. This accounts for the possibility that outcomes in regressions with decade dummies may be disproportionately affected by significant shocks within the 10-year time frame. Figure 5-5 reports coefficients for time trends and their 95% confidence intervals using equation (1) with year-fixed effects for employment share in the manufacturing sector. The results are congruent to those with decadal dummies; results indicate a deindustrialisation trend for the

entire sample, developed Asia noticeably from the mid-1980s, a steady and relevant deindustrialisation trend through the period in Latin America, and a more moderate but persistent one in Sub-Saharan Africa (excluding Mauritius) after 1960.

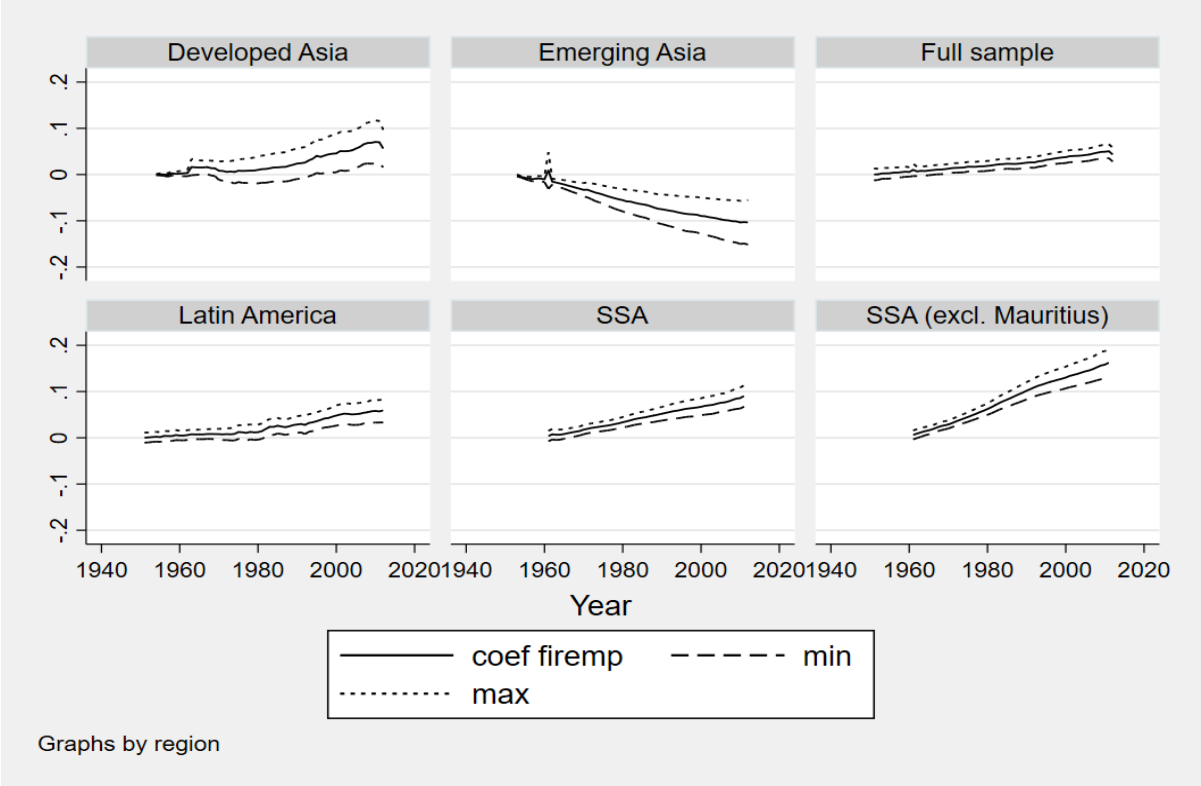
Figure 5-5: Annual time trend of manufacturing employment share by region.



Source: Author's calculation using the GGDC-10 sector-database (Timmer et al., 2014).
Notes: Dependent variable: manufacturing employment share. Shown are the coefficient estimates of the year dummies and their 95% confidence interval. Countries included in each region are detailed in Table 5-2.

In the case of the employment share of the FIRE sector, the results also illustrate congruency with the ones using decade dummies. Figure 5-6 shows a modest increase for the full sample, and a steady increase in Sub-Saharan Africa (excluding Mauritius) and developed Asia. Latin America indicates a more nuanced increase from 1980 onwards. On the contrary, emerging Asia shows a decrease in its share. Appendix C includes analogous figures using the ETD database (Figures 1 and 2), and results show similar trends to those using decade dummies.

Figure 5-6: Annual time trend of FIRE employment share by region.



Source: Author's calculations using the GGDC-10 sector-database (Timmer et al., 2014).
Notes: Dependent variable: FIRE employment share. Shown are the coefficient estimates of the year dummies and their 95% confidence interval. Countries included in each region are detailed in Table 5-2.

As indicated by several scholars, deindustrialisation is occurring prematurely in developing countries (Rodrik, 2016; Felipe et al., 2018; Palma, 2019), raising significant concerns, particularly in Latin America and Sub-Saharan Africa. Although Sub-Saharan Africa shows some optimistic trends with recent growth in manufacturing activities, as indicated in the results derived from the first panel, the broader trend remains worrisome. Premature deindustrialisation stifles the full potential of manufacturing to close the productivity gap with more advanced economies (Rodrik, 2013b). Also, it makes it more challenging to reduce commodity dependence and achieve balance of payments sustainability (UN.ECA, 2016). The concern is further exacerbated by doubts over whether the services sector can adequately replace manufacturing as a robust growth engine. In Latin America and Sub-Saharan Africa, many service-based activities are low-tech and linked to informal

activities, which limits their ability to drive sustained economic development (Akyüz, 2005). This dynamic undermines the structural transformation needed for long-term growth. Additionally, the decline in manufacturing is correlated with lower income levels (Szirmai and Verspagen, 2015), which presents a critical challenge for these regions in their efforts to achieve higher living standards for their populations.
The results for Latin America point out a process of premature financialisation, which, as stated, is not a formal definition but more a historical observation of the timing and context in which this process starts in relation to deindustrialisation, as indicated by Pérez Caldentey and Vernengo (2021). For them, countries shifted towards finance and used it as a source for capital accumulation, in line with Washington Consensus policies. These included financial liberalisation and opening the banking sector to foreign firms, a move welcomed by local elites that ultimately undermined the region's industrial sectors (UN.ECA, 2016). Additionally, and linked to what was discussed in Chapter 2, financialisation has negative consequences in diversifying the productive structures by making the economic environment more volatile, affecting the profitability of economic sectors and shifting resources towards less productive activities, such as real estate. It is important to note that measuring financialisation is a complex task. It involves several dimensions, and simply gauging the size of the financial sector can lead to underestimation. Moreover, determining the size of the domestic financial sector is not without its controversies (Haldane et al., 2010).

To summarise this section. The results seem to indicate that there can be mixed patterns within regions. Latin American results indicate that deindustrialisation occurs early (both in terms of employment and real value added), and it is accompanied by premature financialisation, as shown in the GGDC-10 database (regarding employment and real value added); this is the only region that presents this pattern so clearly. Sub-Saharan Africa, excluding Mauritius, has seen a revival in manufacturing over the past few decades (especially in terms of employment). Nevertheless, its financialisation levels have historically risen in a consistent manner (regarding employment and value added). Regarding emerging Asia, the trends are not that strong. In the first decades, it shows an increase in manufacturing (only in value added) and a decrease in the FIRE sector (in both indicators), and the ETD shows an increase in terms of employment in the last decades in both sectors (manufacturing and FIRE). These varied patterns highlight the diversity of economic

transformations across emerging regions, emphasising that the processes of industrialisation and financialisation are not always mutually exclusive, nor do they follow the same trajectory across different areas.

5.6 Conclusions

Since it can promote economic diversification, the manufacturing sector has been seen as a major driver of economic growth by early development economists. The fact that some emerging countries are switching labour and output from manufacturing to services prematurely (at lower levels of income per capita than their rich counterparts) has been a source of concern in the literature (Rodrik, 2016; Felipe et al., 2018; Palma, 2019). That is because the manufacturing sector offers several benefits for the economy, and if countries deindustrialise prematurely, they cannot experience the positive effects in terms of the diffusion of skills, the capacity to learn by doing or spill over effects with other sectors (Treggena, 2015). Middle-income countries' shift to services before achieving industrial maturity has been characterised by low and volatile economic growth. When this phenomenon, premature deindustrialisation, is accompanied by countries moving into finance prematurely, they are in an even more difficult position to develop and avoid the middle-income trap. Premature financialisation affects emerging countries more strongly, as wealthy nations first achieve a certain income level and establish welfare states based on manufacturing before opening their economies to finance.

This chapter empirically investigated both deindustrialisation and financialisation trends, focusing on the emerging world using two datasets containing systematic information on employment and value added of manufacturing and the financial sector (ETD and GGDC-10). The results from both datasets show a general decrease in manufacturing activities, while increasing financial ones across the board (mainly in terms of jobs). Notwithstanding, there are evident differences across emerging regions. Emerging Asia defied the global trend of deindustrialisation and domestic financialisation, even when considering the expected levels according to its income

and demographics. In the case of Sub-Saharan Africa, as shown by Kruse et al. (2022), they managed to reverse the deindustrialisation trend while increasing their financialisation levels. The case of Latin America's deindustrialisation is strong and early in time, in line with several other studies. For this region, financialisation also comes early, and simultaneously with advanced countries. This fact, empirically confirms what Pérez Caldentey and Vernengo (2021) called 'premature financialisation'. These countries have a truncated industrialisation process (as in Fajnzylber, 1983) and started to deregulate and open their economies to finance before having strong economies; deindustrialisation is, in this region, the consequence of neoliberal policies which promoted the financial sector while dismantling the manufacturing one.

The results, rather than showing causal relationships, indicate what is happening with both trends over time, contributing to previous studies by linking deindustrialisation and financialisation and demonstrating that these trends are not homogeneous across regions. Another point to consider is derived from the fact that, as discussed in previous chapters, financialisation is a multi-faceted phenomenon, and it is not easily captured by one indicator. Measuring the size of the financial sector is central, but it does not fully capture its influence. This is a key caveat, and the indicators used in this chapter are measured at a domestic level (jobs and value added). The international dimension of financialisation, especially for emerging countries, is a crucial factor influencing economic stability and shaping economic decisions that directly affect the productive structure. If anything, the domestic dimension of financialisation underestimates the phenomenon.

Further research could be derived from these initial findings. One is that it would be beneficial to include country case studies within the regions and investigate why some of them are experiencing an increase in manufacturing while financialising at the same time. For example, is this related to the influence of China in manufacturing and finance in Sub-Saharan countries?

Chapter 6 : Conclusions

6.1 Introduction

This thesis provided a theoretical framework and three empirical investigations on the relationship between financialisation and structural change. Through the research process, it tried to answer how and to what extent financialisation shapes the capacity of developing countries to upgrade their productive structures by moving to higher value-added activities, including strengthening the manufacturing sector. Structuralist scholars claim that progressive structural change is the only way to achieve long-term socio-economic development in those nations with heterogeneous productive structures. Most importantly, it is essential to break the pattern of low-productive activities, which translate into low-quality and poorly paid jobs, leading to high poverty levels, as in the case of Latin America. As discussed in this thesis, financialisation could reinforce the position of emerging countries in the global productive system (as commodity producers or by providing cheap labour) and prevent progressive structural transformations.

The research has been divided into six chapters. After the Introduction (Chapter 1), Chapter 2 theoretically analysed how financialisation might affect a country's productive characteristics, drawing on Latin American Structuralism. This analysis entailed identifying how financialisation may obstruct progressive structural change in peripheral economies at the macro, meso and microeconomic level. It argued for the importance of including the sector and the type of firm when investigating the consequences of financialisation. In the case of emerging economies (EMEs), financialisation contributes to cementing the centre-periphery dynamics by increasing instability, while, at the same time, decreasing the policy space for active industrial policies. Besides the shareholder value orientation, this instability makes investment into higher value-added activities and R&D activities more challenging. In this setting,

deindustrialisation is also worrying, as the innovation capacity of a given country is highly connected with the manufacturing sector. Additionally, by affecting the profitability across economic sectors, financialisation influences the productive structure generating positive incentives towards the agriculture sector, as well as redirecting resources to the FIRE sector.

Furthermore, this chapter has argued that financialisation presents specific characteristics in the periphery (derived from the position of these countries in the global productive and financial system). This process has been described as *selective* and *functional*, as it was more oriented to serve the interest of capitalists from rich nations, financial institutions and some domestic actors. Also, financialisation has been focused on specific companies that are more likely to become financially integrated. These companies have access to financial markets through which they may accumulate capital, protect themselves, and profit from speculative activities. Low levels of intermediation characterise the rest of the economy. In conclusion, the chapter argued that the style of financialisation in the periphery does not help to break the commodity dependence cycle or achieve a growth path that would have brought about greater economic stability for these countries.

Following these theoretical considerations, the thesis empirically investigated the potential relationship between financialisation and structural change using long historical data and large samples, including developing and developed countries. In three empirical chapters, financialisation and structural change were captured by different indicators to create a comprehensive analysis of the financialisation-productive structure nexus. What is more, all chapters analysed the results for different geographical regions to assess regional trends compared to Latin America.

More specifically, Chapter 3 analysed the relationship between different indicators of financialisation and the technological sophistication of countries' productive structure using the economic complexity index by Hidalgo and Hausmann (2009) for an unbalanced panel of 80 countries from 1975 to 2015. The results confirmed a negative relationship between some indicators of financialisation and technological sophistication. In particular, the chapter showed that private credit has a detrimental effect on economic complexity in developed and emerging countries, but with an

inverted U-shape pattern in Latin America. In addition, taking into account Latin America and the Middle East and North Africa regions, the results showed that Non-Foreign Direct Investment (FDI) stocks contract economic complexity, confirming previous studies on the potentially negative effects of portfolio capital flows on countries' productive capacity. The findings are robust in the inclusion of variables that are highly relevant for EMEs, such as natural resource rents, terms of trade, or FDI. All in all, this chapter showed that diversifying and complexifying countries' technological capacities are limited by financialisation. The results reinforce the growing consensus that strategic measures are necessary for finance to support productive development effectively. The negative impact of private credit on economic complexity observed across the board is particularly concerning. To foster sustainable development, it is essential to direct private credit towards enhancing productive capacities rather than supporting non-productive activities. That includes careful oversight of the financial sector's size. Additionally, for EMEs, the capital account also plays a critical role in developmental strategies; short-term capital could make these countries more volatile and prevent them from upgrading their productive structures. That requires governments to actively monitor and align capital account movements with broader societal goals. Financial sector reforms should be complemented by industrial policies designed to accelerate economic diversification and complexity. By integrating financial and industrial policies, countries can better navigate the path towards economic development.

Chapter 4 followed one aspect of financialisation: the change in the credit structure worldwide, represented by the massive increase in private credit and its expansion biased towards household credit. It investigated the relationship of both types of credit on manufacturing activities (by including the value added as a share of GDP), identifying the possible channels in which both types of credit could interact with structural change from the mainstream and financialisation literature. To test the channels empirically, an unbalanced panel of 43 countries from the early 1960s to 2021 was constructed, and panel-fixed effects were used to estimate the regressions. The chapter provided evidence that household credit negatively affected productive investment by harming manufacturing activities in the entire sample, developed countries, developing Asia, and Latin America (where the effect is larger). This region also indicated the advantages of lending to businesses for manufacturing endeavours.

These results align with earlier research that suggested that the banking sector increasingly fails to lend to industrial businesses and concentrates on the household sector at the expense of productive lending ("too much of the wrong type of credit"). The tendency to shift debt into the household sector produces outcomes that harm societies in terms of economic stability, production and wealth inequality (Bezemer et al., 2023). Additionally, as shown in the chapter, credit availability and allocation in emerging countries are related to capital inflows and foreign banks' activities. The economic implications of the findings make a case for credit policies. Credit should be directed towards supporting non-financial firms, particularly in production and technological upgrading, to restore lending as a contributor to economic development. These measures could also contribute to reducing financial instability. It is also essential to improve the public provision of goods and services so households can avoid resorting to financial markets.

Finally, Chapter 5 discussed the occurrence of premature deindustrialisation in EMEs and the extent to which it is associated with premature financialisation in those countries. It included an investigation of the evolution of employment and value added shares in the manufacturing and FIRE sector; for that, and in order to allow for comparison, it followed the analysis of previous papers on premature deindustrialisation in developing countries using the same databases (ETD and GGDC-10) and econometric technique, constructing a balanced panel for 51 economies from 1990–2018 (with the ETD). Then, it replicated the analysis for a previous database version (GGDC-10) over a more extended period (from the 1950s to 2012). The chapter trends were analysed for the same geographic areas. The results of the chapter echo those that indicated that deindustrialisation is occurring prematurely in developing countries. The trend is worrying as it hampers the potential to close the productivity gap with rich countries, reduce commodity dependence, and achieve sustainability in the balance of payments. Deindustrialisation also has negative social implications regarding unionisation levels and the quality of welfare states. The issue is further compounded by uncertainties surrounding the capacity of the services sector to replace manufacturing as a reliable engine of growth. In EMEs, many service-based activities tend to be low-tech and tied to the informal sector. Latin American results indicate that deindustrialisation occurs early and is accompanied by premature financialisation, as shown in the GGDC-10 database, confirming the observation made

by Pérez Caldentey and Vernengo (2021). For them, countries shifted towards finance, which resulted from policy measures linked with Washington Consensus policies before reaching maturity in industrial activities and exceeding the expected deindustrialisation process due to economic development. Financialisation has implications in terms of diversifying the productive structures by making the economic environment more volatile, affecting the profitability of economic sectors and shifting resources towards less productive activities. In this region, these trends appear to be mutually reinforcing. In the case of Sub-Saharan Africa, excluding Mauritius, and in the long picture, the region has deindustrialised. However, it has seen a revival in manufacturing over the past few decades (especially in terms of employment). Nevertheless, its financialisation levels have continuously risen from early on. Results confirm that emerging Asia industrialised while keeping its domestic financialisation controlled.

Varied patterns highlight the diversity of economic transformations across emerging regions, emphasising that the processes of industrialisation and financialisation are not always mutually exclusive, nor do they follow the same trajectory across different areas. These findings align with previous studies that suggest successful industrialisation efforts often incorporate measures to regulate financialisation, including tools like capital controls, interest rate management, and targeted credit policies.

6.2 Implications of the research

The renewed focus on the importance of industrial policy in academic and policy spheres has largely overlooked how a more financialised economy constrains structural change (for example, Chang and Andreoni, 2020 or UN-Sustainable Development Goals in UNIDO, 2017). This thesis offers valuable insights that could significantly enhance this ongoing discussion. The thesis has argued that structural change is constrained due to the position of these countries in the global productive and financial system. Instead of supporting the non-financial economy,

financialisation puts EMEs on a low development and unsustainable path. Extending consumer credit or opening indiscriminately to foreign capital provides temporary relief but does not solve structural problems in these nations. On the contrary, financialisation might negatively affect emerging countries' industrial development and their technological capabilities.

Countries that want to avoid that faith, and follow a more stable and long-term sustainable economic path, must conduct contracyclical macroeconomic policies and counteract some of the effects of financialisation. In addition, policies should aim for structural change that is environmentally and socially sustainable. According to what was analysed in this thesis, the productive and financial dimensions are highly interconnected, so policies cannot be only in one dimension; they must combine the productive and financial dimensions. It is necessary to design a pool of coordinated measures at the international and domestic levels, considering that EMEs need particular support. Given the vast scale of global capital flows, UNCTAD (2015) calls for coordinating measures between countries and reforming the international financial and monetary system. This reform should include measures to make purely financial transactions less appealing compared to investments in the real economy, re-directing funds for productive endeavours in that way. According to UNCTAD (2016), this could be achieved by including measures to close tax loopholes at the international and domestic levels. In general, more transparency is needed in the banking system; here, limiting banks from obtaining funding in international dollar markets to reduce financial fragility is important. The regulatory framework should include shadow banks as they have become a major source of systemic risk in the financial system (Ban and Gabor, 2016).

The reform in the international financial system could also include a reorientation of the IMF governance and policy orientation that does not encourage pro-cyclical policies and austerity packages (Ocampo, 2001). In addition, official development assistance should include debt restructuring and relief for some developing countries and other forms of assistance, such as in-donor expenditures like technical assistance (UNCTAD, 2015a). Another issue to tackle is related to credit rating agencies, as they have been a source of systemic risk. It is advisable to create international and regional public agencies that fulfil this function and focus on productivity and long-term growth (Bonizzi et al., 2023).

As several risks in the financialisation literature are linked to more market-based financial markets, specific measures are essential to avoid the short-termism associated with it. Successful examples of regulation frameworks exist in domestic securities markets in China. The country has implemented regulations such as requiring traders to specify if trades are for hedging or speculation (discussion in Bonizzi et al., 2023). Additionally, Gabor (2021) highlights that international investors could shape the developmental agendas of countries, stressing that this issue warrants close monitoring so actions are democratically oriented.

Furthermore, international institutional agreements are needed to coordinate productive strategies. The concentration of production in GVCs calls for an institution that monitors productive practices and ensures that those firms comply with international standards (environmental, labour) and that firms outside the chains are not negatively impacted (UNCTAD, 2016).

Additionally, minimising global financial cycle volatility could help to bring down commodity price movements, as they are highly correlated (Akyüz, 2020). That is critical for EMEs, particularly Latin America, where commodity dependence has vast implications for the balance of payments and macroeconomic domestic dynamics. Also, to address this problem the discouragement of the involvement of speculators and the regulation of the positions of index traders in commodity futures is advised (van Huellen, 2020). In these economies, fiscal policies and resources are very dependent on commodity revenues. Complementary measures could include stabilisation funds, such as the Colombian Coffee Fund (ECLAC, 1998).

Domestic policies at a macroeconomic level include monetary and fiscal ones and measures related to technological upgrading and social policies. ECLAC also recommended macroprudential policies that help to reduce economic volatility and discourage speculative capital flows, such as increasing capital requirements of financial institutions during credit booms and attending systemic risk related to currency mismatches, particularly those influenced by international capital availability. Along with this, countries could impose limits on assets used as collaterals and subject to price booms and busts (ECLAC, 1998). Developing countries could foster regional and interregional initiatives to coordinate macroeconomic and fiscal

policies, reducing the need for foreign exchange accumulation and establishing monetary cooperation of some sort.

High levels of financial integration can result in difficulties for patient capital to contribute to structural transformation. As seen in this thesis, successful industrialised countries imposed capital controls and slowly opened capital accounts when the industrialisation process had reached a certain maturity, such as in the case of Korea (Serra et al., 2008). A stable environment, beneficial interest, and exchange rates are relevant for following an agenda to boost activities that incorporate value-added (UNCTAD, 2015a). In particular, it is essential to minimise sudden stops and short-term capital volatile inflows (Erten et al., 2021). Regimes that manage the exchange rate and actively manage international reserves as a stabilisation mechanism could further enhance stability. This aspect is vital for countries such as Latin America, which are subject to balance of payment constraints (Ocampo, 2011).

The necessary measures for structural change, particularly those related to innovation, require concrete policies for providing long-term patient finance (Lazonick and Mazzucato, 2013). That could mean reforming the credit structure and re-orienting bank credit (public and private) for productive firms and purposes with a particular place given to development banks (Mazzucato and Penna, 2016). Multilateral and national development banks have a pivotal role in prioritising structural transformation in their activities. Also, they could orient economic development and industrialisation strategies, enhancing productivity towards innovative sectors, supporting young high-tech firms, and boosting productivity within established ones, ensuring positive linkages. Additionally, they are essential in mitigating risks linked to boom-bust cycles as they could provide credit in times of crisis (Griffith-Jones and Ocampo, 2021). In addition, National Development Banks could help not only with the provision of counter-cyclical financing and the promotion of technological innovation but also in supporting activities with significant externalities, such as financing adequate infrastructure or climate change policies. National Development Banks could act as first- or second-tier lenders or provide guarantees and venture capital to support small and medium firms, usually constrained in developing countries, and complement private financing. There are plenty of successful examples of the successful role played by those banks in Germany, Korea and China (Griffith-Jones

and Ocampo, 2018). Additionally, Griffith-Jones and Ocampo (2018) state that most Latin American countries have significant potential to scale up their National Development Banks. One caveat regarding which financial instruments development banks choose has to be made; the more complex the financial instruments, the more risky they can become for the balance sheet of these bank firms (Griffith-Jones et al., 2022). The active presence of development banks could be combined with a more active central bank involvement in directing private banks' credit allocation. Here, a focus has to be placed on orienting foreign banks' activities, as they have a significant presence in EMEs, as in the case of Latin America (de Medeiros, 2008). Additionally, pension funds could complement public credit by offering long-term financing for structural transformation, as they have the potential to act as patient investors (Bonizzi et al., 2023). These funds did not fulfil the promises of increasing capital formation in Latin America, one of the regions in which the pension system was heavily privatised (Bonizzi et al., 2021).

On the productive side, developing indigenous industrial and technological capabilities must be a pivotal issue to incorporate. Countries should also conduct active industrial, educational and R&D policies, including shop-floor training that ensure a thriving learning environment (UNCTAD, 2016). Successful and innovative countries such as Japan, Korea or Taiwan have conducted active public policies in technological endeavours (Wade, 1990; Amsden, 2001; Chang, 2002). Also, some form of trade protection or import substitution is needed. As UNCTAD (2016) states, productive strategies could include some form of regional coordination, transforming export processing zones into more integrated forms of industrial development with stronger linkages while avoiding strategies that rely on wage compression and job informality. That is a critical issue in EMEs and Latin America.

In the context of the delocalisation of production policies directed to promote FDI in higher-productivity sectors can be beneficial if they meet specific criteria, such as introducing technological innovation or utilising a certain proportion of domestic inputs. Successful lessons from the East Asian countries have to be taken into consideration here (Chang, 2006; Amsden, 2008). The role of TNCs and GVCs, along with their capacity to extract rents by creating several barriers and squeezing suppliers, also have to be addressed as these factors affect the ability of developing

countries to upgrade their productive structures. Measures must be taken so their presence aligns with domestic and international objectives.

Technological upgrading is particularly challenging in economies that, like most Latin American economies, face static comparative advantages linked to commodities. Integrating advanced technological content into natural resource-based activities and prioritising sustainable production practices is essential (ECLAC, 2007). As stated by Structuralists, increasing productivity levels across the productive structure is vital in countries characterised by high heterogeneity levels. That implies policies to transform rent-dominated sectors, which require managing social conflict (in the case of Latin America with a focus on the landlord class) and providing a clear vision of the direction of the changes while creating institutions and ensuring strategic coordination (Andreoni and Chang, 2019).

Structural change could be complemented with a mission-oriented approach characterised by public policies focussed on solving societal problems, such as climate change or inequality. The priorities could be linked with the UN Sustainable Development Goals. Economic growth or productivity increases should be connected to these priorities (Mazzucato and Penna, 2018, pp. 256). This approach implies that several economic sectors are involved, not just manufacturing, incorporating technological solutions to the problems at hand. In the case of climate change, it could include activities from green infrastructure to sustainable food (UCL-IIPP, 2024). The role of the state in the productive sphere is not seen just as a facilitator or de-risker, but as an active player that could also lead the way through state-owned firms. The relationship between the public and private sector could be redesigned to produce value for society, setting conditionalities, as successful countries have in the past, about public grants, guarantees, tax benefits, or other incentives that align with these goals (Mazzucato and Rodrik, 2023). It is also worth mentioning that the role of state and public agencies in funding high-risk investments should be accompanied by the sharing of rewards, as Mazzucato (2013) indicates.

At a microeconomic level, policies should tackle incentives, so corporations re-orient their efforts from value extraction to value creation. Measures could include tax benefits to those companies reinvesting profits into real investment activities (UNCTAD, 2016). As Lazonick (2023) indicates, one element to implement is limiting

buyback operations and re-aligning the compensation of CEOs to activities which add value to society. These measures could also make jobs in the financial sector less attractive compared to others in the real economy. Furthermore, a change in the management of firms could include incorporating corporate board workers' and citizens' representatives.

6.3 Future research

There are several topics, derived from this thesis, that could be extended in future research. Some ideas are included here, but it does not aspire to be a complete list. First, the research conducted for this thesis could be extended by digging deeper into the productive structure and the implications of financialisation for different economic sectors (focusing on the effects on agriculture or services) and, if possible, into the technological content within these sectors. As shown by the complexity literature, the technological content is a good predictor of economic development, so both the sector and the capacity to add value are crucial.

Second, as this thesis had a regional focus, further research into countries' case studies and their particular evolution could contribute to the understanding of regional patterns. Aggregating countries in regions results in a loss of richness, and even though regions could present specific common characteristics, there are substantial differences within them. For example, in the case of Latin America, noticeable variations are present between countries more open to capital and institutional investors (for example, pension funds), like Chile, when compared to Brazil, which is relatively more closed to foreign capital. Analysing this relationship at the country level could also shed some light on policy regimes and the concrete measures that could be detrimental/beneficial to structural change (at the productive and financial sector levels). That could mean honing in on the characteristics and concrete mechanisms within a country's context.

Third, given the importance of GVCs in the productive landscape, additional studies could also deepen into the link between GVCs and financialisation in the context of

emerging countries. The way in which those chains affect the productive and financial activities of firms within, but also outside the chains, is of high importance. Moreover, it would be interesting to know if those firms involved in GVCs have more financialised practices and how this affects their real investment and R&D decisions.

Fourth, as the three empirical studies presented here focused on the finance-productive structure nexus at the macroeconomic level, future research could elucidate how this relation operates at the firm level. The research about the implications of financialisation on the productive structure at the firm level is lightly touched; studies considering the sector in which the firm is located, if they are exporting firms or not, and the technological content they add could interact in different ways with financialisation. Furthermore, the type of financialisation of those firms could be different, for example, considering credit and capital market access.

Fifth, the thesis examined the effects of private credit and its types on the productive structure, but public credit was not included. Public credit and the role of development banks are crucial for structural change, as shown in successful stories like those in Korea or Japan. Further exploration of this relation, and the potential role the state can play, could contribute greatly to the literature.

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Appendix A

Table 1. Countries, regions and data availability.

Country	ECI	privcred	stockmarkcap	tot-nonFDI
Developed countries				
Australia	1975-2015	1975-2015	1979-2015	1975-2015
Austria	1975-2015	1975-1997; 01-15	1975-2015	1975-2015
Belgium	1975-2015	1975-1997; 01-15	1975-2015	1975-2015
Canada	1975-2015	1975-2008	1977-1980; 82-15	1975-2015
Czech Rep.	1993-2015	1993-2015	1993-2008	1993-2015
Denmark	1975-2015	2000-2015	1975-2004	1975-2015
Finland	1975-2015	1975-1998; 01-15	1982-2004	1975-2015
France	1975-2015	1975-1997; 01-15	1975-2015	1975-2015
Germany	1975-2015	1975-1998; 01-15	1975-2015	1975-2015
Greece	1975-2015	1975-1998; 01-15	2001-2015	1975-2015
Hong Kong	1975-2015	1990-2015	1975-2015	1979-2015
Ireland	1975-2015	1975-1998; 01-15	1997-2015	1975-2015
Israel	1975-2015	1995-2015	1995-2015	1975-2015
Italy	1975-2015	1975-1998; 01-15	1999-2014	1975-2015
Japan	1975-2015	1975-2015	1975-2015	1975-2015
Korea, Rep.	1975-2015	1975-2015	1979-2015	1971-2015
Netherlands	1975-2015	1975-1997; 01-15	1975-2015	1975-2015
New Zealand	1975-2015	1971-2010; 13-15	1985-2009;12-15	1975-2015
Norway	1975-2015	1975-2015	1981-2015	1975-2015
Portugal	1975-2015	1975-1998; 01-15	1997-2015	1972-2015
Singapore	1975-2015	1975-2015	1979-2015	1975-2015
Slovak Rep.	1993-2015	1993-2015	1993-2014	1993-2015
Slovenia	1992-2015	1995-2015	1997-2015	1992-2015
Spain	1975-2015	1972-1998; 01-15	1975-1976;78-15	1975-2015
Sweden	1975-2015	1975-2015	1975-2003	1975-2015
Switzerland	1975-2015	1980-2015	1980-2015	1975-2015
UK	1975-2015	1975-2015	1975-2014	1975-2015
US	1975-2015	1975-2015	1975-2015	1975-2015
EMEs: Latin America and the Caribbean				
Brazil	1975-2015	1975-1978;80-15	2000-2015	1975-2015
Chile	1975-2015	1975-2015	1991-2015	1975-2015
Colombia	1975-2015	75-85;87-88;90-15	2005-2015	1975-2015
Costa Rica	1975-2015	1975-2015	93;95-99;03-11;13-15	1975-2015
Ecuador	1975-2015	1975-2015	1995-2000	1975-2015
Jamaica	1975-2015	1975-2015	93-02;10-11;13-15	1975-2015
Mexico	1975-2015	1975-2015	1975-1976; 78-15	1975-2015
Panama	1975-2015	1975-2015	1993-2015	1975-2015
Paraguay	1975-2015	1975-2015	1996-1999	1975-2015
Peru	1975-2015	1984-2015	1997-2015	1975-2015
Uruguay	1975-2015	1975-2015	1995-1996	1975-2015
EMEs: East Asia and Pacific				

China	1975-2015	1986-2015	2003-2015	1981-2015
Indonesia	1975-2015	1980-2015	1995-2015	1975-2015
Malaysia	1975-2015	1975-2015	1981-2015	1975-2015
Philippines	1975-2015	1975-2015	1996-2015	1975-2015
Thailand	1975-2015	1975-2015	1989-2015	1975-2015
Vietnam	1975-2015	1992-1993; 95-15	2008-2015	1995-2015
EMEs: Europe and Central Asia				
Azerbaijan	1992-2015	1992-2015	1998-1999	1995-2015
Bulgaria	1975-2015	1991-2015	1993-1996;98-11	1991-2015
Croatia	1992-2015	1995-2015	1995-2011;13-15	1996-2015
Hungary	1975-2015	1991-2015	2002-2015	1982-2015
Kazakhstan	1992-2015	1993-2015	1998;02-15	1994-2015
Poland	1975-2015	1990-2015	1995-2015	1975-2015
Romania	1975-2015	1981-1989;96-15	1998-2011;13-15	1990-2015
Russia	1992-2015	2001-2015	2009-2015	1993-2015
Turkey	1975-2015	1975-2015	1993-2015	1975-2015
Ukraine	1992-2015	1992-2015	2010-2011;13-15	1994-2015
EMEs: Middle East and North Africa				
Algeria	1975-2015	1975-2015	1999-2015	1975-2015
Egypt	1975-2015	1975-2015	2006-2015	1975-2015
Iran	1975-2013	1975-1977;79-15	1975-1978;93-15	1975-2015
Jordan	1975-2015	1975-2015	2007-2015	1975-2015
Kuwait	1975-2015	70-71;73-89;91-15	1993-2006;15	1974-2015
Lebanon	1975-2015	1975-2006;08-15	1996-2015	1975-2015
Morocco	1975-2015	1975-1985;90-15	2010-2015	1975-2015
Oman	1975-2015	1972-1999;01-15	1993-2001;04-15	1973-2015
Qatar	1975-2015	1975-1978;80-15	2007-2008;13-15	1975-2015
Saudi Arabia	1975-2015	1975-2015	2009-2015	1975-2015
Tunisia	1975-2015	1975-1982;84-15	95-98;10-11;13-15	1975-2015
UAE	1975-2015	1975-2005;07-15	2007-2015	1973-2015
EMEs: South Asia				
Bangladesh	1972-2013	1974-1985;87-15	93-02;05-11;13-15	1973-2015
India	1975-2015	1975-2015	2000-2015	1975-2015
Pakistan	1975-2015	1975-2015	1993-2001;04-11	1975-2015
Sri Lanka	1975-2015	1975-2015	1999-2015	1975-2015
EMEs: Sub-Saharan Africa				
Botswana	2000-2015	1974-2015	1993-2000	1974-2015
Cote d'Ivoire	1975-2015	1975-2015	93-96;98-11;13-15	1975-2015
Ghana	1975-2015	1975-2015	1993-2011	1975-2015
Kenya	1975-2015	1975-2015	1993-1998;00-11	1975-2015
Namibia	2000-2015	1990-2000;02-15	1993-2011	1989-2015
Nigeria	1975-2015	1975-2015	93-99;02;04-15	1975-2015
South Africa	1975-2015	1975-1990;92-15	1975-2015	1975-2015
Tanzania	1975-2015	1988-2015	1999-2001	1975-2015
Zambia	1975-2015	2009-2015	95-99;01;03-06;11	1975-2015

Source: Author's elaboration.

Table 2. Multicollinearity test.

Variable	VIF	1/VIF
tot_nonFDI	1.92	0.520
tradeopen	1.92	0.521
privatecred	1.89	0.530
GDP	1.76	0.570
stockmarkcap	1.65	0.607
inflation	1.17	0.857
POP	1.11	0.904
Mean VIF	1.63	

Source: Author's calculations based on data as reported in Table 3-2.

The test calculates the (VIFs) variance inflation factors for the independent variables specified in a linear regression model. If VIF is less than 10, there is no problem of multicollinearity among independent variables.

Table 3. Fisher-type unit-root tests.

	ECI			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	491.587	0.000	1409.503	0.000
Inverse normal Z	-13.067	0.000	-31.629	0.000
Inverse logit t L*	-14.059	0.000	-43.475	0.000
Modified inv. chi-squared Pm	18.536	0.000	69.849	0.000
	privatecred			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	440.527	0.000	904.418	0.000
Inverse normal Z	-12.182	0.000	-22.954	0.000
Inverse logit t L*	-12.576	0.000	-27.923	0.000
Modified inv. chi-squared Pm	15.893	0.000	41.989	0.000
	stockmarkcap			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	393.528	0.000	710.189	0.000
Inverse normal Z	-12.418	0.000	-19.905	0.000
Inverse logit t L*	-12.622	0.000	-23.931	0.000
Modified inv. chi-squared Pm	15.615	0.000	35.585	0.000

	tot_nonFDI			
	levels		first difference	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	269.608	0.000	965.664	0.000
Inverse normal Z	-4.998	0.000	-24.545	0.000
Inverse logit t L*	-4.875	0.000	-29.729	0.000
Modified inv. chi-squared Pm	6.127	0.000	45.038	0.000
	tot_FDI			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	142.887	0.830	848.003	0.000
Inverse normal Z	7.811	1.000	-22.114	0.000
Inverse logit t L*	9.988	1.000	-25.963	0.000
Modified inv. chi-squared Pm	-0.957	0.831	38.461	0.000
	GDP			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	380.978	0.000	989.016	0.000
Inverse normal Z	-10.199	0.000	-25.087	0.000
Inverse logit t L*	-10.340	0.000	-30.459	0.000
Modified inv. chi-squared Pm	12.353	0.000	46.343	0.000
	POP			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	312.274	0.000	444.374	0.000
Inverse normal Z	-6.198	0.000	-12.476	0.000
Inverse logit t L*	-6.345	0.000	-12.706	0.000
Modified inv. chi-squared Pm	8.512	0.000	15.897	0.000
	tradeopen			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	444.891	0.000	1242.045	0.000
Inverse normal Z	-12.150	0.000	-29.114	0.000
Inverse logit t L*	-12.664	0.000	-38.305	0.000
Modified inv. chi-squared Pm	15.926	0.000	60.488	0.000
	inflation			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	690.207	0.000	1354.466	0.000
Inverse normal Z	-17.736	0.000	-30.913	0.000
Inverse logit t L*	-21.183	0.000	-42.318	0.000
Modified inv. chi-squared Pm	29.939	0.000	67.850	0.000
	nrents			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	580.355	0.000	1516.834	0.000
Inverse normal Z	-16.881	0.000	-33.183	0.000

Inverse logit t L*	-17.679	0.000	-46.795	0.000
Modified inv. chi-squared Pm	23.499	0.000	75.849	0.000
	ttrade			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	476.631	0.000	602.850	0.000
Inverse normal Z	-13.677	0.000	-16.532	0.000
Inverse logit t L*	-14.036	0.000	-18.140	0.000
Modified inv. chi-squared Pm	17.700	0.000	24.756	0.000
	ka_open			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	464.655	0.000	1142.507	0.000
Inverse normal Z	-13.070	0.000	-27.285	0.000
Inverse logit t L*	-13.591	0.000	-35.202	0.000
Modified inv. chi-squared Pm	17.031	0.000	54.924	0.000

Source: Author's calculations based on data as reported in Table 3-2.
Notes: Based on augmented Dickey-Fuller tests. Null hypothesis: All panels contain unit roots; alternative: At least one panel is stationary. AR parameter is panel-specific. Tests include panel means and drift terms. Tests exclude time trends. Additionally, ADF regressions included two lags, and cross-sectional means were removed.

Table 4. Panel fixed effects regressions. Dependent variable: ECI.

	(1) East Asia and Pacific	(2) Europe and Central Asia	(3) Middle East and North Africa	(4) South Asia	(5) Sub-Saharan Africa
privatecred	-0.047	0.069	0.049	-0.234	-0.609
	(0.075)	(0.106)	(0.107)	(0.198)	(0.373)
privatecred^2	0.000	-0.001	-0.001	0.004	0.006
	(0.000)	(0.001)	(0.001)	(0.003)	(0.003)
stockmarkcap	0.008	0.041	0.001	-0.012	**0.024****
	(0.007)	(0.026)	(0.029)	(0.012)	**(0.010)**
tot_nonFDI	-0.025	0.014	**-0.024****	-0.026	0.013
	(0.022)	(0.015)	**(0.008)**	(0.049)	(0.019)
GDP	2.178	-4.514*	0.655	28.948	16.178***
	(4.319)	(2.018)	(1.637)	(14.303)	(3.196)
GDP^2	-0.176	0.187**	-0.013	-3.085	-2.553***
	(0.176)	(0.083)	(0.022)	(1.673)	(0.429)
POP	-0.361*	-4.104***	-5.536***	0.392*	-1.355
	(0.143)	(1.001)	(1.260)	(0.153)	(0.799)
POP^2	0.000	0.034***	0.028***	-0.000*	0.004
	(0.000)	(0.008)	(0.008)	(0.000)	(0.002)
tradeopen	0.015	0.069**	-0.033	-0.006	-0.055*
	(0.026)	(0.023)	(0.066)	(0.019)	(0.030)
inflation	0.082	-0.015	-0.021	-0.018	-0.025
	(0.047)	(0.032)	(0.094)	(0.061)	(0.019)
_cons	83.284***	134.830***	50.717**	-49.257	51.980**
	(19.329)	(17.415)	(18.895)	(40.798)	(20.463)
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
N	124	141	128	68	132
R2	0.945	0.765	0.725	0.867	0.623

Source: Author's estimations based on data as reported in Table 3-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Table 5. Panel fixed effects regressions. Dependent variable: ECI.

	(1) Developed countries. Before the crisis of 2008	(2) Developed countries. After the crisis of 2008
privatecred	**-0.091****	**-0.119***
	(0.038)	**(0.062)**
privatecred²	0.000	0.001***
	(0.000)	(0.000)
stockmarkcap	-0.001	0.000
	(0.004)	(0.008)
tot_nonFDI	0.005	0.002
	(0.003)	(0.004)
GDP	0.980***	1.550**
	(0.350)	(0.726)
GDP²	-0.008***	-0.012
	(0.003)	(0.008)
POP	0.181	-0.596
	(0.331)	(1.463)
POP²	-0.000	0.000
	(0.001)	(0.002)
tradeopen	-0.007	-0.029
	(0.011)	(0.019)
inflation	-0.029	0.377**
	(0.064)	(0.176)
_cons	57.846***	155
	(9.377)	0.565
Time fixed effects	Yes	Yes
Country fixed effects	Yes	Yes
N	640	155
R2	0.536	0.565

Source: Author's estimations based on data as reported in Table 3-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations. In column (1) results are run for the period 1975-2008, in column (2) for 2009-2015.

Table 6. Panel fixed effects regressions. Dependent variable: ECI.

	(1) LAC	(2) East Asia and Pacific
privatecred	**0.298*****	-0.024
	(0.094)	(0.127)
privatecred^2	**-0.003*****	0.000
	(0.001)	(0.001)
stockmarkcap	-0.041	0.012
	(0.026)	(0.007)
tot_nonFDI	**-0.028***	-0.024
	(0.013)	(0.036)
GDP	-4.238	3.491
	(2.531)	(5.691)
GDP^2	0.192	-0.220
	(0.126)	(0.208)
POP	0.111	-0.327*
	(0.340)	(0.141)
POP^2	-0.001	0.000
	(0.001)	(0.000)
tradeopen	0.115	0.022
	(0.107)	(0.038)
inflation	-0.044	0.079
	(0.050)	(0.050)
_cons	53.622***	82.857***
	(8.190)	(18.675)
Time fixed effects	Yes	Yes
Country fixed effects	Yes	Yes
N	168	104
R2	0.571	0.949

Source: Author's estimations based on data as reported in Table 3-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations. For LAC, column (1), results are run excluding the decade of 1980s. For East Asia and the Pacific, column (2), results are run excluding the years 1997-2001.

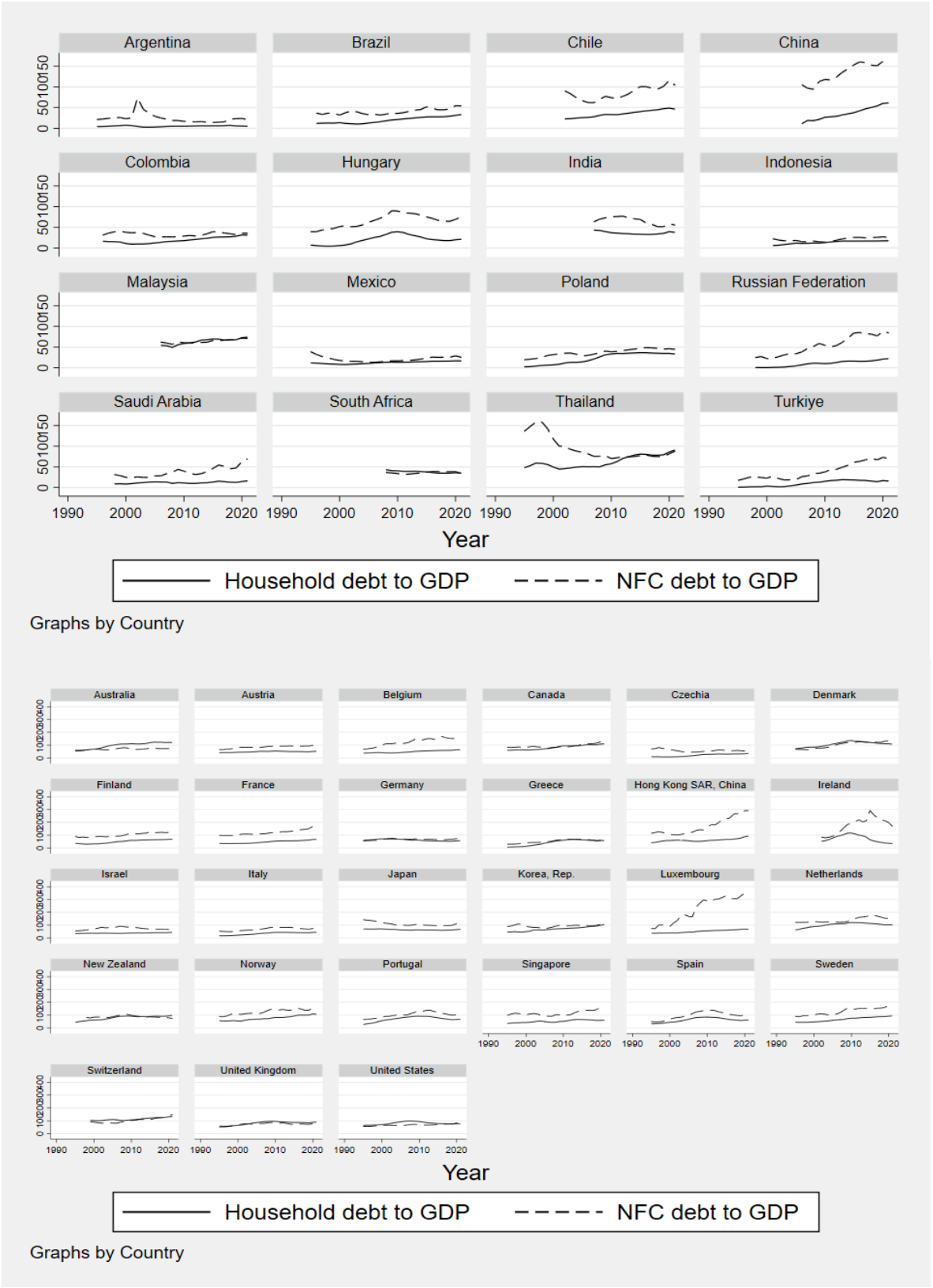
Appendix B

Table 1. Data availability by country.

Country	Credit to NFCs and households	VACmanuf	Manuf
Argentina	From 1994	From 1965	From 1965
Australia	From 1977	From 1975	From 1990
Austria	From 1995	From 1976	From 1976
Belgium	From 1980	From 1995	From 1995
Brazil	From 1996	From 1990	From 1960
Canada	From 1969	From 1997	From 1997
Chile	From 2002	From 1960	From 1960
China	From 2006	Not available	From 2004
Colombia	From 1996	From 1965	From 1965
Czechia	From 1995	From 1993	From 1993
Denmark	From 1994	From 1966	From 1966
Finland	From 1970	From 1975	From 1975
France	From 1977	From 1960	From 1960
Germany	From 1970	From 1991	From 1991
Greece	From 1994	From 1995	From 1995
Hong Kong SAR	From 1990	From 2000	From 2000
Hungary	From 1970	From 1995	From 1995
India	From 2007	From 1960	From 1960
Indonesia	From 2001	From 1960	From 1983
Ireland	From 2002	From 1995	From 1995
Israel	From 1992	From 1995	From 1995
Italy	From 1960	From 1990	From 1990
Japan	From 1964	From 1994	From 1994
Korea, Rep.	From 1962	From 1960	From 1960
Luxembourg	From 1995	From 1995	From 1995
Malaysia	From 2006	From 1970	From 1960
Mexico	From 1994	From 1965	From 1965
Netherlands	From 1990	From 1969	From 1969
New Zealand	From 1998* both values	From 1977	From 1971
Norway	From 1975	From 1970	From 1970
Poland	From 1995	From 1995	From 1995
Portugal	From 1979	From 1995	From 1995
Russian Federation	From 1998	From 2002	From 2002
Saudi Arabia	From 1998	From 1968	From 1968
Singapore	From 1991	From 1960	From 1960
South Africa	From 2008	From 1960	From 1960
Spain	From 1980	From 1995	From 1995
Sweden	From 1980	From 1980	From 1980
Switzerland	From 1999	From 1990	From 1990
Thailand	From 1991	From 1960	From 1960
Turkiye	From 1986	From 1968	From 1960
United Kingdom	From 1976* both values	From 1990	From 1990
United States	From 1960	From 1997	From 1997

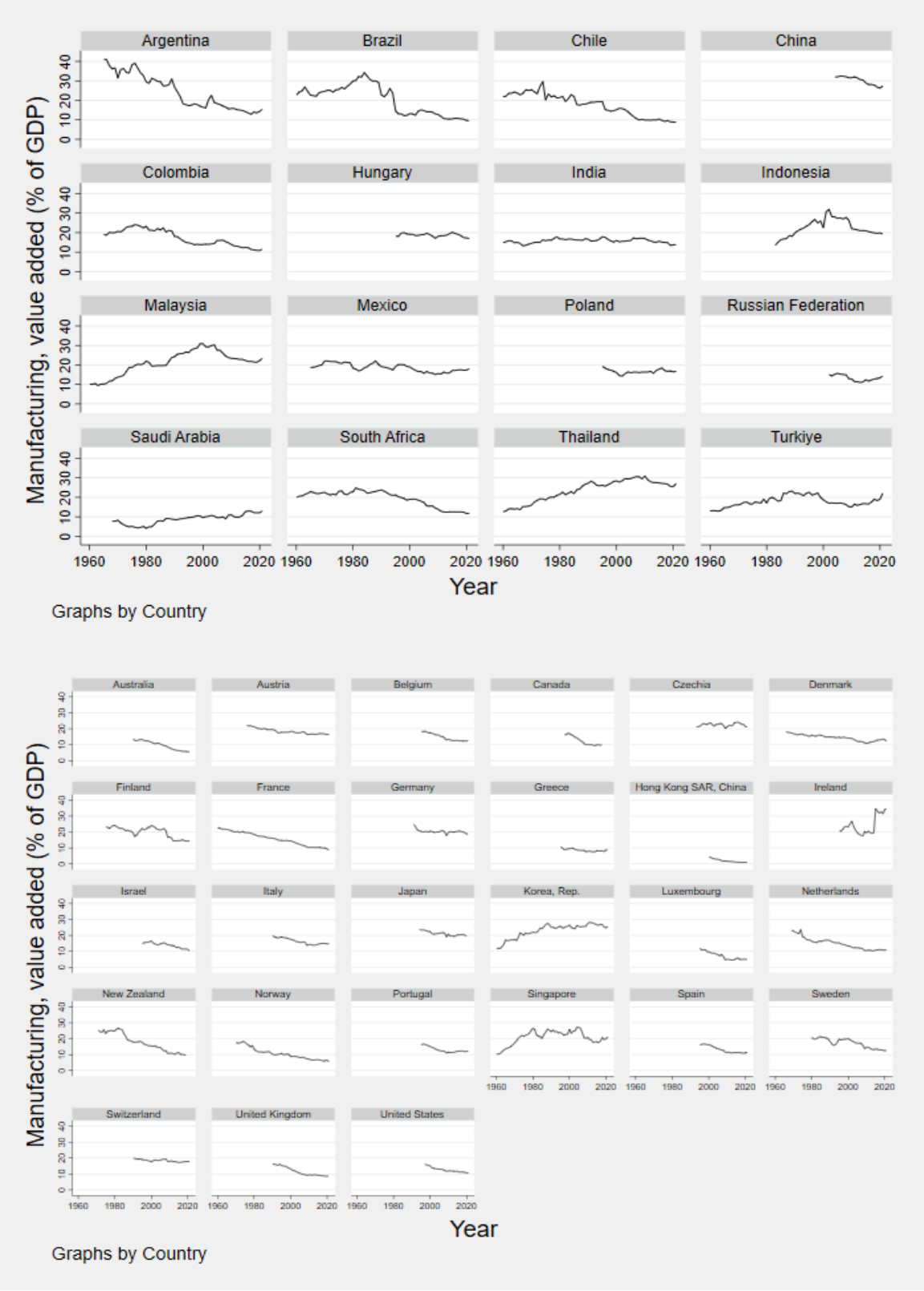
Source: Author's elaboration.

Graph 1. Credit type by country.



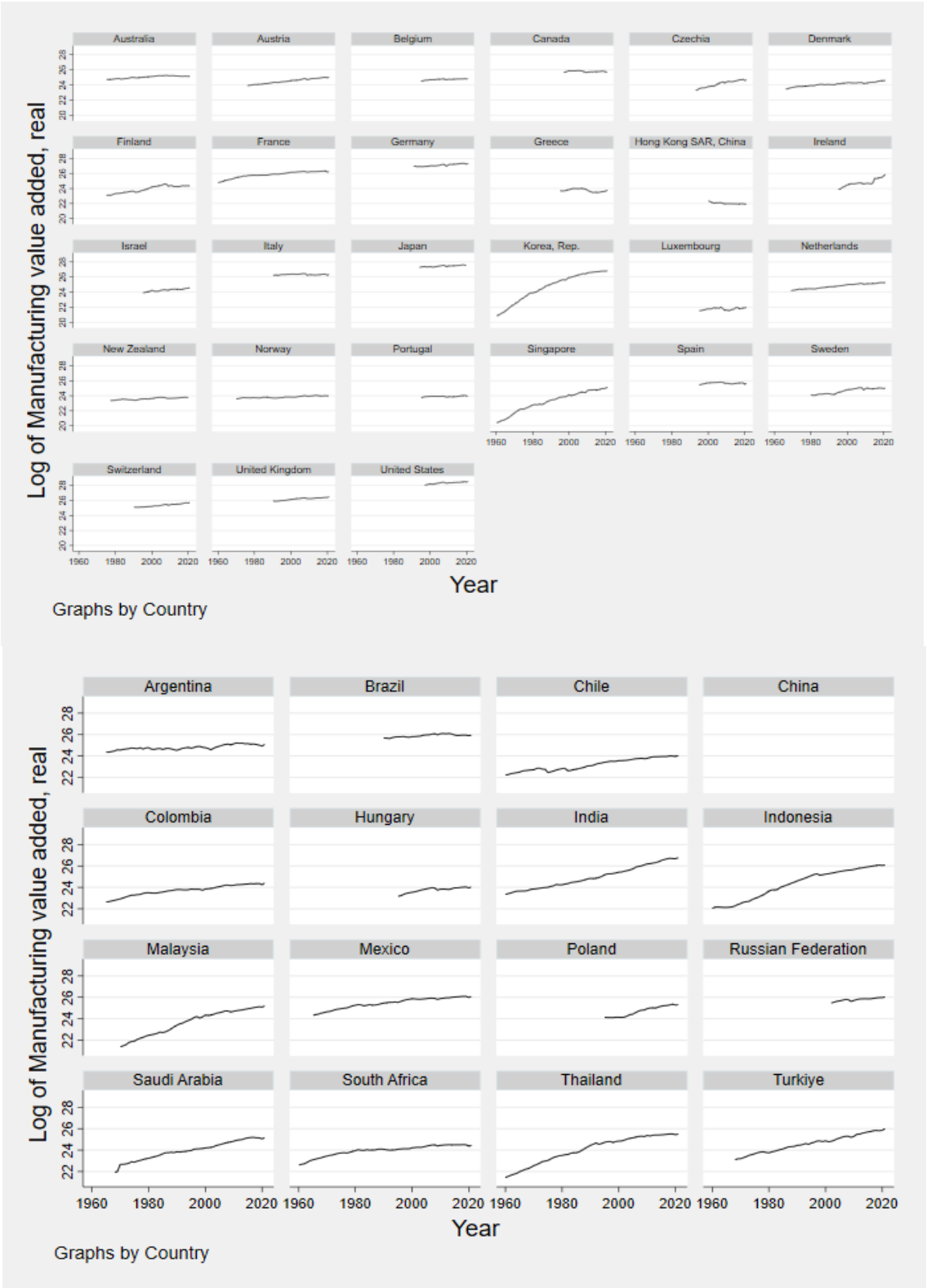
Source: Author's calculations using data from the BIS.
Notes: Panels show the cross-country average of total credit to GDP per year (households and NFCs).

Graph 2. Manufacturing share to GPD and value added in manufacturing by country.



Source: Author's elaboration using data from the WBDI.
Notes: Panels show the cross-country average of the share of manufacturing to GDP (%).

Graph 3. Log of manufacturing value added by country.



Source: Author's elaboration using data from the WBDI.
Notes: Panels show the cross-country average of the log of manufacturing value added at constant prices.

Table 2. Multicollinearity test.

Variable	VIF	1/VIF
GDP	2.33	0.429139
NFCdebt	1.94	0.515452
housedebt	1.85	0.5397
secondary	1.54	0.647667
inflation	1.32	0.760427
POP	1.14	0.876102
Mean VIF	1.69	

Source: Author's calculations based on data as reported in Table 4-2.

The test is calculated for the manufacturing value added (% of GDP). The test calculates the (VIFs) variance inflation factors for the independent variables specified in a linear regression model. If VIF is less than 10, there is no problem of multicollinearity among independent variables.

Table 3. Fisher-type unit-root tests.

	manuf			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	256.626	0.000	614.354	0.000
Inverse normal Z	-9.803	0.000	-19.839	0.000
Inverse logit t L*	-10.267	0.000	-25.839	0.000
Modified inv. chi-squared Pm	13.010	0.000	40.287	0.000
	NFCdebt			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	234.968	0.000	423.561	0.000
Inverse normal Z	-8.741	0.000	-15.497	0.000
Inverse logit t L*	-8.954	0.000	-17.743	0.000
Modified inv. chi-squared Pm	11.359	0.000	25.739	0.000
	householdebt			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	249.827	0.000	345.804	0.000
Inverse normal Z	-9.179	0.000	-13.223	0.000

Inverse logit t L*	-9.651	0.000	-14.404	0.000
Modified inv. chi-squared Pm	12.492	0.000	19.810	0.000
	GDP			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	182.351	0.000	610.434	0.000
Inverse normal Z	-5.591	0.000	-20.167	0.000
Inverse logit t L*	-5.646	0.000	-25.687	0.000
Modified inv. chi-squared Pm	7.347	0.000	39.988	0.000
	POP			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	342.273	0.000	110.312	0.040
Inverse normal Z	-12.163	0.000	2.677	0.996
Inverse logit t L*	-13.824	0.000	3.194	0.999
Modified inv. chi-squared Pm	19.541	0.000	1.854	0.032
	inflation			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	453.532	0.000	1417.336	0.000
Inverse normal Z	-15.714	0.000	-34.519	0.000
Inverse logit t L*	-19.274	0.000	-60.430	0.000
Modified inv. chi-squared Pm	28.510	0.000	102.869	0.000
	secondary			
	levels		**first difference**	
	Statistic	p-value	Statistic	p-value
Inverse chi-squared P	249.243	0.000	535.991	0.000
Inverse normal Z	-9.577	0.000	-18.602	0.000
Inverse logit t L*	-10.159	0.000	-23.374	0.000
Modified inv. chi-squared Pm	13.059	0.000	36.049	0.000

Source: Author's calculations based on data as reported in Table 4-2.
Notes: Based on augmented Dickey-Fuller tests. Null hypothesis: All panels contain unit roots; alternative: At least one panel is stationary. AR parameter is panel-specific. Tests include panel means and drift terms. Tests exclude time trends. Additionally, ADF regressions included two lags, and cross-sectional means were removed.

Table 4. Panel fixed effects regressions. Dependent variable: manufacturing over GDP.

	(1) EME countries	(2) LA	(3) Emerging Asia	(4) Emerging Asia exc. China
housedebt	-0.062	-0.655***	-0.150***	-0.147*
	(0.036)	(0.107)	(0.028)	(0.053)
NFCdebt	0.001	0.157**	-0.009	-0.001
	(0.022)	(0.036)	(0.065)	(0.101)
GDP	-0.472	3.056**	2.593	3.791
	(1.162)	(0.826)	(1.478)	(4.064)
GDP^2	0.028	-0.124**	-0.135*	-0.180
	(0.041)	(0.025)	(0.060)	(0.180)
POP	-0.158*	-0.317	-0.364**	-0.368*
	(0.084)	(0.231)	(0.094)	(0.140)
POP^2	0.000	0.001	0.000**	0.000*
	(0.000)	(0.001)	(0.000)	(0.000)
inflation	0.063***	-0.116	0.157	0.142
	(0.019)	(0.058)	(0.083)	(0.145)
secondary	0.038	0.027	0.019	0.021
	(0.032)	(0.079)	(0.028)	(0.028)
_cons	37.131***	16.789	106.974***	93.505**
	(11.481)	(10.334)	(18.723)	(22.635)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	291	85	82	77
R2	0.566	0.859	0.911	0.912

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Table 5. Panel fixed effects regressions. Dependent variable: manufacturing over GDP.

	(1) Developed countries	(2) EME countries	(1) Emerging Asia	(2) LAC
housedebt	**-0.077****	-0.042	**-0.106***	**-0.402***
	(0.029)	(0.031)	**(0.051)**	**(0.134)**
NFCdebt	0.013	-0.016	-0.029	0.062
	(0.010)	(0.016)	(0.017)	(0.045)
GDP	0.498***	-0.765	-0.427	1.469
	(0.167)	(1.060)	(1.157)	(1.205)
GDP^2	-0.003***	0.037	0.049	-0.064
	(0.001)	(0.036)	(0.033)	(0.036)
POP	0.389	-0.171**	-0.269**	-0.146
	(0.302)	(0.079)	(0.098)	(0.269)
POP^2	-0.001	0.000*	0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.001)
secondary	0.011	0.029	0.046	0.033
	(0.020)	(0.021)	(0.031)	(0.106)
inflation	-0.196**	0.037***	0.044***	0.081
	(0.078)	(0.012)	(0.012)	(0.055)
time	-0.600**	0.184	0.015	-0.348
	(0.250)	(0.634)	(0.711)	(0.542)
$time^2$	0.003	-0.001	0.001	0.005
	(0.003)	(0.005)	(0.006)	(0.006)
_cons	14.257	34.851***	66.731***	22.638*
	(10.955)	(9.489)	(18.782)	(7.661)
N	711	291	141	85
R2	0.575	0.492	0.650	0.739

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Table 6. Panel fixed effects regressions. Dependent variable: manufacturing over GDP for the period 1995-2021.

	(1) All countries	(2) Developed countries	(3) Developed countries without HK and Lux.	(4) EME countries
housedebt	-0.083***	-0.079**	-0.083***	-0.073
	(0.027)	(0.029)	(0.024)	(0.042)
NFCdebt	0.001	0.007	0.022	0.001
	(0.011)	(0.010)	(0.014)	(0.023)
GDP	0.273	0.377*	0.252	-0.443
	(0.187)	(0.188)	(0.266)	(1.149)
GDP^2	-0.002	-0.002*	-0.000	0.028
	(0.001)	(0.001)	(0.002)	(0.040)
POP	-0.110*	-0.147	-0.166	-0.153*
	(0.059)	(0.190)	(0.209)	(0.085)
POP^2	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
inflation	-0.008	-0.368**	-0.336**	0.053**
	(0.028)	(0.154)	(0.134)	(0.019)
secondary	0.017	-0.006	-0.003	0.031
	(0.020)	(0.019)	(0.022)	(0.028)
_cons	20.142***	15.778**	18.499**	34.965**
	(5.360)	(6.617)	(8.277)	(14.128)
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
N	868	591	545	277
R2	0.550	0.658	0.682	0.504

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Table 7. Panel fixed effects regressions. Dependent variable: manufacturing over GDP for the period 1995-2021.

	(1) EME countries	(2) LA	(3) Emerging Asia
housedebt	-0.073	-0.655***	-0.150***
	(0.042)	(0.107)	(0.028)
NFCdebt	0.001	0.157**	-0.009
	(0.023)	(0.036)	(0.063)
GDP	-0.443	3.056**	2.593
	(1.149)	(0.821)	(1.441)
GDP^2	0.028	-0.124**	-0.135*
	(0.040)	(0.025)	(0.058)
POP	-0.153*	-0.317	-0.364**
	(0.085)	(0.230)	(0.092)
POP^2	0.000	0.001	0.000**
	(0.000)	(0.001)	(0.000)
inflation	0.053**	-0.116	0.157
	(0.019)	(0.058)	(0.081)
secondary	0.031	0.027	0.019
	(0.028)	(0.079)	(0.027)
_cons	34.965**	23.347*	110.680***
	(14.128)	(9.367)	(18.659)
Time fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
N	277	84	78
R2	0.504	0.859	0.909

Source: Author's estimations based on data as reported in Table 4-2.
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Appendix C

Table 1. Data availability GGDC-10 database.

Acronym	Country	Value Added in constant prices	Employment by sector
		Advanced Asia	
HKG	Hong Kong	1974-2011	1974-2011
JPN	Japan	1953-2011	1953-2012
KOR	South Korea	1953-2011	1963-2011
SGP	Singapore	1960-2012	1970-2011
TWN	Taiwan	1961-2012	1963-2012
		Emerging Asia	
CHN	China	1952-2010	1952-2011
IND	India	1950-2012	1960-2010
IDN	Indonesia	1960-2012	1961-2012
MYS	Malaysia	1970-2011	1975-2011
PHL	Philippines	1971-2012	1971-2012
THA	Thailand	1951-2011	1960-2011
		Latin America	
ARG	Argentina	1950-2011	1950-2011
BOL	Bolivia	1950-2011	1950-2010
BRA	Brazil	1950-2011	1950-2011
CHL	Chile	1950-2011	1950-2012
COL	Colombia	1950-2011	1950-2010
CRI	Costa Rica	1950-2011	1950-2011
MEX	Mexico	1950-2011	1950-2012
PER	Peru	1950-2011	1960-2011
		Sub-Saharan Africa	
BWA	Botswana	1964-2010	1964-2010
ETH	Ethiopia	1961-2010	1961-2010
GHA	Ghana	1960-2010	1960-2010
KEN	Kenya	1964-2010	1969-2010
MWI	Malawi	1966-2010	1966-2010
MUS	Mauritius	1970-2010	1970-2010
NGA	Nigeria	1960-2010	1960-2011
SEN	Senegal	1970-2010	1970-2010
ZAF	South Africa	1960-2010	1960-2010
TZA	Tanzania	1960-2010	1960-2010
ZMB	Zambia	1965-2010	1965-2010
		MENA	
EGY	Egypt	1960-2012	1960-2012
MOR	Morocco	1960-2012	1960-2012
		Other advanced countries	
USA	United States of America	1947-2010	1950-2010

DEW	West Germany	1950-1991 (1991 prices)	1950-1991
DNK	Denmark	1947-2009	1948-2011
ESP	Spain	1947-2009	1950-2011
FRA	France	1950-2009	1950-2011
GBR	United Kingdom	1949-2009	1948-2011
ITA	Italy	1951-2009	1951-2011
NLD	The Netherlands	1949-2009	1950-2011
SWE	Sweden	1950-2009	1950-2011

Source: Author's elaboration.

Table 2. Estimations following equation (1). Dependent variable: manufacturing value added (real) share.

	(1) Full sample	(2) Advanced Asia	(3) Emerging Asia	(4) LA	(5) SSA	(6) SSA excl. Mauritius
lnPOP	-0.207***	-0.801	-0.091	-0.674***	0.291***	0.341***
	(0.056)	(0.504)	(0.127)	(0.078)	(0.101)	(0.098)
$lnPOP^2$	0.005***	0.019	0.002	0.019***	-0.008***	-0.010***
	(0.002)	(0.016)	(0.003)	(0.003)	(0.003)	(0.003)
lnGDP	0.058**	0.615*	0.280***	0.725***	0.188***	0.130***
	(0.027)	(0.342)	(0.049)	(0.080)	(0.046)	(0.042)
$lnGDP^2$	-0.002	-0.023	-0.013***	-0.041***	-0.014***	-0.010***
	(0.002)	(0.016)	(0.003)	(0.004)	(0.003)	(0.003)
dec00	0.006***	0.001	-0.003	0.003	0.001	0.006**
	(0.002)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
dec10	-0.000	0.004	-0.016**	-0.005	-0.002	0.006
	(0.003)	(0.005)	(0.007)	(0.005)	(0.005)	(0.005)
_cons	2.030***	4.649	-0.314	2.979***	-2.996***	-3.111***
	(0.490)	(5.383)	(1.260)	(0.574)	(0.922)	(0.893)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	51	6	14	9	18	17
N	1479	174	406	261	522	493
R2	0.893	0.961	0.911	0.966	0.862	0.861

Source: Author's estimations based on data as reported in Table 5-3.

Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Table 3. Estimations following equation (1). Dependent variable: FIRE value added (real) share.

	(1) Full sample	(2) Advanced Asia	(3) Emerging Asia	(4) LA	(5) SSA	(6) SSA excl. Mauritius
lnPOP	0.046	-1.115**	-0.063	0.606***	0.045	0.010
	(0.045)	(0.529)	(0.056)	(0.141)	(0.087)	(0.087)
$lnPOP^2$	-0.002	0.037**	0.002	-0.016***	-0.002	-0.001
	(0.001)	(0.017)	(0.002)	(0.005)	(0.003)	(0.003)
lnGDP	0.049***	0.626*	-0.133***	-0.458***	-0.094*	-0.049
	(0.017)	(0.333)	(0.024)	(0.067)	(0.048)	(0.047)
$lnGDP^2$	-0.002**	-0.031*	0.008***	0.025***	0.007**	0.004
	(0.001)	(0.016)	(0.002)	(0.004)	(0.003)	(0.003)
dec00	-0.001	-0.026***	-0.002	-0.007**	0.002	-0.002
	(0.001)	(0.006)	(0.002)	(0.003)	(0.002)	(0.002)
dec10	0.003	-0.032***	0.000	-0.006	0.007*	0.000
	(0.002)	(0.008)	(0.004)	(0.005)	(0.004)	(0.004)
_cons	-0.507	5.302	0.957*	-3.570***	0.088	0.155
	(0.409)	(5.463)	(0.521)	(1.052)	(0.865)	(0.865)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	51	6	14	9	18	17
N	1479	174	406	261	522	493
R2	0.931	0.956	0.919	0.891	0.808	0.806

Source: Author's estimations based on data as reported in Table 5-3.

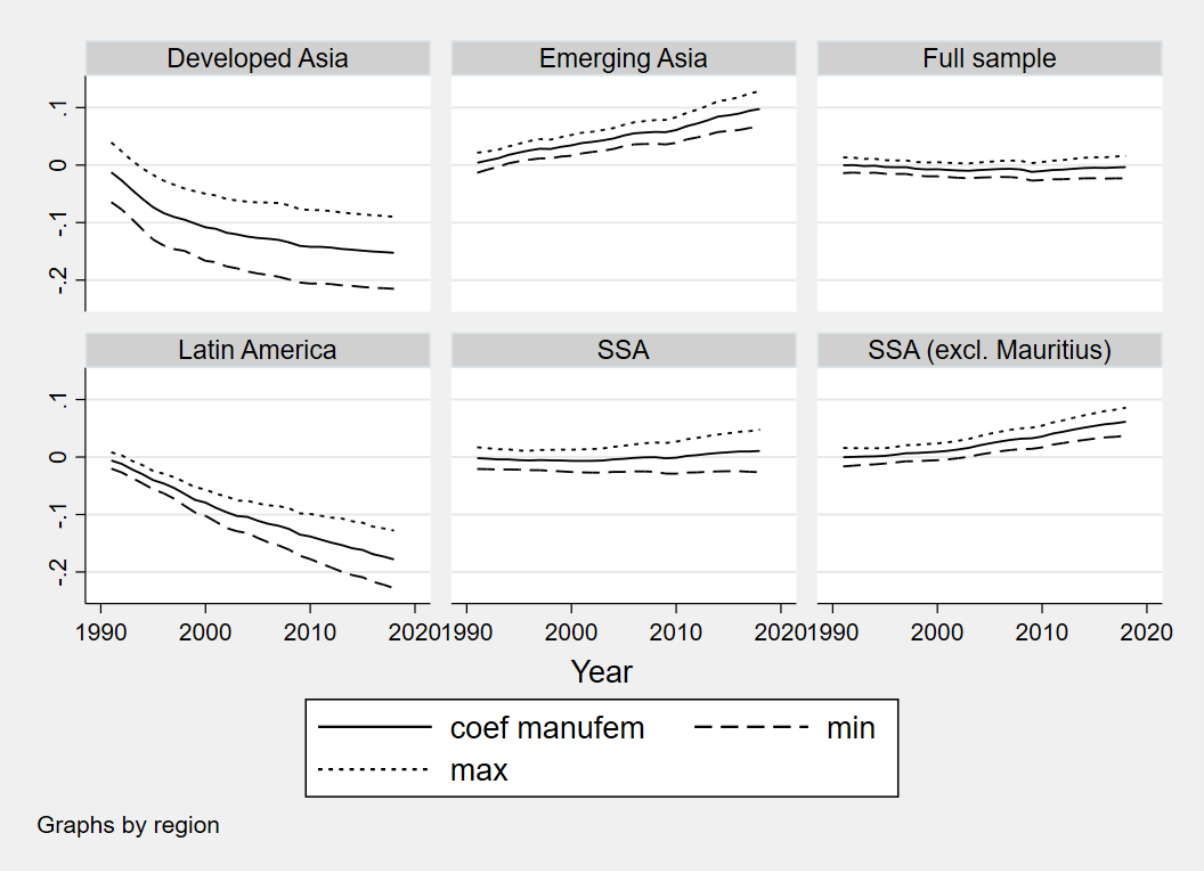
Notes: Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. R2 is the coefficient of determination. N is the number of observations.

Table 4. Estimations following equation (1). Results for other advanced countries.

Dependent Variable	(1) Manufacturing employment share	(2) Manufacturing value added (real)	(3) FIRE employment share	(4) FIRE value added (real)
lnPOP	-0.653***	-5.269***	0.137	-0.116
	(0.144)	(0.876)	(0.092)	(0.140)
$lnPOP^2$	0.016***	0.130***	-0.003	0.008**
	(0.003)	(0.022)	(0.002)	(0.003)
lnGDP	1.073***	0.682***	-0.514***	-0.537***
	(0.087)	(0.145)	(0.044)	(0.061)
$lnGDP^2$	-0.053***	-0.025***	0.029***	0.027***
	(0.005)	(0.008)	(0.002)	(0.003)
dec60	-0.005	-0.043***	-0.005***	0.004
	(0.004)	(0.014)	(0.002)	(0.003)
dec70	**-0.025*** **	-0.025	-0.007***	**0.008***
	(0.006)	(0.017)	(0.003)	**(0.005)**
dec80	**-0.061*** **	-0.034	0.001	**0.011***
	(0.007)	(0.021)	(0.003)	**(0.006)**
dec90	**-0.085*** **	-0.045*	**0.012*** **	**0.014***
	(0.009)	(0.025)	**(0.004)**	**(0.007)**
post00	**-0.107*** **	-0.048	**0.019*** **	**0.033*** **
	(0.013)	(0.032)	**(0.006)**	**(0.011)**
_cons	1.116	46.192***	**0.882**	2.670**
	(1.493)	(8.018)	(0.830)	(1.351)
Country fixed effects	Yes	Yes	Yes	Yes
Number of countries	9	8	9	8
N	510	480	510	470
R2	0.915	0.522	0.965	0.972

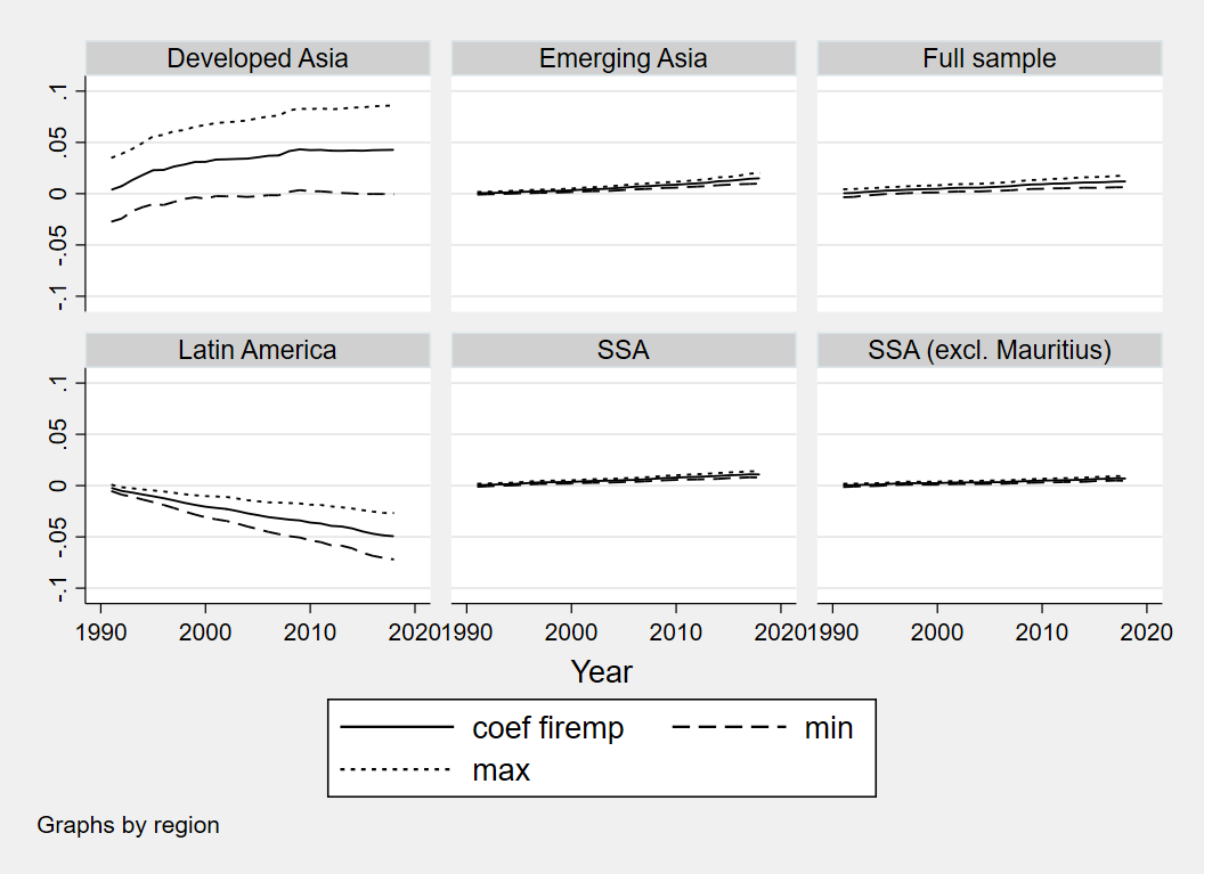
Source: Author's estimations based on data as reported in Table 5-3.
Notes: Robust standard errors in parenthesis. * p < 0.10, ** p < 0.05, *** p < 0.01. R2 is the coefficient of determination. N is the number of observations.

Figure 1: Annual time trend of manufacturing employment share by region.



Source: Author's calculation using the ETD sector-database.
Notes: Dependent variable: manufacturing employment share. Shown are the coefficient estimates of the year dummies and their 95% confidence interval. Countries included in each region are detailed in Table 5-1.

Figure 2: Annual time trend of FIRE employment share by region.



Source: Author's calculation using the ETD sector-database.
Notes: Dependent variable: FIRE employment share. Shown are the coefficient estimates of the year dummies and their 95% confidence interval. Countries included in each region are detailed in Table 5-1.