Policy Target Exchange Rates for Developing and Emerging Economies: A Post Keynesian Analysis

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

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Abstract

This thesis contributes to the Post Keynesian literature by rethinking optimum exchange rates for developing and emerging economies (DEEs). It does so by concentrating on three main aspects: the derivation of a concept, the theory, and the empirics.

The first contribution of this thesis deals with the development of the concept of the policy target. This thesis argues that the equilibrium concept can be interpreted as a policy target from a perspective that considers Keynes' and Post Keynesian methodology and theory and its relevance for policymaking. Policy targets are conceived as long-period optimum states, which are ideal states from the point of view of production. The concept is a hypothetical construction in the sense that there is an assumption that the state of expectations remains constant as there will not be surprises.

The second contribution of this thesis deals with the development of two policy target models for exchange rate analysis: Policy Target Exchange Rate (PTER) models. It builds on the New Developmentalism's concept of the Industrial Equilibrium Exchange Rate (IEER), a competitive level of the exchange rate for industrial development, considering the structural pressures arising from financial factors in the context of DEEs and rising financial globalisation. It builds two concrete policy target exchange rate models that incorporate the structural pressures emanating from financial factors in DEEs. This thesis contends that policy target exchange rate models need to consider the distortions and pressure arising from the financial side and not only the real side as it is currently the state of the IEER model

The third contribution of this thesis deals with the empirical application of the PTER models. It proposes one possible way to address the issue of computing PTERs and applies the methodology to a set of countries with different experiences: Mexico, Brazil and South Korea. Specifically, it addresses further aspects and specificities to determine key normative inputs based on empirical analysis of the main macroeconomic variables.

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Chapter 1
Introduction

1.1. Why is an Analysis of Equilibrium Exchange Rates Important for Post Keynesian theory?

In recent decades, a distinctive aspect of exchange rates in developing and emerging economies (DEEs) has been their volatility and large swings, often caused by short-term financial flows. As a result, in these economies, political and academic debates often place the degree of "misalignment" of the exchange rate from some optimal exchange rate at the centre of the analysis.

These empirical phenomena, that is the large swings in exchange rates and values often incompatible with underlying real sector dynamics, is a challenge to neoclassical equilibrium exchange rate theorists who subscribe to the notion that the exchange rate will automatically adjust to its optimal long-term value and where free-floating regimes are an optimal policy. Post Keynesian theorists, who explain exchange rates dynamics with strong attention to the role of uncertainty and expectations, reject the notion of an equilibrium exchange rate towards which the exchange rate will adjust by market forces (i.e. Harvey, 1991; Kaltenbrunner, 2011). Nevertheless, for this approach the challenge remains to specify an exchange rate which would be sustainable or optimum for the economy and could act as an appropriate reference for policy formulation.

This thesis adopts the latter view and aims to propose a policy target exchange rate framework consistent with Post Keynesian theory. It thus, develops the argument that an approach to the exchange rate, which identifies a sustainable or optimal exchange value, can be reconciled with Post Keynesian analysis as long as it is interpreted normatively as a target to policy rather than a value market-forces will adjust to automatically. It develops the concept, the theory, and the empirics of such a policy target exchange rate (PTER), which is hypothetically capable of neutralising and stabilising the adverse effects of financial variables on exchange rates.

The general idea of a policy target exchange rate put forward in this thesis draws from two main motivations.

First, the general use of the terms currency 'undervaluation' and 'overvaluation', even in Post Keynesian economics, suggests the existence of an optimum value. Academics and policymakers often debate whether a currency is 'artificial', 'weak' or 'strong'. Post Keynesian authors are no exception to this (Moore, 2004). The notion of an optimum level of the exchange rate is necessary to assess whether markets or governments have set the exchange rate at the right level. Indeed, exchange rate volatility, misalignment and its repercussions on the economy have gained increasing attention from Post Keynesian economists (Alcantara-Alencar, et al., 2018; Harvey & Deprez, 1999; Harvey, 1991; Harvey, 2019,; Perraton, 2014).

Second, the Post Keynesian support for active macroeconomic management leads us to the exploration of policy target exchange rates as a key objective of exchange rate policy. Post Keynesian author's emphasis on the exchange rate's competitive levels (Ferrari-Filho & De Paula, 2008) that arises from their support to exchange rate management, demands a thorough examination of the equilibrium exchange rate approaches.

This discussion shows that identifying an optimum exchange rate value, and potential deviations thereof (misalignment), is a crucial issue even for Post Keynesian economists.

1.2. Existing Equilibrium Approaches to the Exchange Rate and Research Gaps

Neoclassical equilibrium exchange rate theory remains tied to the notion that market outcomes are optimal. When interested in exchange rate assessments and misalignments, economists often appeal to approaches like the Purchasing Power Parity (PPP), the Fundamental Equilibrium Exchange Rate (FEER), and the Behavioural Equilibrium Exchange Rate (BEER). These popular approaches conceive the economy as a self-equilibrating system and the exchange rate as a price that creates equilibrium in the goods or the asset markets. Despite its well-advanced modelling techniques and the wide range

of variables considered for exchange rate determination, its use for policy formulation to address exchange rate misalignments is limited given that it is about creating the right conditions (i.e., no barriers such as free markets, free-floating regimes) which will facilitate the automatic realisation of optimal outcomes rather than a deliberated policy action. Economists, therefore, limit themselves, on many occasions, to creating such conditions so that the exchange rate itself reaches optimum levels.

Heterodox equilibrium exchange rate theory has followed a distinctive and different path. Rather than assuming market-equilibrating forces, these approaches either acknowledge permanent states of disequilibrium or adopt a more normative perspective which sets out where the exchange rate "should" be (with no assumption that it should be). One approach which takes the first perspective is the Alternative Approach to Long-Run Real Exchange Rates (AALRER) by Anwar Shaikh. The AALRER approach argues that the exchange rates come at rests at levels that maintain the actual state of things (i.e., lower competitiveness relative to other nations) and, therefore, an approach consistent with trade imbalances. As such, it is a positivist framework devoted to explaining the real exchange rate behaviour; behaviour that might be consistent with persistent disequilibria.

The second 'equilibrium' approach to the exchange rate in heterodox economics is the Industrial Equilibrium Exchange Rate (IEER) underpinning New Developmentalism (ND). The IEER is defined as a competitive level of the exchange rate, a non-market determined one, which will be favourable for industrial development. The IEER approach presents an alternative theory in which the value of the exchange rate is different to its market price, and the term equilibrium refers to the value of the exchange rate. For the IEER proponents, such an equilibrium neutralises the factors overvaluing the exchange rate, namely, the Dutch Disease, and deliberated policy action is needed so that the IEER prevails. Thus, whilst this approach acknowledges the existence of an optimum level, this level is a normative one and might only be achieved through appropriate policy actions.

The policy target exchange rate proposed in this thesis is in the tradition of the ND IEER rate. However, whereas the IEER underestimates the financial factors'

structural role in their exchange rate determination scheme and considers these as cyclical, this thesis puts analytical emphasis on the structural and persistent pressures financial variables place upon exchange rates. Thus, this thesis represents a more complete understanding in line with Keynes and Post Keynesian methodology and theory of optimum exchange rates. Accordingly, this thesis aims to identify optimum exchange rates that are most conducive to structural change in DEEs. In this thesis approach, the optimum exchange rate is concerned with achieving a satisfactory external balance and concerned with structural change as it supports the manufacturing sector.

This thesis endorses a Post Keynesian approach to the exchange rate in that it assumes that nominal and real exchange rate values are relevant when analysing target levels of the exchange rate, an idea that emerges from the Post Keynesian rejection of the classical dichotomy. Moreover, it subscribes both to the tenets that the role of finance is important for output and employment determination, and the principle of Keynesian uncertainty. In addition, it is motivated by the Post Keynesian argument that nowadays, the exchange rate is a variable mainly affected by short-term portfolio decisions.

1.3. Research Questions and Main Contributions to the Literature

Based on the above motivation and research gaps, this thesis is guided by the following research questions:

RQ1. How can equilibrium exchange rates be conceived methodologically and empirically from a Post Keynesian perspective?

RQ2. How can existing Post Keynesian equilibrium exchange rate approaches be extended to take into account the pressures created by financial flows?

RQ3. How can the resulting equilibrium exchange rate model(s) be operationalised for country-specific cases?

The lack of a consistent Post Keynesian equilibrium approach to exchange rates can be explained as follows. On the ontological side, Post Keynesian economists generally regard the idea of ‘equilibrium’ in markets with extreme

scepticism, both because they see markets as being in perpetual states of disequilibrium and dynamic adjustment, and because the fundamental uncertainty that they see as underlying economic decisions makes it impossible to know what an equilibrium should be. This thesis engages with this criticism and proposes the concept of the policy target exchange rate, which has its roots in Keynes and Post Keynesian equilibrium methodology. The proposal reflects the need to interpret the concept of the equilibrium as a policy target – a optimum exchange rate- a concept that provides the grounds on which to base policy decisions. By developing the concept of policy target exchange rates from a Post Keynesian perspective, the thesis contributes to the literature on three levels: the concept, the theory, and the empirics of exchange rate economics.

First, on the conceptual level, this thesis considers particularly important to rethink the concept of equilibrium as a policy target from a perspective that takes into account Keynes' and Post Keynesian methodology and its relevance for policymaking. To do so, it emphasises the importance of Keynes' chapter 18 of The General Theory (GT), which explains the process of building an economic model and how it is relevant for policy considerations. Thus, it is argued that Keynes' insights regarding the process of building an economic model are useful as it allows the economist to build a model to derive policy targets. Furthermore, policy targets are conceived as long-term optimum states, which are ideal states from the point of view of production -a situation in which the economy is operating at full capacity or something close. This conception is informed by Keynes' and Post Keynesian authors' understanding of the long-period positions. It is a hypothetical construction in which there is an assumption that the state of expectations remains constant as there will not be surprises. However, it does not mean that the economy will ever reach such a policy target. It can be the case that such a state is never achieved, precisely, given the existence of such surprises.

Policy targets are characterised by being context and time-specific. That is, such positions are non-permanent and non-necessarily robust. The former implies that its validity depends on the conditions (i.e., industrial policies, exchange rate policy, capital account regulations, among others). The latter

claim that these positions are non-necessarily robust. This implies that changes or alterations on the factors that sustain policy targets' effectiveness would imply figuring out changes in macroeconomic policies adequate to the new situation.

Second, on the theoretical side, this thesis extends the IEER approach so as to incorporate financial variables into its determination. It builds two concrete policy target exchange rate models that incorporate the structural pressures emanating from financial factors in DEEs.

This thesis contends that policy target exchange rate models need to consider the distortions and pressure arising from the financial side and not only the real side as it is currently the state of the IEER model. As such, the exchange rate becomes a key variable to neutralise and stabilise the effect of financial variables on exchange rates. Based on such theories, this thesis proposes two PTERs: the PTER based on an application of Keynes' Interest Rate Parity (PTER-irp), and the PTER based on Keynes' transfer problem and Thirlwall's law (PTER-tp). The former is a rate that acknowledges structurally high-interest rates in DEEs and aims to create a situation in which no profit is made, as the exchange rate adjustment equalises the domestic and foreign rates of return. The latter is a rate that acknowledges the pressures arising from foreign currency-denominated liabilities and the impossibility of running persistent current-account deficits. Thus, it models a hypothetical future spot exchange rate capable of helping an economy to service its foreign currency-denominated liabilities over time. These two exchange rates aim to provide references on which central banks can base their attempts to influence the value of the future spot exchange rate.

Third, on the empirical side, this thesis aims to propose one possible way to address the issue of computing policy target exchange rates. It contributes to the literature by building a methodology that draws extensively on existing work on equilibrium exchange rates adapted to account for the nature of the PTERs. Specifically, this thesis addresses further aspects and specificities to determine key normative inputs based on empirical analysis of the main macroeconomic variables: real exchange rates, net foreign assets, the trade balance and the income balance. The thesis shows the process of computing

the PTERs step by step with an emphasis on showing how, by including financial determinants, namely interest rates and external liabilities, exchange rate policy targets are affected in different forms. It, therefore, highlights the importance of including these financial factors into the exchange rate determination as the direction of interest rates and external liabilities will dictate a different path for the optimum exchange rates. In addition, by conducting country case studies of Mexico, Brazil and South Korea, countries with different experiences and developments of key indicators, this thesis shows the challenges of calculating the policy targets given the differences in country-specific characteristics.

1.4. Thesis Structure

The remainder of this thesis is divided into five chapters.

Chapter 2 reviews the neoclassical and heterodox literature on equilibrium exchange rates and policy. It reviews the neoclassical approaches to the exchange rate commonly used to assess exchange rate misalignment: the PPP, the BEER, and the FEER. In addition, it reviews the heterodox equilibrium approaches to the exchange rate: the AALRER and the IEER. Particular attention is paid to the current state of the IEER approach and its failure to consider how financial factors might alter the assessment of an appropriate exchange rate in DEEs. These considerations, the thesis argues, are particularly important for these economies given their structurally high-interest rates and a process of accumulation of external liabilities.

Chapter 3 presents a critical discussion of the concept of equilibrium in Keynes' and Post Keynesian theory to develop the policy target concept in light of the Post Keynesian market participation theory of economic policy, a framework where the policymaker must normatively choose economic policy's objectives. It argues that the concept of equilibrium is both relevant at an analytical and a policy level. In particular, for this thesis purposes, the concept of equilibrium is a policy-relevant one as it allows one to inform the characteristics of the policy target. In particular, it utilises Keynes' insights regarding the process of building a model explained in chapter 18 of the GT and his writings towards the GT, where the notion of long-period position

identified with positions of optimum output, allows this thesis to characterise the nature of the policy target. Based on that, the policy target is associated with a long-period state of optimum output from the production point of view. The policy target embraces the idea that there is no tendency towards it in any length of time. Thus, active macroeconomic management is needed to achieve the policy target.

Chapter 4 reconciles the IEER approach with financial factors, that is interest rates and foreign-currency-denominated liabilities. It defines the concept of the Policy Target, in the exchange rate sphere, giving rise to the concept of the PTER drawing from Robinson's and Keynes' notions on appropriate policy levels. The chapter develops two hypothetical and theory grounded Keynesian models, one PTER that incorporates Keynes' interest rate parity theory and the other PTER that incorporates Keynes' transfer problem and emerges from Thirlwall's general idea. The basic idea of the first model is to create a future spot exchange rate capable of affecting yield-driven foreign financial flows profitability by adjusting the exchange rate and thus the domestic and foreign rate of return is driven towards equality - interest rates adjusted with exchange rates. The second model emerges from the idea that current account deficits cannot be financed forever, and external liabilities need to be repaid at a point in time. It thus highlights the limits and the pressures that arise from borrowing from abroad and the exchange rate's role as a key instrument to overcome and avoid Balance of Payments difficulties.

Chapter 5 presents and proposes a methodology to compute the two PTER models. It recalls the equations derived in chapter 4 and discusses further specificities. The chapter proposes the criteria and one possible way to compute key inputs necessary for deriving the PTER models' values. As an illustrative exercise, the chapter takes the case of Mexico, Brazil and South Korea to demonstrate the challenges that country-specific characteristics pose to the computation of the PTERs. Computing the PTERs for a set of different countries highlights the approach's context and time-specific nature given the fact that its computation is not exempt from considering the economies characteristics, which can, complicate its estimation. Estimates are far from 'true' values given the challenges that constructing main inputs

for the PTERs, such as the unit labour costs series poses. Results show that taking into account financial factors indeed modify the optimum exchange rate considerably. Countries with high-interest rates, such as Mexico and Brazil, showed that a weaker exchange rate would have been needed to neutralise yield-driven foreign financial flows' profitability. This contrast with South Korea's case, where the PTER-irp remained close to the IEER as interest rates remained close to the foreign interest rates. On the other hand, debtor countries may find it challenging to implement the PTER-tp as such a level depends on the size of the current account gap, the trade balance semi-elasticity and the income balance semi-elasticity, and low values of these semi-elasticities yield higher values which may be difficult and unrealistic to achieve.

Chapter 6 concludes and presents policy considerations. It presents a detailed discussion on how the PTERs may be implemented in light of financial globalisation and changing financial conditions. The chapter argues that several policies and instruments support the implementation of the PTERs namely: i) influencing current exchange rate expectations through the public announcement of the PTER and its commitment to achieving such a value; ii) targeted foreign exchange market intervention in the spot and the forward markets, supported by a policy of reserves accumulation, and; ii) comprehensive capital account management. In addition, it discusses the possibilities and constraints that the implementation of the PTERs may face. Furthermore, it presents this thesis's limitations and goes beyond analysing a set of barriers that achieving the PTERs may face. Resistances are classified as: those emerging to the opposition to exchange rate management; those that arise from the direction of the benefits of an exchange rate realignment; and those political resistances to changes resulting from a successful exchange rate policy (the social and political changes it promotes). Finally, it argues that exchange rate policy alone will not be enough but needs to be complemented with industrial policy to boost structural change.

Chapter 2
On Equilibrium Exchange Rates and Policy: A Review of the Literature

2.1. Introduction

This chapter presents a critical review of equilibrium exchange rate theories with a view to prepare the ground for the Policy Target Exchange Rate (PTER) model, which will be presented in chapter 4. The exploration of equilibrium exchange rate theories is performed for both neoclassical and heterodox approaches. The focus is on approaches useful for policy assessment, understood as those commonly used to determine the degree of over and undervaluation of the exchange rate, with the exception of the Alternative Approach to Long Run Real Exchange Rates (AALRER) .

Three main equilibrium exchange rate theories in neoclassical economics are commonly used for policy assessment, namely Purchasing Power Parity (PPP), Fundamental Equilibrium Exchange Rate (FEER) models, and the Behavioural Equilibrium Exchange Rate (BEER) (Clark & MacDonald, 1998; Isard, 1995; MacDonald, 1997). These fundamental based models have been of interest to policymaking, especially by institutions such as central banks and the International Monetary Fund (IMF). The PPP hypothesis, for example, is used by policymakers as rule-of-thumb (Shaikh & Antonopoulos, 2013) when "a country establishes or adjusts an exchange rate peg, it generally relies on some type of quantitative frameworks, such as the PPP formula, in order to help assess the appropriate level for the new parity" (Isard, 1995, p. 70). The International Monetary Fund's (IMF) Consultative Group on Exchange Rate Issues (CGER) has extended and used these methodologies to assess exchange rate developments in developing and emerging economies (DEEs).

One characteristic of neoclassical approaches is that they are mainly interested in predicting the future course of the exchange rate over different time horizons. These approaches have been shaped by positivist and normative characteristics but share the view that the exchange rate will be tending towards optimality if the conditions that ensure markets operate efficiently are created. Their notion of equilibrium exchange rates, however, is

linked to variables which are the driving force determining currency prices, known as ‘fundamentals’. Fundamentals are characterised in the literature as a those set of variables that the exchange rate needs to adjust to in order to ensure market equilibrium. That is, exchange rate movements act and are a sufficient condition to equilibrate the goods or assets market.

Equilibrium exchange rate theories in heterodox economics are scarce. On the one hand, one can find the Alternative Approach to Long-Run Real Exchange Rates (AALRER), which models competitiveness as a function of the labour costs of the most efficient producer (Shaikh & Antonopoulos, 2013). It is an approach that explains why the exchange rate does not adjust automatically to produce trade surpluses. Instead, the authors argue that real exchange rates come at rest at levels that maintain lower labour costs. It is concerned about what these authors call the “centre of gravity” of the real exchange rate, capital flows, and perpetual trade imbalances. The exchange rate cannot automatically adjust itself and eliminate such imbalances.

On the other hand, the Industrial Equilibrium Exchange Rate (IEER) approach argues that there exists a level of the real exchange rate appropriate for economic development (Bresser-Pereira, 2006; Bresser-Pereira, et al., 2014; Bresser-Pereira, 2017). Economic development for these authors is defined as achieving growth and stability with a combination of free markets and state intervention, where there is a primacy of the manufacturing sector and structural change. Both AALRER and IEER proponents’ conception of exchange rates are unified in their rejection of the exchange rate acting to adjust the trade balance automatically.

Opposite to the neoclassical approaches, these alternative models are not commonly used for exchange rate policy assessment. However, the IEER approach’s characteristics make it a potential candidate for determining a potential policy exchange rate target. It is an appropriate level of the exchange rate for industrial development that boosts output and employment and seeks to address the chronic currency overvaluation in DEEs. However, as elaborated later in this thesis, whereas the focus on manufacturing competitiveness is important, it is not sufficient in globalised financial markets and the pressures these exert on exchange rates. Financial factors have

indeed shaped the experience of DEEs. That is, the negative impact of financial factors on the exchange rate, mainly that of interest rates and the stock of foreign-currency-denominated liabilities.

This chapter is divided into three sections. The first section discusses the PPP, the BEER, and the FEER approaches. The second section presents the AALRER and the IEER approaches with special emphasis on the latter as it provides a basis on which to build a coherent understanding of policy targets. The third section concludes with the implications and the ground for an alternative framework for exchange rate determination in DEEs.

2.2. Equilibrium Exchange Rate Approaches in Neoclassical Theory

There is a wide range of equilibrium exchange rate approaches which have evolved over time in neoclassical economics. However, few are used for policy assessment by domestic and international institutions. One can argue that three models have traditionally dominated exchange rate policy discussions: Purchasing Power Parity hypothesis, Behavioural Equilibrium Exchange Rate models, and Fundamental Equilibrium Exchange Rate calculations. Proof of this is that the IMF, in line with its mandate, conducts exchange rates assessment to advice countries to prevent a balance of payments difficulties using models inspired by these approaches (see for instance Aydin, 2010 and Cubeddu, et al., 2019). These models are at the core of the CGER framework.

2.2.1. The Purchasing Power Parity Hypothesis

One of the oldest, if not the oldest equilibrium approach to exchange rates, is the PPP Hypothesis. The PPP hypothesis links exchange rate behaviour to the ratio of the domestic-to-foreign price level over the long run. This hypothesis is linked to the idea that prices worldwide should equalize, and exchange rate movements will accommodate the trade balance. That is, the role of the exchange rate is to adjusts if domestic prices increase, as this causes a loss of competitiveness, thus the nominal exchange rate need to depreciate to ensure that the trade balance is restored. The origin of the PPP terminology can be traced back to World War I. During these years, high inflation rates in industrial economies focused the debate on the right levels for the nominal

exchange rate (Cassel, 1918 in Taylor and Taylor, 2004). Thereafter, the PPP hypothesis has become a central theme in how international economists think about exchange rates, where the global economy is thought of as a self-equilibrating system (Taylor & Taylor, 2004). The PPP literature considers this hypothesis to be an anchor upon which to explain long-run real exchange rates.

The idea behind the PPP hypothesis is that one unit of domestic currency should have the same purchasing power to buy an identical basket of goods abroad at the prevailing exchange rate (Isard, 1995). In other words, prices of goods and services at home and abroad must be the same when translated to the same currency so that there exists a parity in the purchasing power. The PPP is thus based on the Law of One Price (LOP) as prices will equalise since arbitrage will remove price differences. Therefore, the prices of tradable goods in one country should be equivalent to those in the foreign country at the current exchange rate. The PPP hypothesis is indeed a generalised form of the LOP. The theory is valid under the three following conditions. If these holds, the exchange rate cannot change its purchasing power parity value. First, tradable goods should obey the LOP when there are no transportation cost, tariffs and quotas. Second, the prices equalisation process and equal production functions bring the non-tradable prices to equality worldwide. Third, if goods and services receive exactly alike weights in the price indices at home and abroad (Isard, 1995, p. 60).

Formally, the *absolute* version of the PPP is defined as 2.1:

$$(2.1)\ e = \frac{p}{p^*}$$

where: e is the nominal exchange rate measured in units of foreign currency per unit of domestic currency; p is the domestic price level index (for good and services), and $p^*$is the foreign price level index (for good and services). It is said that the PPP holds when the ratio of domestic and foreign price levels equals to 1 (Gagnon & Hinterschweiger, 2011).

The *relative* version of the PPP hypothesis assumes that the nominal exchange rate maintains a constant equitable relation to the price ratio that reflects the obstacles to trade (Dornbusch, 1985), that is:

$$(2.2)\quad \hat{e} = \hat{p} - \hat{p}^{*}$$

This version is a restatement of the absolute version incorporating changes in the exchange rate and relative price levels. Thus, $\widehat{\ }$ denotes percentage changes. Equation 2.2 implies that a increase in the domestic price level relative to the foreign price level, implies a depreciation of the exchange rate.

As already noted, the goods arbitrage guarantees the equilibrating mechanism in the context of the PPP hypothesis. Trade flows driven by arbitrage opportunities will bring prices to equilibrium. Hence, money inflows and outflows resulting from the inequality in terms of purchasing power- will move price levels to accommodate the trade balance. Overall, this theory states a systemic tendency for balanced trade, which is a recurring theme in neoclassical models, restored by adjustments in the nominal exchange rate.

Objections to this hypothesis have taken different paths. On the one hand, the existence of transaction costs, tariffs, and taxes in trade violates one of the principles underpinning the LOP. (Taylor & Taylor, 2004). On the other hand, the calculation of price indices differs from country to country and products are not all the products contained in these indices are traded. In addition, the PPP assumes the real exchange rate to be a constant, an assumption that is criticised and reconsidered by BEER and FEER models, which are analysed further below. According to Kaltenbrunner (2011), it is not reasonable to argue that the real exchange rate is constant "if the real exchange rate adjusts to equilibrate the trade balance, it should react to factors that change the competitiveness of and/or demand structure for domestic goods" (p.30).

Criticisms to the PPP theory, especially those related to the real exchange rates' constancy, have moved neoclassical economics to take a different path in explaining exchange rate behaviour and turned the attention to the real exchange rate rather than nominal exchange rates. Some argue that PPP -type of models are more to academics' interest than policymakers

(MacDonald, 1999). Attempts to explain exchange rate deviations have moved the attention to developing BEER -based models to specify and model the fundamental factors that influence exchange rates. This chapter will now address the BEER approach, which is considered an approach that considers the actual factors determining the real exchange rate behaviour.

2.2.2. The Behavioural Equilibrium Exchange Rate

The BEER approach has the aim of evaluating the behaviour and the level of the real effective exchange rate (REER) over the long run. It is a positivist approach since it displays the factors that determine the actual behaviour of the exchange rate. It uses the variables that the literature has pointed as those that are the actual fundamental determinants setting the exchange rate (MacDonald, 2000).

The BEER is based on the direct empirical (econometric) analysis of the relationship between the REER and its current fundamental determinants (Clark & MacDonald, 1998). The BEER is expressed in a general form as:

$$(2.3)\ s_t = \beta_1{}' Z_{1t} + \beta_2{}' Z_{2t} + \tau T_t + \varepsilon_t$$

where, s_t is the BEER, Z_1 is a vector of macroeconomic fundamentals that influence the real exchange rate over the long-term, Z_2 is a vector of macroeconomic fundamentals that affect the exchange rates over the medium-term, T_t is a vector of transitory factors that influence the exchange rate in the short-run, and ε_t is the error term (Driver & Westaway, 2004). Short-run factors mainly include the risk-adjusted interest parity condition, where the risk premium is a function of the relative supply of government debt. On the other hand, long-run factors are identified with the terms of trade, relative prices (tradable to non-tradable), and the net foreign assets relative to GDP. These fundamentals are computed relatively to the foreign counterpart.

The exchange rate is assumed to be in equilibrium during the period of study (MacDonald, 1997). The equilibrium exchange rate is expressed in two forms. One is the current equilibrium real exchange rate, which is consistent with the fundamental determinants' current values. The other is the equilibrium real exchange rate consistent with the sustainable values of the fundamental

determinants computed by obtaining values of the fundamentals smoothed using the Hodrick-Prescott filter. This allows the model to distinguish between transitory deviations and movements away from sustainable levels.

To model the exchange rate, the BEER uses the Johansen methodology and the Vector Error Correction to model to look for a stable behavioural link among the real exchange rate and fundamentals (Clark & MacDonald, 1998).

The BEER approach is mainly criticized for its deficient links from economic theory and the lack of robustness of the reduced form equations commonly computed (Driver & Westaway, 2004; López-Villavicencio, et al., 2012).

In the next section, this thesis moves on to analyse the FEER approach, which has its origins on concerns about limiting exchange rate volatility. Despite not being a model for exchange rate determination *per se*, the FEER is a medium-term normative approach that allows a country to achieve both internal and external equilibrium as will now be explained.

2.2.3. The Fundamental Equilibrium Exchange Rate

The FEER is a desired level of the real exchange rate consistent with "ideal economic conditions" guaranteeing the medium-term macroeconomic equilibrium (Wren-Lewis, 1992). It is an approach which incorporates normative features, but ultimately remains tied to the notion that the exchange rate will tend towards optimality over time. The FEER is a medium run approach in which ideal macroeconomic conditions are understood as the simultaneous achievement of internal and external balance (Driver & Westaway, 2004). The internal equilibrium is given by the Non-Accelerating Inflation Rate of Unemployment (NAIRU). The external balance is characterized as the net flow of capital consistent with internal equilibrium (Williamson, 1994).

Williamson's (1994) FEER seek to tackle the ambiguity of the equilibrium rates by referring to the analogue of the 'fundamental disequilibrium'[1]. Indeed, the

[1] Williamson (1994) argues this concept "provided the criterion for a parity change in the Bretton Woods system. […]the term acquired a reasonably clear meaning over the years: in particular, it implied an exchange rate that was inconsistent with medium-run macroeconomic balance" (p. 179).

FEER has its origins in the proposal for global macroeconomic management put forward by the *Institute for International Economics* which relies on the 'target zone system of exchange rate management'. Thus, it highlights the benefits of stable exchange rates, but it does so for developed countries (McKinnon, 1984; Williamson, 1986). The FEER approach incorporates the notion of a sustainable external balance following the idea of international economic policy coordination[2] and can be seen as an equilibrium model of global imbalances (Williamson, 1985; 1994).

The FEER is expressed as equation 2.4:

$$(2.4)\ FEER = \frac{(-\overline{KA} - b_0 - b_2\overline{y_d} - b_3\overline{y_f})}{b_1}$$

Where $\overline{KA}$ is the sustainable capital account, $\overline{y_d}$ is the domestic income at full employment, and $\overline{y_f}$ the foreign income at full employment (Clark & MacDonald, 1998).

There are four main ways of computing the FEER. The first is a value derived from a Global Econometric Model, and the FEER is the solution to the model (Williamson, 1994). The second possible option is a value derived following equation 2.4. The third way is through a partial equilibrium approach using foreign trade model equations (Driver and Westaway, 2004). The last and fourth methodology computes a consistent set of FEER's values using a symmetric matrix inversion method (SMIM) (Cline, 2008).

Several objections to the FEER approach are often made. On a theoretical level, one can raise three objections. First, this approach is criticized because the FEER estimation does not consider real determinants of exchange rates. The main reason is that the approach focuses on the determinants of the current account, which is then calibrated at full employment values. It is,

[2] In this respect, Wiliamson (1983) argues that "[i]t is therefore a matter of importance that the estimates of FEERs, which provide the central rates for target zones, be mutually consistent. One would obviously need some international mechanism to check for such consistency and or negotiate changes in target zones when it is lacking. The obvious organization to take on this task is the IMF, which would at last achieve a focus for its responsibilities for the surveillance of exchange rate policies that has been sadly lacking up to now" (p. 73).

indeed, not a complete theory of exchange rate determination. Second, the difficulty of estimating the potential output that is associated with the concept of the NAIRU. Third, there is no explanation of how the adjustment mechanism operates driving the real exchange rate towards equilibrium (Clark & MacDonald, 1998). The latter factor is driven by a lack of theoretical analysis of how equilibrium adjustment will work. However, it is motivated by the assumption that the current real exchange rate will converge to the FEER over time (Clark & MacDonald, 1998). On an empirical level, the last theoretical objection has guided recent work to misguidedly consider the FEER approach as an improvement over the PPP hypothesis in explaining the medium to long term trends of the real exchange rate (Barisone et al., 2006). As pointed out by López-Villavicencio et al. (2012) this implies that the FEERs are cointegrated with the real exchange rates, and therefore, it explains the real exchange rate long-run path.

However, the increasing importance of financial flows setting exchange rates has made it more difficult to sustain the exchange rate role as a market equilibrating price. Exchange rates do not automatically adjust to restore external equilibrium. Opposite to this line of reasoning, heterodox approaches have focused their attention on linking the real exchange rates to productive and industrial capacities of economies.

2.3. Equilibrium Exchange Rate Approaches in Heterodox Theory

As highlighted above, heterodox approaches to equilibrium exchange rates are scarce and are not commonly used for exchange rate policy assessment. Among them, we find the Alternative Approach to Long Run Exchange Rates proposed by Anwar Shaikh and the Industrial Equilibrium Exchange Rate proposed by Luiz Carlos Bresser-Pereira. Two main characteristics set them apart from the neoclassical approaches above. First is the fact that these approaches pay key attention to the specific industrial structure of the economies. This is reflected in their consideration of the unit labour costs as central determinants of exchange rates. The second is that these approaches acknowledge that the actual exchange rate is not around its appropriate value

and, consequently, trade imbalances can persist. However, while the IEER is concerned about promoting structural change rather than just external equilibrium and assumes a more normative position, the AALRER is concerned about the behaviour of real exchange rates, which will depend on the economies industrial structure and adopts a more positivist position.

2.3.1. The Alternative Approach to Long Run Exchange Rates

The AALRER adopts a positivist position and models the real exchange rate's centre of gravity over the long term. It considers two focal points: first, the notion of 'absolute advantage', that is the ability of a country to produce goods at a lower price and more efficient than others, and second, the pressures arising from competition, understood as the process where firms try to maintain their market shares through constant adjustments of prices and costs[3] (Shaikh, 1991; 2013). In this approach, the centre of gravity of the real exchange rate is determined by the competitive cost structures of the price-leading industries of tradable goods in two countries. The centre of gravity is a long-run equilibrium position that assumes that prices and profits are equalized. This implies that producers are employing resources in the best way, allowing them to have a uniform rate of profit (Cunningham, 1995).

Shaikh's approach revisits Adam Smith's, David Ricardo's and Karl Marx's conceptions of the 'natural price' and the 'price of production' (Shaikh, 1991), which are depicted as the Law of One Price (LOP). It is assumed that firms will sell their products at a common price, which is the lowest price, determined by the most efficient producer[4] ('best practice producers'). This assumption causes divergences of profit margins and profit shares within an industry as firms are forced to sell at a common price (Shaikh, 1991). It is also assumed that the most efficient producers will have similar profits and determine production methods. The latter implies that the average industry' price

[3] Shaikh (2016) conceives competition as a central force "Competition within an industry forces individual producers to set prices with an eye on the market, just as it forces them continually try to cut costs so that they can cut prices and expand market share. Cost-cutting can take place through wage reduction, increases in the length or intensity of the working day, and through technical change" (p. 259).

[4] In this vein, Antonopoulos (1997) states that "[t]he regulating firm is not expected according to this theory to be the same through time. In other words, the hierarchy of worst to best, insofar as cost of production is concerned, is a fluid one" (p. 48).

gravitates around a certain level, as shown in 2.5, and to a normal rate of profit. Hence, according to Shaikh and Antonopoulos (2013), in a given country, prices of production of tradable goods can be linked to the vertically integrated unit labour cost v_i, and the vertically integrated profit wage ratio q_i, as shown in equation 2.6:

$$(2.5)\ p_{ik} \approx p_i \text{ and } p_i \approx p_i *$$

$$(2.6)\ p_i *= v_i[1 + q_i]$$

Assuming two commodities *i* and *j,* equation 2.7 states that for any two industries, located in the same country, relative prices approximate to the relative vertically integrated unit labour costs:

$$(2.7)\ \frac{p_i}{p_j} \approx \frac{v_i}{v_j}$$

This also applies assuming a two-country model. The relative prices, expressed in a common currency, are given by the relative real unit labour cost of the most efficient producers of tradable goods:

$$(2.8)\ s = \frac{pe}{p*} \approx \frac{v_r}{v_{r*}}$$

where s is the real exchange rate, e the nominal exchange rate, p is the price of domestic tradable goods, $p*$ is the foreign tradable goods' price, v_r is the most efficient producer's vertically integrated unit labour cost in the domestic economy, and v_r* is the most efficient producer's vertically integrated unit labour cost in the foreign economy (both unit labour costs for tradable goods in a common currency). The model further assumes that the prices of two baskets of tradable goods are equalized after adjusting for transportation cost, tariffs and quotas (Shaikh & Antonopoulos, 2013), that is expressed as:

$$(2.9)\ p_{cT}e \approx p*_{cT}$$

Denoting the general price level of the domestic and foreign economy as p_c and p_c*, respectively, it is possible to rewrite the real vertically integrated unit labour cost as:

$$(2.10)\ v_r \equiv \frac{v}{p_c}$$

and let τ be the tradable/non tradable adjustment ratio,

$$(2.11)\ \tau = \frac{p_c}{p_{cT}}$$

By combining 2.8 and 2.9, it is possible to write:

$$(2.12)\ s \equiv \frac{pe}{p*} \approx \frac{v_r}{v_r*}\frac{(\tau)}{(\tau*)}$$

Equation 2.12 shows the real exchange rate determination in the AALRER approach. The exchange rate is given by the competitive cost structures of the price leading industries of tradable goods in two countries adjusted by the tradable/non-tradable goods ratio (Shaikh & Antonopoulos, 2013). It is important to note that labour productivity, technology, and tradable sectors' real wages are factors attached to v_r. Thus, a country's competitiveness is primarily driven by these factors (Martínez-Hernández, 2017).

Different implications follow the AALRER approach. First, it cannot automatically adjust itself and eliminate imbalances (Shaikh & Antonopoulos, 2013). The exchange rate is not a market-clearing price, and therefore trade imbalances can be a constant. Even by considering flexible or semi-flexible exchange rates regimes, exchange rates cannot adjust structural trade imbalances (Martínez-Hernández, 2017). Although trade imbalances, in this model, are the outcome of a country's relative competitive position (Martínez-Hernández, 2017), long-run equilibrium exchange rates are consistent with trade imbalances (Antonopoulos, 1997).

Second, a real exchange rate's depreciation in this scenario will only be successful through its capacity to affect the real wage and hence the real unit labour costs and τ (tradable/non-tradable adjustment ratio). It follows that depreciation or appreciation can only occur with movements on the relative competitive position, i.e., a depreciation can happen in a country with relative falling cost and prices that will imply a relative fall in export prices (Shaikh and Antonopoulos, 2013). Therefore, this model provides two alternative routes to enhance competitiveness: the high road and the low road. The high road is

achieved through constant productivity improvements, whereas the low road implies downward real wage adjustments to adjust the real exchange rate (Shaikh & Antonopoulos, 2013).

Antonopoulos (1997) extends the analysis in line with the Keynesian and Marxian 'classical models', whereby it is suggested that variations on liquidity, which are due to surplus or deficits in the trade balance, dictate the direction of interest rates and hence underlying economic conditions. An increase in competitiveness in the export sector will place the economy in a surplus situation. An inflow of capital occurs, which increases liquidity and results in a decline of interest rates. The fall in interest rates, in turn, has a twofold implication. On the one hand, it fosters investment and output, and leads to increasing imports. On the other hand, if speculative capital flows exit the country when investors see their profits affected, and therefore, it leads to a change in international reserves. In comparison, a decrease in competitiveness will induce a reduction in liquidity, a rise in interest rates, capital flows, and a contraction in the real economy.

The AALRER leads to the following conclusion: "if exchange rate variations do not reflect changes in the 'fundamentals' as determined by the economic laws of international competition, such variations can only temporarily *cover up* trade imbalances" (Antonopoulos, 1997, p.57, emphasis in original). Accordingly, the persistence of trade imbalances are part of the functioning of the economic system. Antonopoulos contrasts neoclassical and classical equilibrium conceptions, arguing that "such 'equilibrium prices' are conceivable only as accompanied by cleared markets for neoclassical economist *while they are compatible with market turbulence, and thus surpluses of shortages for classical economist*" (Antonopoulos, 1997, p.43, my italics).

Possible criticisms to these lines of reasoning can be made in terms of the relation between the trade balance and real exchange rates. The 'direct' relation between trade surplus and deficits is poorly explained in this model and appears to have little notion in terms of trade elasticities. For Shaikh (1996) a fall in price will expand the market for the most efficient producer, and the most efficient economy. It is clearly stated that the kind of elasticity

that remains is the “Marshal-Lerner-Robinson elasticity in orthodox economics” (Shaikh, 1996, p.2). Overall, through real wage adjustment, a country can improve its trade balance position (Antonopoulos, 1997). Consequently, most efficient countries will tend to operate with surpluses on their trade balance since price-cutting firms can increase its market share. However, the degree to which individuals react to price changes could not always be the same and can vary across economies as a result of preferences and trade patterns.

The AALRER is a well advanced, coherent and realistic approach to explain the real exchange rate behaviour. And even though financial factors have been considered, it does not provide the ground to determine exchange rate policy targets. It aims to investigate the factors determining competitiveness and not the value of the exchange rate that policy could target.

In the next subsection, this thesis moves on to analyse the IEER approach. Unlike the AALRER approach, in the IEER approach, the equilibrium exchange rate is a desired exchange rate level. It does not aim to explain the real exchange rate determination, and rather it aims at determining appropriate levels of the exchange rate for macroeconomic development.

2.3.2. The Industrial Equilibrium Exchange Rate

The Industrial Equilibrium Exchange Rate is the exchange rate that allows industries that operate at the ‘world-wide state-of-art’ to remain competitive abroad (Marconi, 2012). This value neutralises the Dutch disease in DEEs. It is a normative approach given its interest in appropriate exchange rates, where the focus is on the industrial structure rather than just internal and external equilibrium.

For the New Developmentalism (ND) approach, the exchange rate has a central role in economic development, given its impact on investment and economic growth. In addition, DEEs experience a chronic and cyclical overvaluation of the exchange rate as a result of the adoption of three usual policies: high-interest rates, the growth cum foreign saving strategy and the use of the exchange rate as a tool to anchor inflation (Resende & Terra, 2018). Exchange rate overvaluation reduces the profitability of manufacturer

producers (Bresser-Pereira, 2017). Two main drivers that determine such overvaluation are differentiated by its structural and cyclical nature: the Dutch Disease and foreign capital inflows.

At the forefront of this approach is the Dutch disease or commodities export boom, a characteristic of countries, such as Brazil, which are endowed with abundant natural resources that possess a competitive advantage. Thus, the ND approach views it as a 'structural' problem. As a result, large currency inflows, through higher revenues from exports, overvalue the domestic currency (Bresser-Pereira, 2006; Bresser-Pereira & Gala, 2008; Marconi, 2012). The overvaluation of the domestic currency reduces the profitability of domestic commodity exporters. However, they still maintain a high-profit rate because of their lower costs, which allows them to remain competitive in foreign markets. According to these authors, the larger issue is that such overvaluation leads to a deindustrialisation process and, therefore, lower rates of growth. In other words, the trade balance is affected by an increase in the share of exported primary goods relative to manufacturing goods in imports (Marconi, 2012).

Second, the massive speculative capital inflows are the second major driver of the exchange rate overvaluation. However, in the ND approach these capital flows are considered less important, because they are a cyclical factor affecting the overvaluation of the domestic currency rather than a structural one such as commodity dependence. For example, for Marconi (2012), it is cyclic given that capital flows respond to the difference between domestic and foreign interest rates plus the expected exchange rate. According to Carvalho (2018), two main reasons support this argument. First, this approach assumes that interest rate policies can change over time, and therefore, no systemic pressures are coming from this side. Second, "autonomous changes in expectations are assumed to be random in nature so that their influence is expected to dissipate in longer stretches of time" (Carvalho, 2018, p. 117).

In this context, the ND approach devises three concepts of equilibrium exchange rates: the Current Account Equilibrium Exchange Rate (CAEER), the Foreign Debt Equilibrium Exchange Rate (FDEER), and the Industrial Equilibrium Exchange Rate. The CAEER is a rate that balances the current

account inter-temporally, but alters the composition of the trade balance since, at such given rate, the commodities trade balance is superior to the manufacturing trade balance, leading to a loss or change in the productive capacity (Marconi, 2012). The CAEER is conceptually similar to the PPP and BEER in the sense that is a rate that balances the current account. The FDEER is the exchange rate that allows a country to grow with foreign savings by operating with permanent current account deficits (Bresser-Pereira, et al., 2014). According to Bresser-Pereira et al. (2014), a characteristic of this equilibrium exchange rate is that the net foreign inflows necessary to finance the current account deficits should be equal to the rate of growth of GDP, which guarantees that the ratio of foreign debt to GDP will remain constant. Bresser-Pereira (2019) argues that the ND approach considers this exchange rate level as a non-competitive equilibrium. For the ND approach, such a level of the exchange rate corresponds to an appreciated level compared to the IEER and the CAEER. Thus, it is a value that depresses investment and boosts consumption. He argues that this concept is Williamson's FEER, which aims to maintain the economy's internal and external equilibrium.

Finally, the IEER that is the cornerstone of their argument emerges within the ND approach as a level of the exchange rate, which allows manufactures producing with the "state-of-the-art" technologies to remain competitive in domestic and foreign markets with a reasonable profit margin consistent with current account surpluses.

The IEER methodology proposed by Marconi (2012) states that domestic producers can only compete internationally if their profit margin is equal to that of their competitors in the international market, when converted to the same currency[5]. Marconi et al. (2021) argue that their model works with profit

[5] One more realistic general case could be made, in which at given prices, competitive pressures lead m to depart from m^* if AUC differ from AUC^*. Indeed, m could depart from m^*, and AUC could differ from AUC^*, but could counteract each other to still achieve price equalisation. Furthermore, if AUC are lower in one country, manufacturer producers may have higher profit margins or vice versa.

margins and not profit rates[6]. It argues that, in the manufacturing process, the main production cost is labour. A starting point for Marconi's (2012) and Marconi, et al. (2015) methodology is a pricing rule that manufacturing producers tend to adopt, that is:

$$(2.13)\ p_{trad} = M + AUC$$

$$(2.14)\ m = \frac{M}{p_{trad}}$$

$$(2.15)\ p_{trad} = \frac{1}{1-m} \cdot AUC$$

Where M is the nominal value of the mark-up on the average costs, m is profit margin, calculated as a percentage of price, and AUC is the average unit cost - the wages to productivity ratio, known as the unit labour cost. The price of tradable manufactured goods is defined by setting a mark-up on the average unit cost, AUC, as expressed in 2.15.

Marconi et al. (2021) assume that competitors face the same price in the international market, but the average manufacturing production cost, AUC, would be different across countries. The former relationship is expressed in 2.16, where p_{trad}, is the price of tradable manufactured goods in the domestic country and $p_{trad}\ *$ is the price of tradable manufactured goods of the foreign competitors. This assumption implies that the average revenue is equal to the average price of goods exported by a country's manufacturing companies and similar for all competitors in the same market" (Marconi, et al., 2021, p. 8).

$$(2.16)\ p_{trad} = {p_{trad}}^{*}$$

The condition in which the domestic country can be competitive in relation to the foreign country is its comparison with the average profit margins of producers competing in the global market. In other words, when the average profit margins of the domestic manufacturer producers are equal to those

[6] Although not theoretically substantiated in their work, one can find a reason for their adoption of profit margins instead of profit rates in one of their empirical works. In Marconi et al. (2021), it is argued that the model works with profit margins as no sector information regarding capital productivity is accessible for all the countries.

observed in the global market. This, according to the authors, is ensured when the real exchange rate corresponds to the level suggested by the IEER, which, as will be further explained, is determined by the ratio of the domestic and foreign unit labour costs, given that such a level compensates for the difference between such unit labour costs (Marconi, et al., 2021).

$$(2.17)\ m = m^*$$

In order to equalise profit margins and maintain competitiveness the average cost of the domestic manufacturer producers should be equal to that of its competitors when converted into the same currency.

That is, following Marconi (2012) and Marconi, et al. (2015), the condition for $m = m^*$ is that the average unit cost should be equal $AUC = AUC^*$, when both values are expressed in the same currency. Further assuming that:

$$(2.18)\ AUC^* = ULC^* \text{ and}$$

$$(2.19)\ AUC = \frac{ULC}{e}$$

Where e is the nominal exchange rate between the domestic currency and the currencies of the main trading partner[7] and ULC is the unit labour cost and * denotes foreign. For the competitiveness of domestic producers to be preserved, that is, for $m = m^*$, the evolution of the nominal exchange e rate between the domestic and foreign country should correspond to the ratio between unit labour costs as in 2.20 so that when the exchange rate corresponds to such ratio such a level compensates for the difference between the domestic and the foreign unit labour cost. Equalising $AUC = AUC^*$ and solving for e, we get:

$$(2.20)\ e = \frac{ULC}{ULC*}$$

Considering the price levels p and $p*$, that is, the weighted average general price level in the countries where manufactured goods are produced, and by

[7] The analysis can be expanded and consider * not just the main trading partner but a group of main trading partners.

multiplying both sides of 2.20 by $\frac{\frac{1}{p}}{\frac{1}{p*}}$. Equation 2.21, shows the evolution of the real IEER:

$$(2.21)\ e\frac{p*}{p} = \frac{\frac{ULC}{p}}{\frac{ULC*}{p*}}$$

Equation 2.21 can also be rewritten as 2.22, where $ulc = \frac{ULC}{p}$ and $ulc = \frac{ULC*}{p*}$, that is:

$$(2.22)\ s = \frac{ulc}{ulc*}$$

where, s is the real IEER, ulc represents the domestic real unit labour costs, and $ulc*$ the foreign real unit labour costs.

According to Marconi (2012) to estimate the level of the IEER over time, one must consider several steps. First, it is essential to obtain the real effective exchange rate value, which can be referred to as that of industrial equilibrium exchange rate, that is the starting point of the calculation. This is of importance in order to obtain the evolution of the IEER. Once such a threshold is identified, the variation of the ratio between the domestic and foreign unit labour cost is applied. Second, considering that the real effective exchange rate is an index, in order to estimate its level, it is necessary to pick an average nominal exchange rate level in the present, to apply changes in the real effective exchange rate retroactively from such nominal present value.

Oreiro, et al. (2020) proposed a different methodology to estimate the IEER. Oreiro, et al. (2020) view the IEER needs to consider the fact that in DEEs manufacturer producers do not operate at the 'world-wide state-of-art'. They claim the existence of a technological gap that reduces the manufacturing industry's participation on real income. These authors redefine the IEER as the real exchange rate that allows a country to keep steady, across time, the manufacturing industry's participation in real income. Oreiro, et al. (2020) assume that the participation of the manufacturing industry on real income is given by its previous value, the real exchange rate, the complexity index and the real income per capita:

$$(2.23)\ h_t = h_{t-1} + \beta_0\theta_{t-j} + \beta_1 ICE_{t-j} + \beta_2 RCP_{t-j} - \beta_3 (RCP_{t-j})^2$$

where h_t is the participation of the manufacturing industry on real income in period t, θ_{t-j} is the current real exchange rate in the period $t-j$, ICE_{t-j} is Hidalgo and Haussman complexity index (a meassure of a country's products complexity) in the period $t-j$, and RCP_{t-j} is the domestic per capita real income in the period $t-j$, being j the optimal number of lags.

For Oreiro, et al. (2020) the IEER is the real exchange rate that maintains $h_t = h_{t-1}$. That is:

$$(2.24)\ \theta_t^* = \frac{\beta_4 (RCP_{t-h})^2 - [\beta_1 ICE_{t-h} + \beta_3 RCP_{t-h}]}{\beta_0}$$

Equation 2.24 shows an exchange rate, the IEER, that is compatible with a constant share of the manufacturing industry on real income. Its level is a function of the real per capita income and the economic complexity index. An interesting feature of this model is that being the economic complexity index, an indicator of non-price competitiveness, increases in its value will require lower levels of the real exchange rate to keep the manufacturing industry's share on real income stable. On the other hand, increases in the real per capita income will lead to higher IEER levels if the real per capita income is above a threshold.

One major drawback of the IEER approach, in the two forms above presented, is that trade is the "permanent source of the impulses that are durable expressed in the behaviour of the exchange rate" (Carvalho, 2018, p. 117), as shown in equation 2.22, in which prices of manufacturing goods are the main elements driving the exchange rate. In addition, the assumption of the equalisation of prices in international markets can result unreasonable as if prices were the same at home and abroad then there won't be any motive for trade. Furthermore, competitive pressures in global markets may make the assumptions regarding the equalisation of profit margins and average unit cost unrealistic. Indeed, what is commonly observed in DEEs is that countries try to remain competitive abroad by maintaining lower costs than those in their main trading partners. Moreover, profit margins may or may not be equal in DEEs compared to those in their major trading partners. DEEs may offer higher profit

margins due to lower production costs which may make the IEER assumptions unrealistic.

In the IEER approach, the pressures arising from financial markets are only considered ephemeral, cyclical factors. In addition, amendments to the IEER approach, such as that proposed by Oreiro, et al. (2020), have failed to consider external factors into the exchange rate determination equation and only consider real domestic variables.

Moreover, the level of the IEER is little explained, and such an equation can be easily confused with its neoclassical counterpart. Although the mechanisms and objectives are different from those of the PPP, the resulting equation shows an exchange rate that adjusts only to labour cost differentials in the same way that the PPP adjusts the exchange rate to changes in prices. Finally, an open question can be whether real values are easier to target rather than nominal values of the exchange rate. The IEER is by nature a policy target, and, as such, these types of targets should be formulated both for the real and nominal exchange rates.

Although the ND considers the effect of international financial flows on exchange rates, such concept disregards the structural financial pressures. In particular, it underestimates both the pressure coming from yield-driven foreign financial flows and the external liabilities accumulation, which brings to the picture the relation of exchange rates and the balance of payments. This questions whether it is feasible to adopt such an approach as a policy target. Therefore, this thesis' focus is to consider the dominant role of capital flows, theoretically determining such strategies will be shown below. The addition of these two financial pressures to the model allows neutralising the effect of the two of the three 'usual policies' in DEEs' pointed out by the ND approach, namely: high-interest rates and the growth cum foreign saving strategy.

2.4. Conclusions

This chapter has analysed and contrasted existing equilibrium exchange rate approaches, including those currently used for policymaking. It has also

presented the least known heterodox approaches to analyse the feasibility of being considered for the determination of policy targets.

It has been argued that three main approaches are commonly used for policy assessment are the Purchasing Power Parity hypothesis, Fundamental Equilibrium Exchange Rate models, and the Behavioural Equilibrium Exchange Rate. In contrast, heterodox approaches are little used.

The PPP hypothesis relates the nominal exchange rate behaviour to the domestic-to-foreign price level ratio over the long-term. It is a framework that assumes that prices across the world will equalise over the long-term. The exchange rate's role is to adjust when prices move to counteract the loss or gain of competitiveness and ensure the trade balance is restored. However, the PPP approach's flaws, such as the failure to explain exchange rate deviations from the equilibrium and the real exchange rate constancy, have moved the attention to developing different types of models such as the BEER -type models.

The BEER has turned the attention to the study of the behaviour of the real exchange rate. It is an attempt to study the current fundamental determinants of exchange rates using econometric techniques. Factors such as the real interest rates, stock of government debt, net foreign assets, and terms of trade are commonly used to explain exchange rates' behaviour. However, the exchange rate is assumed to be in equilibrium during the study period, leading to the conclusion that the market exchange rate is always tending towards its optimum value.

One interesting approach is the FEER, which is an ideal exchange rate consistent with internal and external equilibrium. That is, it is consistent with ideal macroeconomic conditions. It is a proposal that is motivated by the interest of limiting exchange rate volatility and aiming for stable exchange rates in developed markets. It has incorporated the notion of sustainable external balance and mutually consistent exchange rate rates. It has been argued that it is not a framework for exchange rate determination per se. However, the FEER approach remains tied to the notion that the exchange rate

will converge towards its optimum level over time, and the approach lacks an explanation of the adjustment mechanism.

In addition, it has been shown that heterodox approaches pay key attention to the specific industrial structure of the economies. The AALRER is an approach that models the centre of gravity of the real exchange rate and the most efficient manufacturer producers' labour cost relative to the foreign labour costs as the main determinants. Despite its realistic approach to model the exchange rate, the fact that it models the actual exchange rate behaviour does not allow one to use it to determine a policy target. Finally, it has been argued that the IEER approach is an appropriate exchange rate that allows the most efficient industries to remain competitive in the world markets. The ideal exchange rate is determined by the ratio of domestic to foreign labour costs. The IEER is not a market-determined level, and as such, it provides a solid ground for assessing exchange rates and determining appropriate targets for DEEs.

However, financial factors have been relegated into the IEER approach as actual determinants of exchange rates. Carvalho's (2018) point above stated motivates this thesis contribution in the sense that it is argued that interest rate differentials are structural because DEEs cannot lower their interest rates easily. In addition, the fact that expectations are towards long-term structural depreciation because there are foreign-denominated currency liabilities to meet in DEEs poses a challenge that this thesis aims to address.

Chapter 3
The Policy Target Concept

3.1. Introduction

The concept of equilibrium in Post Keynesian theory is problematic. On methodological grounds, the existence of an equilibrium is rejected as the concept is "descriptive rather than predictive" (Setterfield, 1997) of economic outcomes, emphasising fundamental uncertainty that governs economic dynamics.

Although considerable literature analyses the role of equilibrium in Post Keynesian theory, little work has focused its attention on the role of equilibrium analysis for policymaking. In chapter 18 of The General Theory (GT), John Maynard Keynes provides a clear picture of the process of building an economic model, central from the point of view of policy. In this chapter, Keynes explains how he built his theoretical model to highlight the economic system's specific characteristics, where full employment is rare. One important interpretation of chapter 18 of the GT is the work undertaken by Claudio Sardoni (1989). Based on Keynes' chapter 18, Sardoni stresses the role of constructing and using an economic model to give a real answer to real questions. Recognising the relevance of the process of building an economic model explained by Keynes and the need to look at reality, Sardoni points to the credible policy recommendations that can be derived from Keynes' model. Thus, Sardoni argues that Keynes provides economists with a realistic, grounded tool to intervene in the economy and influence its behaviour. This thesis argues that economists often need to provide real answers to hypothetical questions. That is, they often need to determine equilibrium levels as ideals or 'rest states' that may be appropriate targets for policies or desired policy outcomes that markets do not provide automatically.

Another economist who argues this is Arne Heise's (2009), who puts forward a 'market participation theory of economic policy' (MPTEP). In the MPTEP economic policy, objectives or 'societal objectives' must be normatively chosen and not determined by equilibrium solutions of models which assume "individual egoistic behaviour" (p. 390). In Heise's approach, governments

should achieve targeted market outcomes. However, difficulties arise as how to characterise the understanding of such target outcomes in Post Keynesian theory, having in mind the case of the equilibrium exchange rate.

This chapter accounts for this difficulty and seeks to provide the foundation for an appropriate conception of the policy target exchange rate in Post Keynesian theory in line with Keynesian thinking. This chapter largely elaborates on methodological grounds and aims to create the policy target concept, which sets the foundations for the theoretical discussion in the following chapters. Its main argument is that from a Post Keynesian point of view, an equilibrium rate needs to be understood as a policy target defined as a hypothetical construct, long-period position, adequate to a given context, which is an ideal state from the point of view of production. The concept is a hypothetical construction as it follows Keynes' insights on the long-period in which it is assumed that the state of expectations remains constant as there will not be surprises. That, however, does not mean that the economy will reach such a long period position. It can be the case that such a long period position never be achieved, precisely, given the existence of such surprises (shocks). The development of the idea aims to address the methodological considerations of such policy-motivated equilibrium: the policy target.

In creating the concept of the policy target, this chapter utilises three main building blocks: Heise's (2009) MPTEP, Sardoni's (1989) interpretation of chapter 18 of the GT, and Keynes' notion of the long-period as shown in his writings towards the GT (Keynes, 1978a). In particular, this chapter stresses the importance of building a model to investigate optimal[8] or desired[9] outcomes. It is worth noting that this chapter does not provide a theoretical

[8] By optimal policies, this thesis means the desire to reach targeted market outcomes that economies do not provide automatically. Something similar to a full employment equilibrium, a situation of "full adjustment also of the price system, as well as of the productive capacity to the demand" (Sebastiani, 1992, p.61)

[9] For desirability it can be understood as something close to the idea of the amount of employment which is full employment. This idea is related to Heise's (2009) metaphor of " 'providing public goods' which can be "public utilities' as well as 'price stability' or 'full employment' " (p.392) . Therefore, the ideal is full employment which becomes the equilibrium level of employment.

specification of that desired outcome and has in mind to provide the basis to understand policy targets.

This chapter is structured as follows. Section 2 briefly discusses the concept of equilibrium in neoclassical models linked to exchange rate analysis. Section 3 critically reviews the existing Post Keynesian equilibrium approaches- the *ceteris paribus* and the Historical Equilibrium approach and raises the question of whether these are policy oriented. Section 4 presents Heise's 'Market Participation' theory of economic policy as a motivation for a policy motivated equilibrium. Based on Section 4, section 5 then presents the concept of the policy target as a useful device to analyse the 'societal objectives' in the spirit of the MPTEP. To do so it particularly reverts to Sardoni's interpretation of chapter 18 of the GT, and Keynes' notion of the long-period positions. This latter section stresses both the process of building an economic model, inspired by chapter 18, and how the objectives of economic policy must be normatively chosen. Section 6 concludes with some potential limitations of the framework presented.

3.2. Equilibrium in Neoclassical Models of Exchange Rate Determination

Let first begin with the examination of the notion of equilibrium underlying neoclassical exchange rate determination. Although it would be narrow to argue that all the neoclassical models are of the type of Arrow-Debreu model of equilibrium that subscribes to the assumption of linearity given its predictive application, it can be argued that most, if not all, the neoclassical equilibrium exchange rate models are linked to it. It does not mean, however, that non-linear or historical time assumptions are not made within neoclassical models (see for example Arthur, 1994), but these are not utilised for exchange rate analysis.

Generally speaking, equilibrium analysis is linked to the study of time in economic theory or the assumptions of linearity and non-linearity in the model's dynamics. The model's potential of dealing with linearity and non-linearity is a function of whether the researcher conceives the system as one moving around an equilibrium point or one that deals with a complex system.

Particularly, these assumptions are linked to the equilibrium analysis in the way events are ordered and the type of individuals.

For Samuelson (1965), the equilibrium is defined as the outcome given by a set of variables. His view on equilibrium prevents the neoclassical analysis from including history, causal relationships and normative connotations. Therefore, it is an analytical tool inspired by natural science to describe the economic system in pure logical and mathematical terms (Jespersen, 2009). The argument of such equilibrium models is limited to the belief that future events are perfectly knowable. In other words, the analysis allows for predictability of future events given that individuals possess correct knowledge and expectations about the future.

In this context, logical time facilitates the mechanical adjustment process that leads to equilibrium. Katzner (1998) points out that in this conception of time future events are known with certainty. Therefore, decisions made in the present are confirmed by future events, which implies that expectations are always satisfied, and plans are achieved. In this way, logical time does not constitute a form of time that humans experience since it does not differentiate between past, present, and future events. This assumption is also labelled as 'timeless' or 'static'. An essential feature of this assumption is that individuals are conceived as "totally constituted by material pieces" (Katzner, 1998, p. 6). Thus, the identification of all "material facts" about individuals and the surrounding environment explains their behaviour, and therefore, human beings are conceived rationally. Finally, variables are not dated, and adjustments are not examined through time. Thus, events follow a causal logical structure - outcomes of the system respond to a mathematical and fixed solution (Termini, 1981). It is precisely, the simplistic, mechanical and therefore a-historical characteristics considered in the analytical concept of logical time, which facilitates its introduction to equilibrium models, that is to say, the dynamic towards equilibrium takes on minor importance[10].

[10] This has to do with the nature of the logical time dimension as it is timeless or static (Termini, 1981). Two main properties of it are worth noting: *homeostasis* and *time reversibility:* "a system is said to be *homeostatic*, or self-maintaining, if the application of a temporary shock to the system does not change its equilibrium position(s). A homeostatic system returns to

The above-described presentation of the equilibrium is a mechanical one. This is criticised by Henry (2003) who explains that it is as "similar to the inner workings of a clock-like machine, one can trace the sequence of events through a system of interconnected variables (gears) in any direction: a deterministic outcome will always obtain and no 'arrow of time' is permitted by the argument" (Henry, 1983, p. 342).

Kaldor (1934) points at the following assumptions to make such an equilibrium possible (Kaldor, 1934, p. 123):

1. A closed economy (either an isolated individual or a completely "self-sufficient" community, with a given volume of human and natural resources).

2. "Perfect knowledge": all the relevant prices quoted in all markets are known to all individuals.

3. "Perfect competition": all exchanges are carried out in markets so large that no individual can influence any of the prices with which he is confronted.

4. "Direct exchange": all goods, services, etc., are exchanged directly for one another, while all processes are expressed in one of the goods serving as unit of account.

In addition, for the equilibrium to be achieved, two main pillars are needed: the assumption of system stability[11]and the use of a given set of data (Setterfield, 1997). These given exogenous variables automatically lead the system to a state of rest or to a single point, which distinguishes itself by regular patterns (prices and production). This approach is also labelled as the equilibrist methodology or traditional equilibrium approach (Setterfield, 1997; Lang & Setterfield, 2006).

However, equilibrist methodology suffers from serious drawbacks. Henry (2003) states that the equilibrist methodology is linked and limited to the belief

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the status quo ex-ante, the stable equilibrium, after being hit by a temporary shock" (Lang and Setterfield, 2006, p.199). In contrast, for time reversibility the system can "move from the "present" into the "future" and from the "present" back into the "past" (Lang and Setterfield, 2006, p., 192).

[11] Setterfield (1998) mentions that stability is important given the limited concern of the existence of an equilibrium. This premise implies that "the system will return to equilibrium following any arbitrary initial displacement" (p. 527).

that economic laws have universal applicability. Therefore, it cannot integrate history. In this vein, Kaldor (1934) critiques the way economics, increasingly adopting this equilibrist view, has moved towards a technical and confusing path, losing its "relevance to facts" in their interest of maintaining the plausibility of their 'laws'. This has taken the economics science to reject the substance of important forces, based on 'self-evident postulates alone' making economics more technical and not intelligible. Furthermore, he argues that the equilibrist methodology entails the "wrong kind of abstractions and therefore gives a misleading paradigm […] of the world as it is: it gives a misleading impression of the nature and manner of operation of economic forces" (Kaldor, 1934, p. 347).

Post Keynesian economists have mainly placed historical time, at the core of their analytical constructs in their persistent search to make macroeconomic theory more realistic[12].

3.3. Equilibrium in Post Keynesian Models: Is the Equilibrium Concept in Post Keynesian Theory Useful for Equilibrium Exchange Rate Analysis?

The concept of equilibrium in Post Keynesian theory is problematic and is a source of scepticism. It is mainly considered an analytical device rather than for policy derivation (Setterfield, 1997). This poses a challenge if one were to use the term equilibrium approaches in Post Keynesian theory to investigate optimal/hypothetical outcomes. Before discussing an understanding of these outcomes in Post Keynesian theory, it is worth analysing the state of the notion of equilibrium. As indicated above, an underlying feature of concept of the equilibrium in Post Keynesian economics is the assumption of historical time or at least a 'low-level' historical time[13].

[12] Perhaps one exception is, the work of Pasinetti (1962), which is a linear model, showing that linear and non-linear models have nothing to do with the school of economic thought that the models subscribe. However, historical time remains as a common feature amongst Post Keynesian models.

[13] This terminology is adopted following Setterfield (1995) and Setterfield (1997).

Historical time shows the path-dependent process of achieving equilibrium (Setterfield, 1997). This conception of time considers that events are qualitatively differentiated and ordered among the past, present and future[14], which means they follow a chronological time structure, in the sense that the future is not known, the past is history, and the present constitutes the 'real time' and is the result of past decisions. In this regard, individuals possess knowledge that is determined by their 'material parts' and their experience of events. Events have a unique place in time, in a precise way, where individual decisions are based on the knowledge that is accumulated throughout time (Katzner, 1998).

Therefore, historical time encompasses fundamental uncertainty, which is a central theme in Post Keynesian theory, highlighting the challenges that individuals face in a monetary economy. This shows a realistic alternative in depicting how economic events occur (Henry, 1983). Such a historical and open system[15] implies constant changes from the pre-existing state of the economy. Individuals "are moving away from a fixed and irreversible past" (Davidson 1991 in Henry 2003, p. 343). Post Keynesians argue that the economic system does not have a final outcome by itself and is defined by a series of non-equilibrium adjustments (Setterfield, 1998). Hence no deterministic outcomes are feasible. In this sense, the Keynesian analysis rejects the universal laws and rational agents assumed in the neoclassical approach presented above. This becomes particularly clear in Keynes's rejection of the optimal choice theory, where he argues that under uncertainty, "human decisions affecting the future […] cannot depend on strict mathematical expectation, since the basis for making such calculation does not exist" (Keynes in Glickman, 2003, p. 366).

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[14] Katzner (1998) quote Hicks (1976), who catalogues logical time as 'out of time' and historical time as analysis 'in time', raising the issue of hypothetically series of events versus real-time.

[15] For Post Keynesians, the 'macroeconomic landscape' is an open system (Jespersen, 2009). The notion of time in this approach is historical and, therefore, of changing dynamics. This deals with the way that economic events take place, Katzner (2003) states that "[b]ecause of the changing nature of the subjects of inquiry, because of the fluidity of economic endowments and expectations that market processes generate, and because of the continually evolving character of institutional structures, such an analysis constructed for any moment or period is different from that constructed for any other" (p. 128).

Moreover, expectations, uncertainty, natural and political shocks cannot be reduced to mathematical calculations (Robinson, 1974). For Robinson (1974), the lack of appropriate treatment of historical time, and the rules of the economy in place make the standard framework useless for the analysis of real economic phenomena.

However, Post Keynesians acknowledge that the historical time dimension is fundamental to understanding the concept of equilibrium from their perspective. There is a recognition of the possibility to include such a concept in economic modelling. In this vein, Setterfield (1997) states that historical time's anti-deterministic nature makes the introduction to economic modelling difficult. However, he suggests that Post Keynesian equilibrium models can be thought, at least, to be consistent with 'low-level' historical time. That is, the notion of equilibrium is compatible with history in a way that it can replace the mechanistic a-historicism of traditional equilibrium models (Setterfield, 1997). It is impossible that Post Keynesian approaches to equilibrium can completely include historical time, but it can, at least, approximate the essence of historical time[16] (Setterfield 1995; Setterfield 1997).

One can identify three Post Keynesian approaches to equilibrium consistent with 'low-level' historical time. First, the *ceteris paribus* approach, that can be thought of as a stationary state concerned with short-run equilibrium positions whose task is mainly descriptive. Therefore, it is concerned about suboptimal position as the short-run underemployment equilibrium analysed in the GT. It is recognised as something close to the partial equilibrium analysis to understand a world of historical movement and change (Setterfield, 1997; Jespersen, 2009). It is considered to have pedagogical purposes (Shackle, 1974; Kregel, 1976; Setterfield, 1997). Second, Basour's (1982) model of Historical Equilibrium, which concentrates attention on repeated behaviour and business-as-usual. In this approach, the equilibrium is concerned with the process of economic interactions (perceptions, expectations and strategies)

[16] This is conceived as a 'soft' conceptualization of historical time. For Setterfield (1995), it is important to think historical time at two levels of conceptualization, "a lower-level which is successfully characterized by [analytical concepts: hysteresis, cumulative causation, lock in], and a higher (and more radical) level which can be conceptualized but only approximated by practical concepts" (p.24).

and appeals to inter-temporal consistency in economic systems. Third, Sardoni's (1989) interpretation of chapter 18 of Keynes' GT, that highlights the importance of building an economic model to explain economic reality, emphasising the relevance of the equilibrium analysis at a policy level. This last alternative, which is a more 'general' interpretation of Keynes' equilibrium methodology, serves as a building block for creating the concept of the equilibrium exchange rate from this perspective.

3.3.1. The Ceteris Paribus Approach

According to several Post Keynesian interpretations, in Keynes' analysis the equilibrium concept plays the role for pedagogical purposes (Shackle, 1974; Kregel, 1976; Setterfield, 1997) to "characterise what is otherwise acknowledged as a non-equilibrium world of historical motion and change" (Setterfield, 1997, p. 68). Hence the notion of equilibrium means 'no further change' under given conditions (without ignoring their existence) to analyse an open macroeconomic system.

Keynes used the equilibrium approach to "clear up a theoretical point about how aggregate demand can be transformed to effective demand for labour: it is a point of a standstill with given expectations" (Jespersen, 2009, p. 168). The need for constructing an analytical model in the GT forced Keynes to rely on this pedagogical tool. In this way, it was in his theory of effective demand where he needed to illustrate the 'causal' link connecting aggregate demand and employment (Jespersen, 2009). To make this equilibrium possible, Keynes had to make assumptions that he knew did not exist in reality, such as holding constant the state of long-term expectations[17] (Kregel, 1976; Setterfield, 1997).

Furthermore, Jespersen (2009) argues that Keynes wanted to demonstrate that the equilibrium was "determined by structures rooted in the deep stratum that could lead to a permanent 'no change' situation, if nothing

[17] According to Hansson (1985), "at each point of time there exists a state of expectations – comprised of short term and long-term expectations – which determines production and purchasing plans for the period ahead. In short period equilibrium, as described above, the two types of expectations are congruent, which means that production plans for capital goods coincide with the purchasing plans for these goods" (p.335).

external to the macroeconomic landscape happened" (p. 169). Keynes used the equilibrium concept to portray stability that can exist if there is a conjunction of what decision-makers expect and realise (Jespersen, 2009). Thus, for Jespersen, Keynes' interest is to provide a richer understanding of the economic system with the use of economic tools to characterise the macroeconomic functioning, which is not directly observable.

Setterfield (1997) calls Keynes use of equilibrium as a pedagogical tool the *ceteris paribus* approach. Three key peculiarities are recognised by Vickers (1994) and Setterfield (1997) in the the *ceteris paribus* approach. First, at the forefront, historical time as a feature of the economic system. The Keynesian partial equilibrium might seem similar to the standard equilibrium counterparts but with a time-dependent realm. The equilibrium in Keynes allowed the explanation of the causal relationship between aggregate demand and employment with a chronological or historical sequence (Katzner, 2003; Jespersen, 2009). Second, it is built on the conception of 'sequential causality', that is, cause and effects are considered not in an immediate manner, but rather in a chronological way. Therefore, one can build a model, and one can analyse its solutions and its path. By contrasting reality to time paths under analysis, it is possible to identify a time path that matches reality (Katzner, 2003). Hence, an explanation of what is coming next is possible, opposite to equilibrium and logical time, where there is no reference to the process taken towards the equilibrium. The third involves the Marshallian approach of 'one thing at a time'[18] as a synthetic and inter-temporal feature of an open and historical system (Vickers, 1994 in Setterfield, 1997, p. 69). The equilibrium is seen as the outcome of a path-dependent process in a monetary economy characterised by fundamental uncertainty.

For Kregel (1976), Keynes' "position is indeed closer to Marshall's partial or one at a time method, although his system is interdependent in a sense that Marshall is not" (Kregel 1976, p. 218). The use of the equilibrium method in

[18] Setterfield (1997) quotes Milgate (1987) to clarify the terms of Marshall' *ceteris paribus*, which has an intertemporal meaning, considering the data as constant and the external environment as "freely competitive". Thus, the long-run equilibrium would be possible.

Keynes acknowledges that not all the economic processes can be analysed assuming a world of fluid forces where disequilibrium usually prevails (Shackle, 1974). Hence Keynes had to turn to the *ceteris paribus* methodology to analyse a specific part of the economic system. This approach suggests that what it is meant to be in equilibrium under assumed circumstances, without neglecting relevant characteristics of historical time, in a world experiencing continuous changes (Setterfield, 1997). The partial equilibrium analysis with a time-dependent realm was indeed compatible with the Keynesian methodology.

In this vein, Kregel (1976, pp. 216-217) argues that:

> [t]he extreme complexity of such a situation explains why Keynes was willing to "tame" this system, first making assumptions that allowed the definition of functions that he knew did not exist through their entire range, expressly in order to give force to the theory of effective demand […] this approach of modelling is, however conceptually distinct from the manner of use of equilibrium to tame the system adopted in most other approaches from the monetarist to general equilibrium

An essential characteristic of the *ceteris paribus* approach is derived from the reduced form of the system. Setterfield (1997) states that the constancy assumption to the 'ignored' part of the system provides the conditional closure to the model, and therefore, the equilibrium can be defined. The result is a point that can be thought of as conditional equilibrium and "represents a state of rest brought about by real or imagined temporary suspension of the forces of change endogenous to the system" (Ibid, 1997, p. 70). In addition, to avoid an arbitrary process when making a temporary closure, Setterfield (1997), following Vickers (1994) and Crotty (1994), argues that conventions[19] in the form of structural relations, provides the conditional closure to the analysis, as conventions can, by nature, remain unchanged. Thus, the given factors

[19] For Setterfield (1997), conventions play an important role both in economic activity and economic analysis. It is not possible to assume the institutional framework as a given, but "threatening conventions (or at least some subset of conventions) as unchanging is a useful device for economic agents functioning in historical time" (p.70)

become empirically grounded “enhancing the descriptive realism of economic theory” (Setterfield, 1997, p. 71).

Finally, it is important to clarify that the *ceteris paribus* approach shows that “economics is best thought of as being fundamentally descriptive rather than predictive. This calls for corresponding degrees of humility in the derivation of policy recommendations that are seldom currently observed” (Setterfield, 1997, p. 72). The *ceteris paribus* methodology allows economists to model reality, and therefore, has observational purposes and primarily sub-optimal states. Thus, such models are not predictive in practice to formulate direct policy recommendations.

3.3.2. The Historical Equilibrium Approach

In the same line, considering historical time as a central feature of economic analysis, one can find an equilibrium approach based on habitual behaviour or business-as-usual, in particular the historical equilibrium approach developed by Bausor (1982). The historical equilibrium approach arises from the recognition of periods of apparent tranquillity in the economic system. It is concerned with “the process of economic interaction[20] [a model that includes the interaction of perception, expectations, strategies and outcomes] than to the momentary coordination of the system’s state” (Bausor, 1982, p. 173).

The historical equilibrium approach reflects the persistence of stability in at least two ways (Katzner, 2003). First, the equations of a model appear to be stable over time, in a way that the time path showed by the model approximates the observations nearly accurate. In this view, variables, parameters and relations are seen as time-dependent and furnish a scenario that matches the observation of reality.

[20] Bausor (1982) developed what he called ‘a model of historical-time behaviour’, which relates perceptions, expectations, strategies and outcomes in a logical sequence. Bausor argues that “[e]xpectations govern choice but are themselves shaped by perceptions of the past rather than knowledge of the future. Those perceptions, in turn, depend on the outcomes of earlier decisions. In short, current strategies depend on current expectations, which in turn depend on current perceptions, themselves tied to past outcomes, while current outcomes depend on past strategies” (p. 167).

Second, for the construction and explanations of models, stability can persist over time concerning the solution values of the variables in question, even when the equations of the model change (Katzner, 2003). Hence, the state of things between t_0 and t_1 can be seen as a pseudo stationary situation. Changes occur, but not to the extent that they can affect the values of the variables in place (Ibid, 2003).

Bausor's (1982) historical equilibrium rests on the assumption of repeated behaviour. It focuses on the process of economic interactions (perceptions, expectations and strategies). It hence is "an ideal from which formal analysis of dynamic processes develops, rather than its final objective [not predictive]" (Ibid, 1982, p.173). This approach admits that there is no fixed point of the system's functions, contrary to what economists are always looking for.

Therefore, the historical equilibrium exists. Still, it does not mean that an economy can reach equilibrium, and since different conditions can be considered equilibrium, it is not unique. Historical equilibrium, in this perception (Bausor, 1982, p.174),

> invokes inter temporal consistency. Thus, the system can be said to be in equilibrium with respect to a former state if, and only if, the later state, among those possible at the later date, most resembles its predecessor. Equilibrium, in this sense, means that although time forces change, the resulting disruptions are the least possible […] In addition, historical equilibrium of outcomes suggest neither successful coordination nor efficiency, but only inter temporal continuity of ex post phenomena.

Two pedagogical factors warrant the need for the study of the historical equilibrium approach. First, it exemplifies the historical dynamics and displays the central role of psychological factors that rule economic phenomena. Second, it helps to discern disequilibrium dynamics. In this conception, equilibrium is not a steady-state towards which economic processes tend, as in neoclassical models, instead it shows historical continuity, where the equilibrium can "lack instantaneous coordination" (Bausor, 1982, p. 178). Therein, Bausor (1982, p.179) claims that:

> general historical equilibrium is assuredly rare. Rather than convincingly describing normal situations, it points toward historical disequilibrium analysis as

> means of comprehending our world. Equilibrium is more an introduction to, rather that the consummation of the formal analysis of genuinely historical time.

In sum, as it has been shown, in Post Keynesian theory, the term equilibrium has been interpreted differently and narrowly. Therefore, it seems to be challenging to use equilibrium analysis as a tool for policy derivation, which is reflected in the little emphasis that the approaches above discussed put on policy formulation. Instead, these have been devoted to explaining reality. However, the Post Keynesian world shows that, under conditions of fundamental uncertainty, individuals are not able to allocate resources optimally, as is the case in the neoclassical case above explained. On the one hand, it is only by introducing economic conventions that equilibrium can be understood. On the other hand, Post Keynesians point towards the historical disequilibrium analysis of economic interactions, which rest on repeated behaviour. However, the question remains about defining and understanding an equilibrium exchange rate approach that matters for policy. In the following section, this chapter moves to explain in detail the three main building blocks to both put in context and understand the policy motivated equilibrium: Heise's (2009) principles of Post Keynesian economic policy, Sardoni's (1989) interpretation of chapter 18 of the GT, and Keynes' notion of the long-period positions as shown in his writings towards the GT (Keynes, 1978a). The policy motivated equilibrium aims both to reclaim Keynes' process of building an economic model, and to highlight the relevance of long-period positions in Post Keynesian economics. This in order to show how that the equilibrium analysis is also relevant for the process of policy formulation to determine the objectives of economic policy.

3.4. The Post Keynesian Theory of Economic Policy and the 'Societal' Objectives

Heise's (2009) Post Keynesian market participation theory of economic policy, MPTEP, arises from the lack of a theory of economic policy in Post Keynesian economics. It is defined as one that focuses on (Heise, 2009, p. 384):

> relating means and ends in a systematic way so that the goal of achieving overall welfare maximization may be met (policy dimension). This touches not only upon

> the optimal use of scarce resources by the political actor (polity dimension) but also upon questions about the willingness of political actors to behave in a certain way and to achieve what has been normatively set (politics dimension)

The MPTEP focuses on the 'normative approach to economy policy making' (Heise, 2009). For Heise, in Post Keynesian economics "the objectives of economic policy are no longer merely functional derivatives of equilibrium solutions of individual egoistic behaviour, but must be normatively chosen" (Heise, 2009, p. 390). It follows that 'societal objectives' are not reached automatically and governments (as agents) would have to direct policies towards the fulfillment of such objectives because free markets can lead to a "waste of productive capacity, skills and qualification" (Ibid, 2009, p. 390). Thus, governments should not act to correct 'market failures', but should instead be an active market participant to adjust the market outcome in any desired path. Therefore, governments, as a market participant should have control over the targeted variables.

For a deeper comprehension of the above, the political actor (government) should 'act purposefully' (Heise, 2009). Governments, in this view, as market participants do not possess absolute control but as a market player can pursue the 'societal objectives'. Heise (2009) points out that the political actor must have a purpose to produce public goods, in a way that it should have the inclination to reach 'targeted market outcomes', which markets are unable to provide. In this vein, Heise states that "the metaphor of 'providing public goods' for 'economic policy making' is a very useful one as it pinpoints the constraints that the political actor (as much as private actors) has to face" (Heise, 2009, p. 392) . Therefore, governments as active players in market processes can positively influence Gross Domestic Product (GDP), investment, employment and salaries as well improve the distribution of income.

According to Heise, such an intervention would require a set of norms and institutions along with cultural norms and conventions, which are known as

functional[21] "market constellations". They help to shape market participants' behaviour (private and political actors) according to the 'societal' objectives (Heise, 2009). It is worth noting that the Post Keynesian market participation theory is considered by Heise (2009) to have a "constrained feasibility", admitting that public and private actors shape the behaviour of the economy, therefore, he argues that it "is a multidirectional governance process of rule-based coarse-tuning" (Heise, 2009, p. 398).

In a nutshell, the Post Keynesian theory of economic policy argues favouring efficient interventionist policies to meet economic policy's 'societal objectives'. An important question that now arises is: how are those 'societal objectives' set? And, how best to approach the 'societal objectives' of, say, a competitive exchange rate or full employment? Is the equilibrium analysis, in Post Keynesian theory, a useful device to provide reasonable answers to 'desired' market outcomes?

The above questions point to the relevance of reclaiming both Keynes' process of building an economic model, and the relevance of Keynes' notion of the long-period positions. Keynes' process of building an economic model is shown in chapter 18 of the GT, which underscores the relevance of Keynes' (1936) insights to give credible policy suggestions (Sardoni, 1989). This chapter's contention is that the generality of Keynes' model allows for the existence of an analytical reference, a long-period position, which is regarded as a special case. In this regard, Keynes' (1978a) previous writings in preparation for the GT show Keynes' interpretation of such analytical reference and associate policy efforts to the achievement of the long-period outcome (i.e., a full-employment equilibrium position). Thus, the long-period position is a reference or desired state, which is understood as a result of the full adjustment of forces regarded as dominant (Sebastiani, 1992). The above is the spirit of the policy target proposed in this chapter, which aims to suggest

[21] By 'functional' Heise (2009) refers to Fritsche et al. (2005) who attributes the term to "market constellations that facilitate full employment and price stability –two macroeconomic targets that are pursued by most democratic governments" (p.394)

a reliable reference on which to work for those who seek to extend the Post Keynesian equilibrium thinking. The following section will develop this conclusion.

3.5. The Policy Target: A Long-Period Concept for Economic Theorising

According to Sardoni (1989), Keynes' insights with regards to the process of building an economic model explained in chapter 18 of the GT are general and aims to provide economists with a more credible 'tool' for policy. In fact, in Keynes' approach, described in chapter 18, the model's taxonomy is crucial to derive plausible policy suggestions. The variables do not only depend on the observed reality but also are selected on the basis that they can be affected through policy. Keynes' modelling insights have a twofold implication. On the one hand, it allows economists to know that the economy is not operating in a satisfactory way, a less than full employment outcome. On the other hand, the approach suggested by Keynes (1936) as to how to select the variables in an economic model, in such a way that these can be influenced by policy, allows the economist to know how to affect the behaviour of the economy.

In what follows, this chapter will validate these two claims, which are, in turn, two building blocks useful to build the concept of the policy target. These thesis' claims are: i) that Keynes' notions of building an economic model and the generality of such an approach allow economists to derive credible policy suggestions, as shown in chapter 18 of the GT (Sardoni, 1989). In particular, the generality of Keynes' approach allows this chapter to take one step further to reclaim ii) the importance of Keynes' notion of the long-period positions (Keynes, 1978a). This latter notion helps conceptualise a policy motivated equilibrium such as the policy target, where the term equilibrium is associated with an optimal or ideal position, which characterises the 'societal objectives'. The term long-period/long-term has been previously used by Keynes' to make reference to ideal states (Keynes, 1937). One of his proposals to stabilise investment was to stabilise the long-term interest rate nearly to what was believed to be the long-term optimum. In line with Keynes, recent Post

Keynesian scholarship has associated long-period positions with policy rules (see, for instance, Docherty, 2012).

3.5.1. Chapter 18 of the GT: Keynes' Process of Building a Model and its Relevance for Policy Making

In chapter 18 of the GT, Keynes (1936) joins together key issues of the arguments presented in the GT. Keynes provides a clear picture of the process of building an economic model, and a basis for policy recommendations. It highlights the specific characteristics of the economic system. That is, an average level of employment, bellow full employment. In this vein, it recognises that the economic system does not have any explosive tendency and full employment is of a "rare and short lived occurrence" (Keynes, 1936, p. 250). Keynes' insights provide economists with a general alternative for formal equilibrium analysis in the context of historical time, in which policy is central for the selection of the variables.

As already highlighted, an important characteristic of Keynes' approach is the central role it gives to policy to affect the behaviour of the variable under study. In his structure, the determinants in a given economic system are divided as follows: i) the 'given factors', ii) the 'independent variables', iii) and the 'dependent variables'[22]. Keynes (1936, p.247) explicitly stresses that, for the construction of a model, the division of the economic system's determinants, among independent and given variables, is "quite arbitrary from any absolute standpoint". The economists should select such variables according to the criteria that can be "deliberately controlled or managed by the central authority" (Keynes, 1936, p.247). Thus, the task for the economists is to find out which factors exert a dominant influence for the determination of

[22] For Keynes (1936), the variables taken as given were "the existing skill and quantity of available labour, the existing quality and quantity of available equipment, the existing technique, the degree of competition, the tastes and habits of the consumer, the disutility of different intensities of labour and of the activities of supervision and organisation, as well as the social structure including the forces, other than our variables set forth below, which determine the distribution of the national income". For independent variables Keynes takes the "propensity to consume, the schedule of the marginal efficiency of capital and the rate of interest", and as dependent variables "the volume of employment and the national income" (p. 245)

the *quasietum* (dependent variable), which is a variable that has to be "explained and affected through policy" (Sardoni, 1989, p. 297).

Keynes has no difficulty recognising the strict complexity of economic processes. He highlights that an essential characteristic of the structure of the model presented in the GT is that it does not entirely ignore the influence of the "given factors". Therefore, from this viewpoint, Keynes warns about the difficulties of making precise generalisations about the economic system. Keynes (1936, p. 246) clarifies that the factors taken as given "influence our independent variables, but do not completely determine them". In this way, these factors are not assumed to be constant. Rather, it means that there is no analysis of the consequences of movements in the given variables (changes on those "different repercussions" have little relevance). As such, it is possible to infer that Keynes' theorising cannot be seen as a form of *ceteris paribus* or partial equilibrium analysis as he was not looking into a specific part of the economic system.

The above process underscores the usefulness of isolating specific factors and the role of policy as an important criterion for selecting the model's variables. Hence, Keynes proceeds clearly, by stating the value of using his framework to analyse any actual economic issue. Keynes wrote (1936, p.249):

> If we examine any actual problem along the lines of the above schematism, we shall find it more manageable; and our practical intuition (which can take account for a more detailed complex of facts than can be treated on general principles) will be offered a less intractable material upon which to work.

In the following section, this chapter moves on to analyse the notion of long-period positions in Keynes. This notion becomes essential to characterise the outcomes derived from building a model along the lines of Keynes' (1936) insights, particularly the criteria for selecting the variables above explained.

3.5.2. Chapter 18 and the Generality of Keynes' Model

Interpretations of chapter 18 have already been advanced. (see for instance Carabelli & Cedrini, 2014) One interesting interpretation is the one by Sardoni (1989). For Sardoni, chapter 18 of the GT, is central, innovative and contains

non-standard features, explaining relevant aspects of the economy's actual behaviour. He points at Keynes' theorising as a 'practical tool', suitable for policy, to intervene in the economy to affect its dynamics.

Following Sardoni (1989) we can identify several key features of Keynes' alternative approach illustrated in chapter 18.

First, it explains some characteristics of the actual economic system obtained from the observation of reality from which economists can securely generalise. This is helpful for economists as it provides them with a theoretical base on which to justify policy interventions. However, in building this explanation, the choice of the right model is of fundamental importance based on a better perception of the economic system. Here, Keynes insists on the 'vigilant observation' of reality, and since economics is a 'moral science', it uses judgements of values and introspection:

> Economics implies judgments of value. The analysis leads to the conclusion that the economy is unable to ensure the automatic and spontaneous achievement of optimal results. In order to achieve better results than those yielded by private sector decisions, policy interventions are required, and *policy necessarily implies value judgements* (Sardoni, 1989, p.300, my italics).

Thus, the economists' criterion to select both the study variables and the values that these variables take in reality is important. Here, Sardoni (1989) states that generalisations from experience and judgments of value become relevant. These generalisations should remain in the domain of human logic, and such type of logic becomes important before and after the construction of the model (Sardoni, 1989, p.302).

Second, the model is general, and it "does not ensure any stable result or behaviour". The model does not contain any mechanism that guarantees the equilibrium. That is, the equilibrium is not unique. In Keynes' model, a number of different equilibrium solutions are possible. Therefore, the model is "open to all possible solutions". There are neither theoretical nor logical assumptions of the independent variables, which allows the system to reach stable equilibrium outcomes. However, these factors determining the equilibrium can change abruptly and considerably. It is important to note that the model arises

from the fact that the 'classical' model could not satisfactorily explain the real world and give adequate policy answers. Therefore, in his view, Keynes' model is open to "all possible" results according to output and employment dynamics. As Sardoni wrote (1989, p. 304):

> But this new model is not one that can only yield results consistent with the observable reality: in this way it would lose its generality. The model has to be so general as to yield any logically possible solution, so that the "classical" *full employment turns out to be only a special case* [my italics].

Third, and the most important for this chapter's purposes, is that the generality of Keynes' model generality leaves economists in a solid position at both the analytical and the policy level. On the one hand, at the analytical level, the equilibrium is important as a suboptimal rest state. It shows a prolonged state of unemployment without any tendency towards full-employment - a less - than-full-employment outcome (maximum). In chapter 18, Keynes proceeds to claim that (Keynes, 1936, p.249):

> it is an outstanding characteristic of the economic system in which we live that, whilst it is subject to severe fluctuations in respect to of output and employment, it is not violently unstable. Indeed it seems capable of remaining in a chronic condition of sub-normal activity for a considerable period without any marked tendency either toward recovery or towards complete collapse

Keynes (1936) adds that such "facts of experience do not follow of logical necessity". Therefore, it is necessary to make assumptions to produce such results (Keynes, 1936, 250). Thus, he states that it is helpful to consider hypothetical assumptions that would take to a stable system, which at the same time are appropriate to explain "the outstanding features of our actual experience" (Keynes, 1936, 254). Such hypothetical assumptions allow Keynes to claim that the economic system oscillates around a mean position without any drastic movement in employment and prices (Keynes, 1936). But such a situation is not a rule and merely derivates of the observation of reality, which in principle does not mean that things cannot change.

On the other hand, at the policy level, the equilibrium is relevant as it shows that government intervention is necessary to reach full employment. Thus, the outcome of Keynes' approach has direct implications for policy (Sardoni,

1989). Its task is not merely descriptive but provides economists with a realistic, grounded tool to intervene in the economy. For Sardoni (1989), Keynes theorising “provides a direct tool, as it were, to intervene in the actual economy in order to affect its behaviour” (Sardoni, 1989, p. 294). Sardoni’s interpretation highlights the fact that Keynes’ theorising gives real answers to real questions. However, as mentioned above, economists often need to determine desired, hypothetical or ideal rest states such as that of full-employment. Below, this chapter argues that it is indeed a possibility in Keynes’ model facilitated by its generality. In the following sections, this chapter will argue that Keynes’ emphasis on his method’s properties allows one to choose the variables to consider to derive a long-period value. Although Keynes attached a sub-optimal outcome to the concept of equilibrium in chapter 18 of the GT, it is argued below that optimal/hypothetical/desired outcomes can also be derived.

3.5.3. Keynes and Hypothetical Constructions: The Notion of the Long-period Positions

This chapter has emphasised the role of policy in Keynes’ method concerning equilibrium modelling. The approach, which follows from chapter 18, is a general method for equilibrium analysis (Sardoni, 1989). Keynes’ analysis shows that there is no tendency towards full employment, and therefore the economy moves around a sub-optimum position. But, if economic policy is central in modelling: what are the effects of adding an active intervention in the model? And, in those terms, what would it mean to be in equilibrium? Keynes indeed tackled these questions. One can find some answers to these questions in material he lectured in November 1932 that maintains coherence with his arguments in chapter 18 of the GT. That is, economic policy is central in equilibrium analysis (Keynes, 1978a).

Keynes’ lectures in the autumn of 1932 show his ideas regarding the long-period. In chapter 18, Keynes leans towards interpreting the notion of long-period as a non-changing position and a clear message that there are no automatic tendencies towards full-employment.

However, his writing reflect that he also had a general conception of the long-period. Keynes also identified the notion of the long-period with an optimum or ideal position. There are two possible hints in which one can find such a connotation. One is Keynes' (1937) assertion that the long-term interest rate should be kept continuously as close as possible to what is believed to be the long-term optimum. The other is Keynes' treatment of the own rate of interest (ORI) (Sebastiani, 1992). The uniformity of the ORI shows Keynes conception of the full-adjustment "to the forces of competition (i.e. free mobility of capital among productive sectors, and between these and the financial sectors)" (Sebastiani, 1992, p. 65).

Indeed, in Keynes (1978a), the long-period has different connotations. He states that there are three dominant definitions of the 'long-period position' which he summarises in: i) "a position towards which forces spring up to influence the short-period position whenever the latter has diverged from it"; ii) "a stable position capable *cet.paribus* of been sustained, whilst short-period positions are *cet.par*. unstable and cannot be sustained", and iii) "an optimum or ideal position from the point of view of production, i.e. a position in which the forces of production are disposed and utilized to their best possible advantage" (Keynes, 1978a, p. 54). He, therefore, argues that "whichever of these tendencies we have in view, is entirely independent of the policy of the monetary authority; whilst, on the other hand, it cannot be maintained that there is a unique policy which, in the long run, the monetary authority is bound to pursue" (Ibid, p. 54).

Keynes (1978a) makes clear his opinion about the above stated dominant definitions of the long-period (Keynes, 1978a, p. 55):

> Thus I conclude that this theory is not really dealing with a generalized doctrine of the long period, but is concerned, rather, with a *special case*; i.e. with a long-period position corresponding, in some or all of the senses of this term, to a particular assumed policy on the part of the monetary authority.
>
> On my view, there is no unique long-period position of equilibrium equally valid regardless of the character of the policy of the monetary authority. *On the contrary there are a number of such positions corresponding to different policies*. Moreover there is no reason to suppose that positions of long-period equilibrium

> have an inherent tendency or likelihood to be positions of optimum output. *A long-period position of optimum output is a special case corresponding to a special kind or policy on the part of the monetary authority*. This conclusion will be developed in the subsequent chapters [my italics].

A fundamental point in Keynes' argument is his clear purpose of showing that a position of optimum output is a *special case* and there is a *special* role for policy to achieve it. The above argument suggests an outstanding feature in Keynes' modelling: there is no such a tendency toward the equilibrium that standard economics assumed to exist, instead, there is a position of optimum output which can be reached through policy, keeping in mind that the economy is in a "chronic condition of subnormal activity". The message is clear: a long-period position of optimum output can never be thought of as one towards which the economy will automatically be moving, and is rather a *hypothetical* and *special* case. Therefore, the optimum position is a consequence of exogenous factors: the monetary policy. Thus, Keynes points at policy as a force in the real economy, which can move it toward a higher equilibrium solution. In other words, this equilibrium can be thought of as an outcome towards which the economy is moving according to the role of monetary policy.

Thus, Keynes points at policy (monetary policy) as a force in the real economy, which can move the economy toward and higher equilibrium position.

Long-period position is indeed a *hypothetical* one, something close to an ideal. Following Sebastiani (1992), an exemplification of this notion is shown in Keynes chapter 17 of the GT. This chapter is mainly focused on the analysis of the long-period positions, where a distinction is made between the *natural* rate of interest and the *neutral* rate of interest. Sebastiani (1992) highlights three main factors worth noting. First, the *natural* rate of interest is the rate that determines different levels of employment according to its level, whereas the *neutral* rate of interest corresponds to full employment. Second, there is no tendency towards the alignment of the *natural* rate with the *neutral* rate of interest. Third, the above propositions seem to be "as the extension to 'long period' of an analysis so far carried out within the framework of short period" given that is located at the end of the book where Keynes

clarifies special features of his analysis. Indeed, it is followed by chapter 18, a central chapter in terms of methodology as discussed above.

For Hansson (1985), Keynes' long-period concept is a *fictitious* construction on theoretical and hypothetical grounds. He claims that it is a hypothetical construction because it assumes that today's state of expectations is held constant for future periods without any fundamental change. Therefore, this would establish a fictitious future situation towards which the economy is moving, i.e. a long-run equilibrium" (Hansson, 1985, p. 337). However, in this analysis, Hansson (1985), as well as Sebastiani (1992), warn about the coexistence of a long-run equilibrium and involuntary unemployment. In other words, Sebastiani (1992) states that "in so far as involuntary unemployment of labour persists, the adjustment process does not concern the labour market" (p.68). It is worth noting that a key and underlying feature of the long-period positions is that it is conceived as something 'desired'. In this vein, Sebastiani (1992) argues that the "long-period positions […] marked as they are by the uniformity of the Own Rate of Interest and by a normal degree of utilization of plants, *represent satisfactory situations for producers and investors*; in this context they can be considered states of full-adjustment of the economy to dominant forces" (p. 68).

Hansson (1985) and Sebastiani (1992) bring two crucial aspects to the long-period analysis related to the role of policy that are worth highlighting: the role of expectations and the *fictitious* future situation. These two concepts are related to the role of policy in the decision-making process under uncertainty. Estrin and Holmes (1985) point at uncertainty as a central problem in Keynes' analysis and policy "as an opportunity to solidify entrepreneurs' expectations about the future" (p. 467). Thus, since people do not possess all the information they need, "there exists the prospect of improvement to the state intervening to stimulate the informational flow". Therefore, for Keynes, "since the markets fails to transmit the best information […] outcomes can be improved by information pooling" (p.467). Therefore, policy is fundamental to: i) ensure the desired state of expectations, facilitated by the informational flow, and thus, ii) to achieve the desired equilibrium, that is, to build or shape the *fictitious* future situation.

Decision making under uncertainty, therefore, requires “a rule-based well communicated, and credible provision of public goods […] and may be called the ‘governance’ variant of quantitative policies” (Heise, 2009, p. 393). The role of policy is also to create what Heise (2009) calls ‘market constellations’ to systematically alter the market outcomes in an ideal path and give shape to the desired future situation - a long-period position.

Finally, Hansson (1985) states that Keynes’ idea of long-period positions is a theory of ‘shifting equilibrium’ characterised by its foundation in the real world. This concept is different from the standard conception of a static state equilibrium given that Keynes’ view embraces uncertainty, and therefore a changing future linked to the present. For Keynes, “a final position of equilibrium, such as one deals with in static economics, does not properly exist” (Keynes, 1979 in Hansson, 1985 p. 338). Thus, Keynes’ long-period concept was resting on a realistic basis, leaving behind the logical or mechanical standard argument.

3.5.4. The Policy Target Concept: A Long-period Concept

The arguments presented above suggest that the equilibrium analysis in Keynes has practical and analytical purposes. This chapter has shown that equilibrium analysis is relevant in Post Keynesian analysis given that economists need to determine the ‘societal objectives’ of economic policy or policy targets. Economic policy targets are assumed to be, at least, something close to desired or optimum outcomes, where the concept of an optimum long-period position takes on great importance. Following Keynes (1978a), this chapter emphasises optimum or ideal equilibrium outcomes, which can be best regarded as a policy target. The above three main building blocks of the policy target allow this chapter to highlight this concept’s three main features.

Firstly, a policy target can be obtained by building an economic model in the realm of Keynes (1936). It is an ideal position of equilibrium determined by independent variables that have a dominant influence determining the dependent variable, where judgments of value and introspection, as stated by Keynes, matter. However, the emphasis is that such variables can be managed by policy as stated in chapter 18 of the GT.

Secondly, an essential characteristic of a policy target is that it at least approximates the essence of historical time, and therefore is consistent with 'low-level' historical time. It can replace the mechanistic and a-historicism of the neoclassical long-run equilibrium model presented above. As Keynes (1978a) put forward, "there is no reason to suppose that positions of long-period equilibrium have an *inherent* tendency or likelihood to be positions of optimum output" (p.55). And as forces in the real economy do not automatically take to a full-employment position, policy is important to achieve the policy target.

Thirdly, a policy target is a long-period position of optimum output. It is indeed an optimum or ideal position, and it is a desired and a hypothetical future situation for the economy. In this context, it is an equilibrium outcome given that the dominant forces in the economy are fully adjusted. Policy plays an essential role in setting this outcome. In Keynes (1978a), this outcome is a 'special case' that corresponds to a 'special kind of policy'. There is no reason to think about a tendency guiding the economy automatically towards such a point. This is the policy target spirit: policy can guide the economy towards the desired outcome assuming that the state of expectations remains constant.

3.6. Conclusions

To conclude, we can summarise the main argument of this chapter by saying that the equilibrium is relevant at both the analytical and policy levels. It has been argued that Keynes' insights of building an economic model and Keynes' notion of the long-period can help to determine and understand the objectives of economic policy from a Post Keynesian perspective. Keynes' notion of the long-period allows this chapter to shape the policy target concept, which is a concept that embraces the idea that there is no tendency towards it in any length of time. It is a concept which represents the desired outcome in line with the evolving economic conditions and policy aims. That is to say, it represents an economic goal that policymakers would like to achieve. Such a concept is a hypothetical and desired situation towards which the economy will move if a set of assumptions and policy measures hold.

Economic policy has a central place in Keynes' equilibrium method. In fact, variables in Keynes' model are selected because they can be affected through policy, and a particular kind of policy can guide the economy towards an optimum or an ideal position. This suggests that policy is fundamental to reach an optimum long-period equilibrium position. Thus, one can also think of equilibrium outcomes as appropriate outcomes that policy should target.

However, outcomes should be interpreted carefully and are, in turn, context and time-specific. Not all the economic variables can be analysed in terms of equilibrium outcomes. It is the economists' task to determine whether or not equilibrium analysis is feasible to analyse desirability of the outcome variable in question. The concept of the policy target developed above is mainly considered appropriate to understand equilibrium exchange rates from a Post Keynesian perspective. It is important to clarify that in no case these can be seen as outcomes that guarantee the efficient operation of currency markets (a level that clears the markets). Instead, its interest is purely to define and understand an appropriate or desired level for the exchange rate.

Chapter 4
Policy Target Exchange Rates: Revisiting Keynes' Interest Rate Parity, Keynes' Transfer Problem and Thirlwalls' Law

4.1. Introduction

As discussed in Chapter 2, one of the core ideas of the New Developmentalism (ND) approach is the concept of the Industrial Equilibrium Exchange Rate (IEER). Such an exchange rate is at the centre of its analysis, and it is a level which allows domestic manufacturer producers to remain competitive abroad. Bresser-Pereira (2012) argues that such a competitive level does not correspond to a 'relatively undervalued' level of the exchange rate, rather it is an appropriate level of the exchange rate for industrial development. The emphasis is, thus, on competitive or appropriate levels of the exchange rate for a "mix of exports that allows for sufficient employment and growth" (Kregel, 2018, p. 74) and, therefore, for economic development (Bresser-Pereira and Gala 2008; Bresser-Pereira 2012). The IEER is a level which is only reached through active policy support and, therefore, policy must counterattack market forces which prevent the IEER from prevailing (Carvalho, 2018). It is a level that "cannot prevail 'naturally' since it does not reflect the market forces operating in the market for foreign currencies" (Carvalho, 2018, p. 117).

A primary concern of the ND approach is the neutralisation of the Dutch disease, that is the appreciation of the home currency in countries abundant with natural resources, which is considered a structural problem and a major obstacle to development. However, a major problem with this kind of analysis is that it relegates to a minor problem the massive capital inflow and its pressures on currency overvaluation, as financial flows are assumed to exert cyclical pressures on exchange rates. In agreement with Carvalho (2018), the ND approach will increase its theoretical reach by giving more attention to autonomous financial variables which affect the exchange rate. He argues that ND's view of exchange rates and their determination still maintains traditional features as it assumes that trade predominates over financial flows.

This chapter attempts to contribute theoretically to a possibility that is not contemplated in the ND approach, where capital movements generate structural pressures on exchange rates, in the case of countries with a high degree of financial openness. This chapter will attempt to explore analytically Carvalho's claim that market forces in the financial sector can put pressures on the exchange rate that might not only mean that the IEER is not achieved, but also the target policy rate needs to be formulated differently. Thus, this chapter considers two structural mechanisms through which capital flows exert persistent pressures on exchange rate levels in developing and emerging economies (DEEs): i) the structurally high and volatile interest rates, which attract yield-driven foreign financial flows; and ii) the structural pressures coming from a stock of foreign-currency-denominated liabilities. Drawing from these mechanisms, it proposes two Policy Target Exchange Rate (PTER) models which deal with the neutralization and stabilisation of the structural pressures that capital flows exert on DEEs' exchange rates in the era of financial globalization: PTER in line with Keynes' interest rate parity and the PTER in line with Keynes' transfer problem and Thirlwall's law. It thus enriches the concept of the policy target theoretically incorporating fundamental properties of the Post Keynesian theory of both monetary and international trade.

This chapter has been organised in the following way. Section 2 outlines Robinson's and Keynes' notions on appropriate policy levels of the exchange rate and utilises them to give the policy target rate more precision. Section 3 then presents Keynes' and Carvalho's insights on the interest rate parity theory based on the *Tract on Monetary Reform* (1923). Based on this discussion, section 3 presents an alternative framework for a PTER determination, a rate which aims to neutralise the impact of short-term capital flows on exchange rates. Section 4 presents Keynes' transfer problem based on the *Treatise on Money* (1930) and Thirlwall's law on exchange rates and capital flows. Based on this, the second part of section 4 develops a PTER determination which aims at stabilising the foreign-currency-denominated liabilities accumulation towards sustainable levels. Section 5 concludes with some policy implications of the alternative frameworks.

4.2. Robinson and Keynes on Appropriate Exchange Rate Levels

Let us begin with bringing back the insights of Robinson (1937) and Keynes (1941) regarding appropriate levels of the exchange rate. Although these authors did not seek to develop appropriate exchange rate models, their analyses provide elements to consider when seeking an exchange rate target such as that stressed by the PTER concept. In this vein, the use of the terms “optimum”, “long-period” and “appropriate” extracted from these authors determine the fundamental normative component of the PTER concept.

A notable feature of Robinson’s (1937) writings is her conception of the “optimum exchange rate” (p.146). The concept of the “optimum exchange rate” put forward by Robinson can be understood on the lines of the hypothetical situation which the PTER aims to create. This is so for two main reasons. First, it is a notion which is associated with the trade balance surplus. For Robinson (1937), in any country and at given labour costs, there will be a maximum trade balance compatible with a level of the exchange rate, which can be called the “optimum exchange rate”. She proceeds arguing that such an optimum level is one in a very limited sense given its effects upon the foreign markets, namely the reduction of the real income of the foreign markets via the reduction of the demand for imports. Thus, it is assumed that a depreciated exchange rate, which is associated with the “optimum”, increases the price of imports relative to exports leading to lower demand for imports. According to Robinson, this case is more likely to happen when it is the case of a country that specialises in manufactured goods given that it has both an elastic foreign demand and a highly elastic home supply.

Second, the optimum exchange rate is associated with a long-period position. The relationship is given by the fact that both the foreign elasticity of demand for exports and the domestic elasticity of demand for imports are higher in a longer period of time (Robinson, 1937). For Robinson (1937), factors such as contracts and the agreement of prices in terms of exporters’ currencies will slow down the change in the value of exports in the short-term, which suggest that an optimum level of the exchange rate is associated with the long-period.

The PTER is thus a concept that draws from Robinson's connection between the optimum exchange rate, the trade balance, and the long-period.

However, this thesis' conception of such an optimum exchange rate and long-period position is associated with a hypothetical[23] situation interpreted as a target level rather than an actual level of the exchange rate. As such, in choosing a target, the term "appropriate" is useful to describe this policy construct.

The PTER is also a concept that is at an "appropriate" level of the exchange rate based on two of the four "leading criteria" discussed in Keynes' (1941) writings about *The Currency Question.* In Keynes' discussion, the term "appropriate" is associated with the criteria on which to base the future path of the exchange rate. The discussion took place during the times that Britain left the gold standard and, therefore, the authorities proceeded to study the appropriate currency policy for the new scenario. The criteria which need to be considered according to Keynes are:

i) *Exchange rate pass-through and wage push*. This first criterion considers a value high (appreciated) enough to avoid an increasing demand for a rise in the level of wages, which could be derived from the increase in the cost of living. This criterion aims to avoid a 'vicious spiral' arising from the rise in the cost of living and considers the level of the exchange rate as a key to avoid it.

ii) *Exchange rate and national debt sustainability*. The second criterion points to the reduction of the burden of the national debt to sustainable levels. Such an exchange rate has to be accompanied

[23] This does not mean that important factors determining the exchange rate should be relegated. Instead, it intends to highlight the importance of taking a realist account of what is 'right', in a very limited sense, in order to avoid a misunderstanding that the concept assumes a positivist way of modelling the exchange rate behaviour, which is often made by economist when approaching other equilibrium exchange rate concepts, such as the Fundamental Equilibrium Rate. In other words, the PTER is a concept which can be best regarded as a normative or a hypothetical construction, where policy plays an important role in setting such an outcome.

by the increase of wages and money income in order to reach the objective of reducing the level of the national debt.

iii) *Exchange rate, trade balance and external competitiveness.* The third criterion pays particular attention to the trade balance. This criterion is one in which the exchange rate is at its "optimum point", a competitive level, at which exports "are no further cheapened beyond that point" (Keynes, 1941, p. 23). The level of the exchange rate in these lines is one which lies between the first and the second criteria. That is, it considers the effect of an appreciated exchange rate on exports such as the one invoked by criterion i) and the effect of a depreciated exchange rate on exports such as that invoked by criterion ii). Whilst an appreciated level of the exchange rate will obstruct the progress of a satisfactory level of exports, an overly depreciated level will lead to extremely low-priced exports and more expensive imports which creates wage-push inflation.

iv) *Exchange rate consistent with the competitiveness of the agricultural and raw material sector*. This fourth criterion considers a favourable level of exchange for the agricultural sector and raw material producers. This norm suggests determining the future value of the currency so as to "return the wholesale price of the principal foods and raw materials of international trade to the level […] desired" (Keynes, 1941, p. 24). This criterion, therefore, looks at fixing the disparity of agricultural price levels, which could be damaging for agricultural countries, to a sound level experienced in the past.

Keynes (1941) made clear his position on these criteria. He stated that adopting one criterion is not a straightforward decision. For instance, according to Keynes, criterion i) could be applicable for a transitory period, whilst criterion ii) can be costly in relation to criterion iii), as exports are sold too cheap adopting the former criterion. On the other hand, a decision between criterion iii) and iv) depends if the government wants its currency to be the standard accepted beyond the national boundaries. He suggests that a competitive position can be pursued if the government aims to make its

currency accepted only within national boundaries. But if the government seeks that its currency becomes an international standard, the adoption of a more general criterion based on international trade norms would be required. Finally, although Keynes suggested the adoption of the fourth criterion because it allowed Great Britain to become a standard accepted beyond the national borders, he admitted that such norm, practically speaking and reasonably applied, differed very slightly from criterion iii).

In summary, in Robison's (1937) and Keynes' (1941) work, we can identify some pointers towards both appropriate exchange rate levels and the formulation of a policy rate. One could argue that the use of the "optimum" in Robinson, for example, is linked to a desired future or hypothetical situation. As such, it is a long-period concept similar to the one that PTER visualises, rather than one that has an immediate effect on the trade balance. In addition to that, Keynes' criteria provide a ground on which to base the theoretical development of the PTER approach as it highlights different policy considerations[24].

In the next section, this chapter analyses Keynes' interest rate parity theory and the different interpretations in the literature. It does so with the view of expanding the IEER model to consider financial factors into its determination.

4.3. Keynes, Carvalho and the Interest Rate Parity Theory: Exchange Rates and Speculative Cross- Border Capital Flows

Carvalho (2018) suggests a theoretical extension to the New Developmentalism (ND) approach in order to devise efficient policies to tackle the issue of currency overvaluation. He states that in the ND approach, the role of finance is minimised and is seen as supplementary to trade. Moreover, he argues that this approach assumes capital flows as a consequence of trade imbalances (Carvalho, 2018). In light of this, he states that the role of finance

[24] The ND's view of exchange rates captures some elements of Keynes' and the Post Keynesian view above stated as it an appropriate exchange rate that aims to correct the disparity of price levels which is so adverse to the manufacturing sector, which could be linked to a slightly modified version of criterion iv).

is underestimated, and it is seen as complementary rather than as an autonomous activity, as the actual dynamics of financial flows. Carvalho argues that capital flows are not 'erratic' neither 'temporary'; instead, capital movements represent "*persistent* pressures on exchange rates" (Carvalho, 2018, p. 118). To incorporate these structural pressures from capital flows on the exchange rate theoretically, Carvalho points at Keynes' *Tract on Monetary Reform* (1923) as a starting point to expand the IEER.

Keynes in his *Tract* (1923) explicitly critiques the weight put on trade as the main determinant of exchange rates. Carvalho (2018) argues that Keynes did not abandon, at that time, the Purchasing Power Parity (PPP) theory, and was still faithful to the classical theory. For Keynes, the PPP was not an appropriate guide to describe the behaviour of the exchange rate and to formulate policy proposals. That was the reason Keynes had to move forward to develop his framework known as the interest rate parity *(*IRP*)* theory*,* which contained theoretical contributions, that he will keep for the rest of his work, such as the role of expectations and the speculative demand for money, where expectations are not assumed 'erratic' or 'irrational' (Carvalho, 2018, p.121).

The IRP theory proposed by Keynes explains and predicts short-term money market flows, which are assumed as dominant in the international exchange (Carvalho, 2018). In such approach, the value of the spot or current exchange rate depends on two main factors: the forward rate and the interest rates at maturity of the countries in question, both of which guide investors decisions. Keynes' IRP theory can be quantified equation 4.1, which is given by the covered interest parity (CIP), according to Lavoie (2000):

$$(4.1)\ R - R^* = F - S$$

where F is the logarithmic value of the forward exchange rate and S is the logarithmic value of the spot exchange rate, R is the domestic nominal interest rate and R^* is the foreign nominal interest rate.

The difference between 'spot' and 'forward' exchanges is central for the development of Keynes' IRP theory. Keynes (1923) recognised that market transactions in foreign currency need not take place immediately by cash, but

also can take place in a later date. The period which it takes to complete a ‘spot’ transaction in foreign currency at a later date, entails an exchange risk (losses or gains). He argued that ‘forward’ contracts allow individuals to prevent this risk. He differentiated between transactions in ‘spot’ exchange rate and ‘forward’ exchanges. Regarding the first case, he refers to the current price of one currency in terms of the other for immediate settlement. Whereas the ‘forward’ contract allows for the settlement of a ‘spot’ transaction in the future, which fixes the rate to the ‘spot’ exchange rate in the initial time. However, ‘spot’ and ‘forward’ rates can vary considerably according to the preference of individuals, that is measured in terms of the ‘discount' or ‘premium’.

The discount, or premium, in turn, is given by the short-term interest rate differential, which indicates the preference of individuals to hold funds in one country rather than other (Keynes, 1923). Keynes defines the interest rates on ‘short’ money as the rate which is paid “on money lend or deposited for short periods of time” at home and abroad (Ibid, 1923, p. 103). A lower interest rates will reduce the ‘attractiveness’ of a given market, whilst the market with higher interest rates would increase its ‘attractiveness’. Thus, lower ‘forward' quotations relatively to the ‘spot’ quotations, a ‘forward discount’, reflect higher interest rates if compared to the rates abroad, and vice versa. Keynes writes (1923, p.103):

> Forward quotations for the purchase of the currency of the dearer money market tend to be cheaper than spot quotations by a percentage per month equal to the excess of interest which can be earned in a month in the dearer market over what can be earned in the cheaper.

The neoclassical theory has interpreted the IRP theory differently: the uncovered interest parity (UIP). One main characteristic of this interpretation is that the forward rate takes the form of an expectation variable, and thus there is no use of a forward contract to hedge against the exchange rate risk. The UIP states that the expected rates of return at home and abroad, constituted by both the interest rate differential and the expected exchange rate, must be equal amongst countries (Harvey, 2004). Following Lavoie’ (2000) equation 4.1, and substituting F by e^e, the UIP relation can be quantified as:

$$(4.2)\ R - R^* = e^e - S$$

where e^e is the logarithmic value of the expected future spot exchange rate and S is the logarithmic value of the current spot exchange rate, R is the domestic nominal rate of interest and R^* is the foreign nominal rate of interest. According to Harvey (2004), the UIP suggests that the rate of return that could be earned at home is equal to what is expected to earn if the money is invested abroad. But when it is not equal, “forces are set into motion” to bring back the equilibrium (Harvey, 2004, p. 20). For example, considering the case when the market participants expect a higher rate of return at home than in the foreign market. This will make the domestic economy more attractive to capitals, moving R downwards and R^* upwards, and leading to the domestic currency appreciation. This process is recreated until the point where the investor is indifferent towards investing at home or abroad.

In contrast, a Post Keynesian interpretation of the IRP theory is the cambist approach put forward by Coulbois and Prissert (1974). Coulbois and Prissert (1974) hold the view that the cambist approach relies on the actual observation of the foreign exchange dealers' behaviour when accepting forward orders. The cambist approach argues that the forward exchange rate is simply an arithmetic calculation carried out by the commercial banks in the forward market. Under this view, the covered interest rate parity correctly defined always hold (Lavoie, 2021). The cambist view argues against the view that the forward rate is dominated by speculators' expectations (Coulbois & Prissert, 1974). Given that forward orders made by speculators must be first accepted by a commercial bank that quotes the forward rate, which reflects the interest rate differential. According to the cambist view proponents, commercial banks quote the forward rate based on both the spot exchange rate and the interest rate differential to ensure that commercial banks cover their cost given the interest rate differential. Thus, the forward rate is set following the CIP identity, so the condition is achieved (Lavoie, 2021).

According to Lavoie (2021), one remarkable difference with Keynes’ view is that in the cambist approach, the CIP condition is met through the hedging behaviour of commercial banks and not through the behaviour of investors.

Agents who purchase a currency forward (offshore agents, cover non-bank arbitrageurs, or small banks without access to international markets) will cover themselves through an authorised foreign exchange dealer, commonly a large commercial bank. Large commercial banks, in turn, will cover themselves on the spot market, buying the currency on the spot market to be prepared for the forward order delivery (Coulbois & Prissert, 1974). The cambist view argues that in the case of a covered arbitrageur attempts to take advantage of the interest rate differential "that seems to give rise to an intrinsic premium, the bank need not do anything because the forward order is annulled by the spot order" meaning that covered interest arbitrage will not have any effect on both spot and forward rates (Lavoie, 2021, p. 21). The equilibrium in the forward market is brought about by the role of commercial banks that simply cover on the spot market the plethora of forward orders by borrowing the currency that is sold to customers and lending the currency that is bought (Coulbois & Prissert, 1974).

Keynes' (1923) and Coulbois and Prissert (1974) analysis provides a useful insight into exchange rates, interest rates and yield-driven foreign financial flows, which allows this thesis to augment the concept of the IEER to give rise to PTER the approach. Particularly given the role of speculative demand for money highlighted by Keynes in his Tract. One interesting practical conclusion[25] of Keynes' IRP theory is that speculators trying to take advantage of the difference between spot and forward rates guide the situation to a point in which no profit can be made. This idea provides a sound basis to consider when the policymaker is interested in addressing the issue of speculative

[25] Keynes' (1923) theory, which is mainly stated in terms of the CIP relation, provides three different practical conclusions. Firstly, in the case of countries suffering from strong movements in the exchange rate and other political and economic factors (such as distrust about the country, financial or political disturbances, and exchange rate regulations.), "state banks" should be the ones which facilitate forward dealings by receiving short-term deposits. Secondly, given the difficulty of differentiation between speculative forward trading and hedging business, which are in need to avoid the exchange rate risk, Keynes prescribed free forward markets. He argues that free forward markets were necessary given the advantage that resources coming from speculators provide (Keynes, 1923). Thirdly, neglecting to analyse the link between spot and forward quotations can lead to an incorrect "bank-rate policy".

capital flows. With this case in mind, the PTER approach can argue where the effect of yield-driven foreign financial flows is neutralised by adjusting the exchange rate. Instead of the speculators driving the non-profit situation, the non-profit situation is brought about by the exchange rate adjustment sought by the government. The extensions developed below use the IRP formula to determine the target exchange rate, similar to how Coulbois and Prissert (1974) suggest that forward rates are quoted so that the CIP always hold. This argument will be developed in the next section.

4.3.1. Yield-driven Foreign Financial Flows and Structurally High Interest Rates: A Policy-Target Exchange Rate in line with Keynes' Interest Rate Parity Theory

The first extension developed in this thesis is a long-period model which takes account of yield-driven foreign financial flows and is in line with Keynes's criterion number iii, the e*xchange rate, trade balance, and external competitiveness* criterion above stated. This extension arises from the issue of structurally high and volatile interest rates in DEEs (Andrade & Prates, 2013; Kaltenbrunner, 2015). The argument held by the currency hierarchy proponents underpins the first extension of the IEER approach. Such an argument emerges from the hierarchical nature of the International Monetary system characterised by points in time where international agents either "search for yield" or "flight to quality" driven by international agents' expectations (De Conti, et al., 2013). The former is one when international agents invest in assets in DEEs, whose interest rates are structurally high. The latter moment is one when international agents return to the central currencies. Having these elements in mind, the first extension proposed by this thesis aims to tackle the issue that arise in DEEs, which offer high-interest rates, attract yield-driven foreign financial flows that contribute to the appreciation of the domestic currency.

One of the contemporary forms of yield-driven foreign financial flows, is the carry-trade strategy that is defined as an investment strategy that involves borrowing in low yield markets (developed countries or the "funding currencies") to invest in high yield markets (DEEs or the "target currencies"). Such strategy benefits from interest rates differentials and the appreciation of

the target currencies, thus, take the risk of exchange rate depreciation of investment currency (Hoffmann, 2013). Carry-trade strategies can also be analysed in the light of the IRP theory, where the spot value is driven by investors decisions.

In practice, the carry-trade strategy reproduces the speculative scenario raised in Keynes' IRP theory, but unlike what he established, carry-traders can generate profits by recreating the disequilibrium process and, thus, are capable of producing significant and sudden fluctuations of the domestic currency, mostly independent of domestic economic conditions. Mainly because these investments seek high short-term profits and run the risk of exchange rate depreciation (Burnside, et al., 2011; Hoffmann, 2013).

The first model proposed has in mind the neutralisation of the effect of yield-driven foreign financial flows on the exchange rate. This extension assumes that there is "no movement in the 'equation of exchange' [in the balance of payments position] with the other country" and there is no loss of relative efficiency when capital and labour move from one country to the other[26] (Keynes, 1923, p. 76). The resulting concept is a PTER in line with Keynes' interest rate parity theory, which is a rate that allows efficient domestic producers to remain competitive, which is consistent at the same time, with the notion that the rate of return, at home and abroad, will be driven towards equality by adjusting the exchange rate - interest rates adjusted with exchange rates. In other words, a competitive level of the exchange rate in which the yield-driven foreign financial flows' profitability is trimmed.

The starting point of this model is Keynes' CIP condition which can also be expressed as:

$$(4.3)\ \frac{F}{S_0} = \frac{1+R}{1+R^*}$$

[26] The second extension devised in this chapter will introduce a modification to this assumption as it is mainly concerned with the pressures coming from a country's balance of payments position on exchange rates.

where F and S_0, the forward and the spot exchange rate and, R and R^* are the domestic and foreign short-term interest rates, respectively. The proposition here is to create an equation which shows the possibility that CIP holds artificially through managing the exchange rate and, thus, there is an equilibrium[27] when the foreign return excess that in the domestic economy and conversely, by adjusting the exchange rate in the hypothetical future time $t + h$. In this model, the forward rate is transformed and conceived as the future level of the exchange rate that the monetary authorities expect to achieve in the future, and it is a level that may or may not be reached as there are factors outside of the control of the policymaker. In other words, as will be explained below, the future spot exchange rate represents a target for domestic monetary authorities, which try to manage the exchange rate towards the target through influencing exchange rate expectations. The rationale for taking the forward rate as a basis to represent a future exchange rate, which ultimately is a spot rate in the future, is that exchange rate targets are generally set in, say, time $t = 0$ for time $t = 1$. Similarly, the approach put forward in this thesis aims to set a target in time $t = 0$ for the hypothetical future time $t + h$. This thesis utilises the IRP formula as a pricing rule for the future exchange rate reflecting the relevant interest rate differential, similar to the way the forward rate is quoted by banks as suggested by Coulbois and Prissert (1974), which in turn implies that the forward rate continuously coincides with the level suggested by the IRP theory. In this thesis' view, the central bank wants to control the future exchange rate by directly intervening in the current spot exchange rate and the forward market. To this is added the fact that a series of policies that aim to influence exchange rate expectations might be needed, as will be developed in chapter 6.

In this scenario, the proposed extension seeks to create an equation for the future exchange rate, which is thought of as a central parity, the target that aims to lead to a non-profit situation for speculators artificially. Although the CPI holds by definition, this extension draws from the idea that monetary

[27] The use of the term equilibrium here indicates a situation in which market forces are not pushing the exchange rate up or down. The exchange rate is stable at that rate.

authorities can artificially create a non-profit situation by exchange rate adjustments in time $t + h$. The latter idea is ultimately the cornerstone of the argument raised in this section.

To do so, equation 4.3 requires few modifications. First of all, F needs to be replaced by the policy target exchange rate, $e_{PTER-irp_h}$, which is the nominal exchange rate in $t + h$ time. In this thesis approach, the central bank is adjusting $e_{PTER-irp_{t+h}}$ and the rate has two characteristics that worth highlighting. Firstly, as already said, it is a variable that represents a future spot exchange rate and is in line with the hypothetical future situation that the PTER aims to create. Secondly, it is a key variable that can be adjusted in order to affect yield-driven foreign financial flows' profitability and, more importantly, its level deals with the issue of the structurally high interest rates - it counteracts the excess return in the domestic economy. Put differently, by managing $e_{PTER-irp_{t+h}}$, the exchange rate can be placed at a level at which yield-driven foreign financial flows' profitability is neutralised, given that the exchange rate movements can reduce their profitability. Thus, interest rates adjusted with exchange rates are brought to equality. Theoretically, one would expect that net short-term capital flows would be zero[28] if it is assumed that these flows are only driven by short-term interest rate differentials. However, this approach contends that net flows will not be zero given that different factors also drive these flows, but at least it neutralises one aspect, that is, the possibility of interest carry.

A fundamental aim of this extension is to address the question of what would be the hypothetical future exchange rate to prevent interest rate arbitrage? As the objective is to create an exchange rate that acts as a guideline where the future value of the exchange rate should be, we can express:

$$(4.4)\ F = e_{PTER-irp_{t+h}}$$

[28] It is important to note that here it is assumed that these flows are only driven by short-term interest rate differentials.

And therefore we can re write equation 4.3 as:

$$(4.5)\ \frac{e_{PTER-irp_{t+h}}}{S_0} = \frac{1+R_t}{1+R_t*}$$

Solving by the future value of the exchange rate, $e_{PTER_{t+h}}$, and after rearrangement, this gives:

$$(4.6)\ e_{PTER-irp_{t+h}} = S_0 \cdot [\frac{1+R_t}{1+R_t*}]$$

A level of the exchange rate set as in equation 4.6 guarantees that there is no carry to be made and, thus, satisfies equation 4.3. Equation 4.6 suggests that the future value of the exchange rate is determined by an adjustment which needs to be made to the current level of the nominal exchange rate, S_0, by a percentage equivalent to the excess of interest which can be earned in the domestic market over what can be earned in the foreign market.

However, as the main interest of this approach is to extend the IEER considering financial elements, the model assumes that S_0 is the current level of the nominal exchange rate that is consistent with the IEER. Thus, it is a level of the exchange rate determined by factors related to the relative unit labour costs. Therefore, the current level of the exchange rate is assumed to be a competitive level supportive of competitiveness s_i, adjusted by the unit labour costs differential and the price differential. In order to move from a past real exchange rate value to a current nominal exchange rate, few steps need to be made. First, consider that s_i is a level of the real exchange rate supportive of competitiveness that prevailed in the past, that is, time i. It is possible to proceed by defining s_i as 4.7:

$$(4.7)\ s_i = \frac{ulc_i}{ulc_i^*}$$

By recalling equation 2.22, it is possible to determine a nominal level of the exchange rate supportive of competitiveness S_i, that is:

$$(4.8)\ S_i = \frac{ulc_i}{ulc_i^*}\frac{P_i}{P_i^*}$$

Following the same logic S_0, the current level of the nominal exchange rate determined by factors related to relative unit labour costs, can be formally expressed as follows:

$$(4.9)\ S_0 = \frac{ulc_0}{ulc_0^*}\frac{P_0}{P_0^*}$$

To determine S_0, as a function of s_i, few steps need to be performed. First, in order to move from time $t = i$ to time $t = 0$ and using equations 4.8 and 4.9, one can write

$$(4.10)\ S_0 = \frac{ulc_i}{ulc_i^*}\frac{P_i}{P_i^*} + \left[\frac{ulc_0}{ulc_0^*}\frac{P_0}{P_0^*} - \frac{ulc_i}{ulc_i^*}\frac{P_i}{P_i^*}\right]$$

The left-hand side of equation 4.10 specifies that S_0 is a function of S_i plus a change in the exchange rate from time $t = i$ to time $t = 0$. In 4.11, 4.12, we factorise and we rearrange in 4.13:

$$(4.11)\ S_0 = \frac{ulc_i}{ulc_i^*}\frac{P_i}{P_i^*} + \frac{ulc_i}{ulc_i^*}\frac{P_i}{P_i^*}\cdot\left[\frac{\frac{ulc_0 P_0}{ulc_0^* P_0^*}}{\frac{ulc_i P_i}{ulc_i^* P_i^*}} - 1\right]$$

$$(4.12)\ S_0 = \frac{ulc_i}{ulc_i^*}\frac{P_i}{P_i^*}\cdot\left\{1 + \left[\frac{ulc_0}{ulc_0^*}\frac{P_0}{P_0^*}\frac{ulc_i^*}{ulc_i}\frac{P_i^*}{P_i} - 1\right]\right\}$$

$$(4.13)\ S_0 = \frac{ulc_i}{ulc_i^*}\frac{P_i}{P_i^*}\cdot\left[\frac{ulc_0}{ulc_0^*}\frac{ulc_i^*}{ulc_i}\frac{P_i^*}{P_i}\frac{P_0}{P_0^*}\right]$$

Recalling equation 4.7 and defining $g_{ulc\,0-i} = \frac{ulc_0}{ulc_i}$ and $\pi_{0-i} = \frac{P_0}{P_i}$ and denoting $g_{ulc\,0-i} - 1$ as the percentage variation in unit labour costs in the domestic economy from time $t = i$ to time $t = 0$, $\pi_{0-i} - 1$ is the inflation rate in the home economy from time $t = i$ to time $t = 0$, and * denotes the foreign economy.

Thus, we can write 4.14:

$$(4.14)\ S_0 = s_i\frac{P_i}{P_i^*}\cdot\left[\frac{g_{ulc\,0-i}-1}{g^*{}_{ulc\,0-i}-1}\frac{\pi_{0-i}-1}{\pi^*{}_{0-i}-1}\right]$$

Then, by combining equation 4.6 with equation 4.14, we get the nominal exchange rate that policy should target:

$$(4.15)\ e_{PTER-irp_{t+h}} = s_i \frac{P_i}{P_i^*} \cdot \left[\frac{g_{ulc\,0-i}-1}{g^*_{ulc\,0-i}-1} \frac{\pi_{0-i}-1}{\pi^*_{0-i}-1}\right] \cdot \left[\frac{1+R_t}{1+R_t^*}\right]$$

where $e_{PTER-irp_h}$ is the future value of the exchange rate, which is a function of factors related to the relative variations in unit labour costs, inflation and the domestic and foreign short-term nominal interest rates R_t and R_t^*. The future value of the currency equals the value of an exchange rate that is supportive of competitiveness determined by the relative dynamics of labour costs in competing industries with the aim of maintaining similar levels of profitability plus the interest rates differential.

The PTER in equation 4.15 is a competitive exchange rate that allows domestic manufacturer producers to remain competitive abroad and at which short-term capital flows will not be zero given that these flows are also driven by different factors, but at least it neutralised one aspect, that is the possibility of interest rate gains. Following equation 4.15, to compensate for changes in the dominant domestic forces, and thus maintain the validity of the IRP, the PTER rate must depreciate if, *ceteris paribus,* there are upward movements on the dominant domestic forces, namely unit labour cost and interest rates, and vice versa.

4.4. Keynes and Thirlwall on Exchange Rates and the Balance of Payments: Keynes' Transfer Problem and Thirlwall's Law

Capital flows, however, do not only generate shorts-term structural pressures but, through time, net capital inflows also lead to a process of debt accumulation. The accumulation of foreign-currency-denominated liabilities will eventually manifest by the tension it creates on the Balance of Payments (BOP). Keynes and Post Keynesian authors have captured these tensions in their analytical frameworks. They have stressed particular attention to the role of exchange rates, relative prices, and interest rates correcting the disparities on the BOP from different angles but closely interconnected in the way they capture the limits and the pressures that arise from the process of borrowing from abroad (Thirlwall & Hussain, 1982; Moreno-Brid, 1998; Moreno-Brid, 2003; Razmi, 2016; Alencar, et al., 2019; Bhering, et al., 2019).

On the one hand, Keynes' (1930) transfer problem emphasises the structural pressures that an increasing stock of foreign-currency-denominated liabilities creates on the BOP. Keynes' argument was developed in the context of an international policy debate of how Germany could solve an unprecedented change in the magnitude of foreign liabilities and, therefore, a profound change on its BOP. The idea of the problem is how an unfavourable financial account forces policy action to direct their efforts to promote policies to positively influence the trade balance to meet foreign-denominated liabilities when foreign investment stops flowing into the economy. Keynes' idea resembles an ideal adjustment that policy should aim for so as to achieve the BOP equilibrium. Such an equilibrium is characterised by an increase in competitiveness, which would improve the trade balance situation. As exports are higher than imports, a country's incomes are higher than its expenditures, and therefore it is easier for a country to repay its outstanding liabilities in foreign currency. The transfer problem can be seen as a predominantly normative analytic framework as it explains the process of rightly adjusting the BOP. Although there are multiple tools to adjust the BOP, this section focuses on one of the most important instruments to achieve the equilibrium, that is the exchange rate. In this vein, Keynes' argument serves as a central basis for the second extension proposed in this thesis and follows criterion ii above described.

On the other hand, one strand of Thirlwall's law literature captures the pressures that financial flows create over the BOP. Thirlwall's law is an analytical framework more on the grounds of a positivist theory, which explains how the BOP influences economic growth. It states that the BOP position can limit aggregate demand growth and, therefore, a country cannot sustain an ever-growing current account deficit (López & Cruz, 2000)[29].

[29] This line of thought can be sustained only in general terms. Bresser-Pereira & Rugitsky (2018) argue that the exchange rate scepticism is a characteristic of Thirlwall's law literature. Most of these studies are done under the implicit assumption that the real exchange rate is constant in the long run. It is worth noting that a positivist side of the exchange rate analysis concerns to this literature. Thirlwall's law literature starts from a premise that considers the "actual" behaviour of the exchange rate, which is the case of most countries. Our approach concerns the normative side of the exchange rate analysis. However, Thirlwall (2011) seems to give some hints related to that normative side of the exchange rate analysis. He argues that a currency depreciation "will improve the balance of payments equilibrium growth rate provided the sum of the own-price elasticities of demand for imports and exports exceeds

Whereas the literature has traditionally focused on real factors, there is a recent literature which has incorporated the role of capital flows into the BoP model. The literature of the BoP incorporating the role of capital flows is important for this thesis' purposes as it draws attention to elements not incorporated into Thirlwall's original approach. This relatively new literature incorporates into the analysis interest rate payments, the sustainability of the current account, and the financial limits imposed by creditors; all of which influence the BoP equilibrium growth rate (Thirlwall, 2011; Alencar, et al., 2019).

Keynes' transfer problem and Thirlwall's law are closely interrelated as both are concerned with the performance of exports and imports and, therefore, are concerned about the importance of the BoP, which is a crucial factor for output growth determination in DEEs. Indeed, both approaches are, in essence, highly rooted in Keynes' theory of aggregate demand, which advocates net exports as an alternative means of boosting demand. On the one hand, Keynes' transfer problem is related to aggregate demand theory since it gives trade surpluses a central role for economic recovery and debt servicing. On the other hand, Thirlwall's law analyses the role of real external variables as main income growth determinants. Furthermore, both approaches emphasise the importance of the limits imposed by the scarcity of foreign exchange either by difficulting the BoP adjustment or constraining an economy's growth rate. In addition, the approaches are also linked as their arguments highlight the importance of a healthy BoP, which is manifested through the non-deterioration of the BoP when demand expands to achieve the level close to its productive capacity that, in turn, encourages investment and employment.

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unity in absolute value, which is the so-called Marshall-Lerner condition" however, he highlights that " once-for-all depreciation of the currency cannot raise the balance of payments equilibrium growth rate permanently" and as such "to raise the balance of payments equilibrium growth rate permanently would require continual depreciation" (p. 433).

4.4.1. Keynes' Transfer Problem

In the *Treatise on Money* (1930) Keynes elaborates theoretically the argument of the transfer problem[30] that was previously debated in the *Economic Journal* (1929) with reference to the German reparation problem. In what follows this thesis examines Keynes' transfer problem relying on the *Treatise*[31] .

Keynes' analysis carried out in the *Treatise* led him to reject the PPP given the effects that the movement of capital from one country to the other has over terms of trade and the BOP. He argued that the PPP theory did not recognise the effect that foreign lending had over the terms of trade. As Keynes noted (1930, p. 302):

> *The neglect to allow for the effect of changes in the terms of trade* is, perhaps, the most unsatisfactory characteristic of Professor Cassel's *Pucharsing Power Parity Theory of the Foreign Exchanges*. For this not only upsets the validity of his conclusions over the long period, but renders them even more deceptive over the short period, whenever the short period is characterised by a sharp chance in the attractions of foreign lending [my italics].

The transfer problem is defined in general terms as the "problem of transition [in the BOP] which occurs when there is a change in the locality where investment takes place" (Keynes, 1930, p. 307). Such a disturbance forces monetary authorities to adjust policy variables - the interest rate and/or the exchange rate - to effect a considerable change in the trade balance through the impact they have over the labour costs and the general price level.

Some key elements allow one to fully understand Keynes' (1930) theoretical argument. The starting point is the study of the process of achieving external

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[30] The transfer problem theory is commonly associated with the issue of sovereign debt; however, it has a broad application for the analysis of the BOP. The generality of Keynes' approach becomes clearer in Keynes' reply to Ohlin in the Economic Journal in 1934. Keynes recognised that in his article The German Transfer Problem he "applied general principles to a particular case [the German reparation problem], without attempting to go deeply into the general principles themselves or even to enunciate them in a generalised form" (Keynes, 1978b, pp. 475).

[31] In this regard, this chapter points to chapter 21 of Keynes' *Treatise on Money* (1930), and the chapter on "The Foreign Exchanges" in Robison's *Essays in the Theory of Employment* (1937) as Keynes' main arguments were also further elaborated by Robinson (1937).

equilibrium (the equilibrium in the BOP defined as the equality between the trade balance, B, a function of relative prices, and the foreign lending, L[32], a function of relative interest rates). Even though the equality is always fulfilled[33], imbalances originated either from the trade or the financial side boost necessary changes in interest rates or exchange rates to achieve the BOP equilibrium (Keynes, 1930; Robinson, 1937). In addition, the argument makes the simplifying assumption of a two-country world, country *a* and *b*, where the former is the most favourable country or the net creditor country, and the latter is, by hypothesis, the weaker economy or the net debtor country.

Keynes' initial situation based on the change in the locality of investment is also one in which there is a sudden stop in the foreign lending or capital flows for country *b*. Such a situation is characterised by two facts. First, by an unfavourable balance on the financial account, which represents both the pressure or the fact of a movement of capitals[34], and forces monetary authorities to "alter their terms of lending as temporarily to reduce the net amount of the [financial account] and ultimately to increase [the trade balance]" via the disturbance[35] of the "existing investment equilibrium in both

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[32] There are two principal components of the BOP in Keynes (1930). The *foreign balance* (B) is defined as the balance of trade, which is the outcome of the difference between the domestic goods and services sold to the rest of the world minus the foreign goods and services sold to the domestic market. On the other hand, the *foreign lending* (L) is defined as the "unfavourable balance of transactions on capital account" and represents the "*financial transactions*", which is the "excess of the amount" or the difference from the money of the domestic residents transferred to foreigners through purchases of foreign investments minus the money non-residents expended to purchase domestic investments (Keynes, 1930, p.119). Thus, for Keynes, the processes represented in L involve claims on hand of residents or foreigners "in return of some kind of bond or title to property or future profits" (ibid, p.119). These unfavourable transactions on capital account are what is known as the *financial account,* which is the account that reflects both the domestic and foreign ownership of assets such as debt, equity and foreign exchange reserves. This thesis, however, uses L to refer to the financial account.

[33] Although the equilibrium here concerns a mere identity, shifting from one period to the other brings about changes. One can see Keynes' notion of shifting equilibrium (dynamic economics), in which the conditions in the newer positions of equilibrium change as time moves. In other words, the equilibrium is characterised by changing patterns (prices and production), where historical time matters.

[34] Keynes refers to gold movements as he may have written his *Treatise on Money* in the period of the so-called Interwar Gold- Exchange Standard. Currencies were redeemable into gold at that time. However, pounds could be redeemable into dollars and dollars into gold.

[35] The latter point is central in his reasoning, and the complexity of achieving such an adjustment is made clear in his text The German Transfer Problem, where he states that in

countries leading to appropriate changes in relative prices of home and abroad" (Keynes, 1930, p. 296). Second, by a change in the factors of production meaning that investments that were previously manufacturing goods in country *b* manufacture goods in country *a*. These changes, in turn, will lead to modifications of the terms of trade determined by "physical facts and capacities" of each country. Such changes lead to a loss or gain of efficiency relative to the other country. In Keynes' framework, it is this gain or loss of efficiency in each country that will contribute to the modification of the terms of trade adversely for the most efficient producer.

The first fact mentioned above forces monetary authorities to adjust either the interest rate (contractionary monetary policy) or the exchange rate (devaluation) to achieve external equilibrium by improving B. On the one hand, the interest rate method, which has a lagged and indirect effect on B does it throughout the deflationary bias it introduces to the economy. In addition, the interest rate method has the peculiarity of affecting more directly on L given that it can make one market more attractive for investments compared to another. On the other hand, the exchange rate method will modify the price of tradable goods, assuming static the price of non-tradable goods and thus leading to a trade surplus. He argues that a surplus in B is understood as a "surplus home production" of tradable goods also allows a country to increase its foreign investment, given that the domestic market is more attractive to manufacturer producers.

The existence of the two different tools in Keynes is the result of an analysis that takes into consideration external adjustment under two cases: a purely fixed exchange rate regime and some sort of managed exchange rate regime. In the first case, gold movements allow a country to correct disparities in the BOP. These movements are prevented (or allowed) through the nature of monetary policy, that is, given the position of the interest rate in relation to its

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the reparation case the main problem was to force the trade balance to adjust to the financial account, arguing that those who do not see any difficulty in such an adjustment are "applying the theory of liquids to what is, if not a solid, at least a sticky mass with strong internal resistances" (Keynes, 1929, p. 6).

natural rate [36] [37]. Such policy will, in turn, lead to variations in the terms of trade. For example, if country *b* is reluctant to lose gold, the interest rate is set above its natural rate until it introduces a deflationary bias to the economy, keeping lower rates of growth, pushing prices and labour costs down and consequently the process of deflation will lead to a deterioration of the terms of trade for country *b*).

In the second case, the pressure is on the exchange rate to correct the disequilibrium between B and L. Keynes (1930) indeed recognises that a change in the exchange rate can also restore the BoP equilibrium and not only the interest rate. As Keynes (1930, p. 321) noted:

> In short, the operative machinery for the preservation of external equilibrium is no longer, primarily, a change in bank rate, but a change in the rates of foreign exchange. Bank rate remains as a secondary instrument for external equilibrium and as a primary instrument for internal equilibrium.

Keynes (1930) states that the exchange rate method has a more direct effect on B as it can affect relative price levels directly.

However, in some cases the exchange rate method is not sufficient to equilibrate the BoP. The exchange rate method and the interest rate method can be complementary one to the other. This is dictated whether changes in prices or interest rates are *permanent* or *transitory* and the effect such changes have over the terms of trade. For Keynes (1930), in case of

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[36] In Keynes (1930) analysis, there is an adherence to the original conception of the natural rate of interest. It can be argued that the natural rate of interest here concerns to one that balances savings and investments. In addition, its position with reference to the market rate of interest boosts a process of inflation or deflation. That is, if the market rate is below the natural rate of interest there is a process of inflation, whereas if the market rate is above the natural rate a deflationary process is triggered.

[37] Although not the main interest of this thesis, the natural rate of interest can be understood as a benchmark interest rate in line with Post Keynesian thinking (see for example Pilkington, 2014), which rejects the notion of the natural rate of interest. Therefore, one possibility to deal with this issue is by replacing the notion of the natural rate with some appropriate benchmark rate of interest (see Smithin (1994), and Rochon Setterfield (2007) for some alternatives). The appropriate benchmark rate of interest is defined as a target interest rate that follows a rule which determines a “proper” interest rate and independent of market forces. This market rate should be in line with economic stabilisation policies that pursue economic growth and full employment.

permanent changes in the foreign price level, the exchange rate method is a more effective tool to restore external equilibrium. However, if the disequilibrium is caused by a *permanent* change in the foreign interest rate level and it leads to a modification in the terms of trade, both the interest rate method and the exchange rate method enable a country to achieve equilibrium. Otherwise, if there is no modification in the terms of trade, the interest rate method remains an essential tool to achieve the BoP equilibrium. If changes in prices and interest rates are *transitory*, Keynes argues that the exchange rate method is the most effective tool restoring the BoP equilibrium. This given that prices respond faster and directly when the exchange rate is adjusted and without any structural alteration (i.e. income levels) as it does the interest rate method. In addition, the lag that the interest rate method carries to adjust the BoP equilibrium effectively can be non-essential when policymakers aim to adjust a transitory disequilibrium.

But there is a side effect of the use of the exchange rate method that needs to be considered, which reminds the effect that exchange rates can have discouraging foreign lending and borrowing. Keynes (1930) points out that the uncertainty surrounding the use of the exchange rate method to equilibrate the BoP will tend to shrink the volume of foreign lending and foreign borrowing. Given that the effect that an exchange rate depreciation impacts on the price of liabilities when converted to domestic currency. Thus, the use of the exchange rate method and the interest rate method is also a function of whether policymakers aim to encourage or discourage foreign borrowing or lending activities.

Keynes (1930) argument of forcing a favourable B to drive L into the desired direction is to a certain extent an argument that acknowledges a successful export-led strategy implicitly as an increase on exports does not deteriorate the BoP simultaneously. It is an argument that can be thought to generate a virtuous cycle. That is, when demand pressures reach a level close to the existing productive capacity, without deteriorating the trade balance, such an increase in demand can increase the growth rate of an economy as it stimulates investment, job creation and the movement from the less efficient

sectors to high efficient ones, along with an increase on the capacity to import as domestic resources are more productive (Thirlwall, 2011).

4.4.2. Thirlwall's Law, Exchange Rates and Capital Flows

Thirlwall's law or the BOP constraint growth model arises from the analysis of growth rates disparities among countries, mainly driven by constraints on demand, in which the primary constraint lies on the BOP. The BOP constrained growth model is understood as the "growth rate associated with the balance of payments balancing, i.e. with all debits and credits summing zero" (Thirlwall & Hussain, 1982, p. 502). It subscribes to the notion that domestic output growth is driven by the growth of world demand and the relevant demand elasticities (Razmi, 2016). Indeed, Thirlwall (2011) argues that "believers in export-led growth are really postulating a balance of payments constraint theory of why growth rates differ" (p. 430). Thirlwall's law can be seen as a positivist analytical tool given that it states that a country's growth rate is approximated by the "rate of growth of exports divided by the income elasticity of demand for imports" (Thirlwall, 2011, p. 429) assuming that the real exchange rate is constant over the long-run.

The basic formulation of Thirlwall's law is given by a system of equations (for imports and exports) which follows a trade balance condition as shown in equation 4.16. Following Thirlwall (2011), the BOP constraint growth model starts from:

$$(4.16)\ P_t \cdot X_t = P_t^* \cdot M_t \cdot E_t$$

where P_t is the domestic price level, P_t^* is the foreign price level. X_t is the volume of exports, M_t is the volume of imports, E_t the exchange rate (defined as the domestic currency per units of foreign currency). After applying a logarithmic transformation to both the trade balance condition and the exports and imports equations, which are defined as a function of price levels and income levels of home and abroad, the BOP equilibrium growth rate is (Blecker, 2016):

$$(4.17)\ Y_{Bt} = \frac{(\varepsilon_x + \varepsilon_m - 1)(\hat{E} + p_t^* - p_t) + \epsilon(y_t^*)}{\pi}$$

Equation 4.17 shows a growth rate incorporating the variation of relative prices, where ε_x is the relative price elasticity for export demand, ε_m is the relative price elasticity for import demand, $\hat{E}$ is the rate of change of the nominal exchange rate, p_t is the rate of change of domestic prices, p_t^* is the rate of change of foreing prices, ϵ is the income elasticity of demand for exports, y_t^* the rate of growth of the foreign income level, and and π is the income elasticity of demand for imports.

Further assuming that: i) relative prices do not move in the long run ($p_t = e_t + p_t^*$ remain invariable); ii) current account deficits cannot be financed, and; iii) that $\epsilon(y_t^*) = x_t$ since the exogenous income growth abroad, $\epsilon(y_t^*)$, is not available for all countries and thus substituted by x_t that is the country's rate of growth of exports. Equation 4.17 can be rewritten as:

$$(4.18)\ Y_{B_t} = \frac{x_t}{\pi}$$

Equation 4.18 states that a country cannot achieve higher growth rates than its BOP equilibrium growth rate (Thirlwall, 2011). However, there are two exceptions. One is that a country can grow faster than its BOP equilibrium growth rate if it can finance ever-growing current account deficits through capital inflows. The other is the case of countries that have a high BOP equilibrium growth rate, such as oil produces, but its physical capacities do not allow these countries to grow at a higher rate. According to McCombie and Thirlwall (1997) one of the possible ways to assess the BOP constraint growth model is to examine the evidence as to whether or not the exchange rate has a considerable impact over the rate of growth of exports and imports. They argue that such an approach will also need to consider the evidence with regards to the magnitude and persistence of capital flows among countries and to evaluate whether or not these are enough to compensate for the slow growth of exports.

Below, this thesis briefly analyses the role of exchanges rates and capital flows in the BOP constraint growth literature. The BOP constraint growth literature analysis and particularly that which incorporate the effect of capital flows is important for this thesis for two main reasons. First, the BOP constraint

growth literature acknowledges that the exchange rate could start a process of increasing economic growth. Second, the literature concerning capital flows is relevant for this thesis as it shows both the pressures that financial factors exert on the BoP and the limits imposed by foreign creditors.

4.4.2.1. Thirlwall's Law and Exchange Rates

Let us first start analysing the role of exchange rates in Thirlwall's law literature. It is commonly argued that the BoP constraint growth literature contributes to some sort of exchange rate scepticism and/or to boost the argument of the exchange rate neutrality over the long-run (see for example Bresser-Pereira and Rugitsky, 2018; Razmi, 2016 and Blecker, 2016).

Razmi, for example, argues that most of the BoP constraint growth literature postulates that the real exchange rate plays a passive role and, if it matters, it does in the "form of changes rather than levels" (Razmi, 2016, p. 1582). According to Blecker (2016) the exchange rate neutrality is often claimed in the form of "elasticity pessimism" ($\varepsilon_x + \varepsilon_m \approx 1$) or the real exchange rate remaining constant over the long run $(E + p_t^* - p_t \approx 0)$ (p. 281). Blecker suggests that empirical evidence shows that particularly the level of the exchange rate has a positive association with economic growth (for instance, Rodrik, 2008; Korinek and Servén, 2010; Berg et al. 2012; Rapetti et al. 2012; Razmi 2016).

However, McCombie and Thirlwall (1997) and Thirlwall (2019) claim that it is not their contention to ignore the role of exchange rates in economic growth. Indeed, the importance of the real exchange rate is noted by Thirlwall (2011, p. 433) who points out that:

> Devaluation or currency depreciation, i.e. a rise in the home price of foreign currency (e_t> 0), will improve the balance of payments equilibrium growth rate provided the sum of the own price elasticities of demand for imports and exports exceeds unity in absolute value, which is the so-called Marshall-Lerner condition. Notice, however, the important point that a once-for-all depreciation of the currency cannot raise the balance of payments equilibrium growth rate permanently. After the initial depreciation, e_t=0, the growth rate would revert to its former level. To raise the balance of payments equilibrium growth rate

> permanently would require *continual depreciation* i.e. e_t > 0 in successive periods. (my italics)

Two key factors stand out in the above Thirlwall's quote. One is the fact that such depreciation in the exchange rate needs to be continuous and such a continuous exchange rate depreciation for some of Thirlwall's supporters is an "implausible" situation (McCombie, 2011, p. 358). One can judge such an asseveration fairly in the light of Thirlwall's (2019) claims. On the one hand, Thirlwall (2019) argues that a long-run adjustment in the real exchange rate is questionable for reasons associated with country-specific characteristics. Factors such as exchange rate pass-through; 'price to market', which involves absorbing the variations of the exchange rate to maintain market shares; and sticky prices in the domestic economy add to this resistance.

On the other hand, Thirlwall argues that depreciation could stimulate a process of increasing economic growth, but it cannot maintain it. Given that the effect of an exchange rate depreciation can fade, it may have transitory effects, or even terms of trade shocks and volatile capital flows can occur. Particularly the latter case can lead to deviations from its BOP equilibrium growth rate, which are not long-lasting given that structural characteristics of an economy determine the growth rate over the long run. The other is that, clearly, what matters is the change in the exchange rate, in the shape of an exchange rate depreciation, to increase the BOP equilibrium growth rate. However, such a statement is debatable. The importance of the changes is the result of the transformations to which the equations of exports and imports are subject. Thirlwall (2019) states that if one were to include the level of the exchange rate making the growth of exports a function of the level, it would involve an abnormal demand function of exports, which won't be a continuous elasticity function. He argues that the price elasticity would change according to the "changing ratio of the growth of exports to the price level" that is not theoretically adequate (Thirlwall, 2019, p.559).

4.4.2.2. Thirlwall's Law and Capital Flows

Let us now move to the analysis of the role of capital flows in Thirlwall's law literature. A large and growing body literature has investigated the role of capital flows in the context of the BOP constraint growth theory. The BOP

constraint growth literature have been extended so as to consider the role of capital flows raising the question of whether these flows actually moderate or remove the BOP constraint on economic growth (McCombie & Thirlwall, 1997). According to Britto and McCombie (2009), several contributions to the BOP constraint growth literature have been made to consider the role of capital flows, namely, Thirlwall and Hussain (1982), McCombie and Thirlwall (1997), Moreno-Brid (1998), Moreno-Brid (2003). Further, Alencar, et al. (2019) and Bhering, et al. (2019) join to this growing literature.

As a whole, the contributions to this strand of literature have shown that capital flows have little impact increasing the BOP equilibrium growth rate and highlight both the limits to external financing and the pressures that they create over the BOP, which become relevant in the light of the transfer problem. That is, the BOP pressures arising from debt financing conditions.

A first extension can be found in Thirlwall and Hussain (1982). The authors make the case where the BOP is in a disequilibrium position and moves towards further disequilibrium through time. For Thirlwall and Hussain, the BOP constraint growth is given by the rate of growth of exports plus the real rate of growth of capital flows divided by the income elasticity of demand for imports, meaning that countries with higher real capital inflows can achieve higher BOP constraint growth rates. A second extension is put forward by McCombie and Thirlwall (1997) who extend the notion that current account deficits cannot grow without limit in the context of increasing stock of debt and investors' aversion to financing deficits notwithstanding interest rate differentials. The authors argue that the real interest rate should be lower than the real growth to stabilise the debt to GDP ratio. Otherwise, the debt to GDP ratio will experience an increasing trajectory, which, in turn, will require increasing capital inflows to sustain a constant BOP growth rate. A third extension can be found in Moreno-Brid (1998) who modifies the standard BOP constraint growth model to satisfy a condition in which the long-term economic growth is associated with a sustainable path of foreign liabilities. Such a sustainable path of foreign liabilities is represented as a constant current account deficit as a share of GDP. A fourth extension is also put forward by Moreno-Brid (2003) who adapts Thirlwall and Hussain's (1982) model to capture interest

payments. According to the author, the assumption that interest payments are constant in the long-run yields to a loss of predictive power of the BOP constraint growth theory for cases where such payments constitute a big part of current flows. Moreno-Brid shows that higher interest payments abroad lead to lower BOP constraint growth rates. A fifth extension is put forward by Alencar, et al. (2019) who investigate the effect of Foreign Direct Investment (FDI) and long-run economic growth. The authors show analytically a negative association between the real value of FDI flows and the real value of incomes derived from FDI with long-run economic growth.

Finally, and perhaps most relevant to this thesis, is the extension proposed by Bhering, et al. (2019) bring in another dimension of the debt sustainability problem. In this case, the analysis emphasises the ratio of debt as a share of exports as an appropriate proxy to evaluate the capacity of an economy to generate foreign currency. In addition, the authors include a maximum import to export ratio, which is equivalent to a limit given by a level of indebtedness according to credit constraint conditions. That is, an upper ceiling that is imposed from creditors to debtors and the association between the cost of liabilities and the rate of growth of exports.

Bhering, et al. (2019) analysis considers that a country cannot experience an indefinite loss of foreign reserves and long-run capital flows are assumed to be the new flow of external debt to finance current account deficits.

One key element of this analysis is the incorporation of a maximum imports to export ratio where the external debt is at is maximum, which, in turn, is determined by foreign credit conditions. Such a maximum ratio is denoted by b which is given by:

$$(4.19)\ b = d_{max}\left(\frac{g_x - r}{1 + g_x}\right)$$

Where d_{max} is a point where foreign creditors will stop financing current account deficits, a credit constraint that is determined by foreign creditors, g_x is the rate of growth of exports, r is the net cost of liabilities.

Solving the model, the BOP constraint growth rate is defined by Bhering, et al. (2019) as:

$$(4.20)\ Y_{B_t} = \frac{X(1+b)}{\pi}$$

Equation 4.20 incorporates the debt financing conditions, that is, the foreign limits imposed by foreign creditors, the relation among interest rate payments and the rate of growth of exports, which together are added to the standard BOP constraint growth model.

Thirlwall's law extensions show a more realistic picture of the limits of financing current account deficits given the constraints imposed by financial factors, namely, the willingness of foreign investors to continue the processes of lending abroad and the pressures imposed by a country's increasing stock of foreign liabilities. These limits on current account deficit financing and the importance of considering the pressures created by external liabilities show the relevance of bringing back Keynes' analysis on the transfer problem.

In what follows, this thesis proposes a second extension to the IEER approach that deals with the pressures arising from a stock of foreign-denominated currency liabilities. The exchange rate is assumed to have a positive impact on the BOP equilibrium and output growth. Before moving on, one important thing to note is that the changes to the Thirlwall's law models solution imply changes in the composition of the factors determining exchange rates. That is, changes from one solution that incorporates the composition of exports and imports to another that incorporate financial factors necessarily change the composition of the factors setting exchange rates. In this vein, the policy target exchange rate proposed in this thesis can also be seen as a level that can stimulate and sustain a process of increasing economic growth in the realm of Thirlwall's law extensions.

4.4.3. A Policy Target Exchange Rate in line with Keynes' Transfer Problem and Thirlwall's Law

The criterion ii, which links the *exchange rate and national debt sustainability* allows for the second extension proposed in this thesis. As Keynes (1941) pointed out, one criterion to decide the future value of the domestic currency

is to aim for the reduction of the burden of the national debt to sustainable levels. The second extension proposed in this thesis conceives a PTER which highlights the importance of the relationship between exchange rates and foreign-currency denominated liabilities. The extension is based on Thirlwall's law idea that a country cannot sustain an ever-growing current account deficit (López & Cruz, 2000) as capital flows impose limits for financing such deficits. As such, DEEs may face episodes in which they need to decrease L and increase B so as to stabilise the level of foreign external liabilities around sustainable levels and, thus, stabilising the effect of the financial account on exchange rates through higher trade balances. At the same time, an appropriate level of the exchange rate such as the one invoked by the PTER can help DEEs to achieve higher BoP constraint growth rates by assisting economies to reduce the impact of financial factors constraining the economies' growth performances. The model developed in this section considers that the preferred instrument to achieve external equilibrium and that the exchange rate is a key tool to pay back foreign-currency-denominated liabilities following the insights put forward in Keynes' transfer problem.

Indeed, one of the problems that DEEs face, given their adoption of the growth cum foreign savings strategies, is the increasing stock of foreign-denominated liabilities. The result of such a strategy is similar to Germany's situation, which inspired Keynes to write about the transfer problem. Keynes, in 1924, pointed out that Germany continued to operate with both trade and current account deficits and used external indebtedness to meet the deficit and reparation payments (Moggridge, 1992). Alongside this, rising prices and rising real wages led the country far from the competitive position needed to pay for its outstanding liabilities. Similarly, Thirlwall's law becomes important for DEEs in the context of increasing current account deficits, the accumulation of foreign liabilities and relatively low rates of output growth along with a less dynamic export sector. Following McCombie and Thirlwall (1994), such deficits are financed through high-interest rates that favour the accumulation of monetary assets and liabilities against productive assets in the short-run. However, this situation cannot be sustained forever.

The transfer problem theory has already been applied to the spectrum of the exchange rate analysis. Lane and Milesi-Ferretti (2004) have investigated the relationship between real exchange rates, net foreign assets, relative GDP and the terms of trade in order to evaluate the significance of the transfer effect. The authors have taken a positivist approach as their analysis leads to the conclusion that countries with an unfavourable net external position (debtor countries) tend to have more depreciated exchange rates.

The model proposed here, however, interprets Keynes' transfer problem in normative terms, in such a way that it dictates a desired adjustment to the exchange rate in order to equilibrate the BOP allowing DEEs to reduce the size of their external liabilities and the structural burden they creates on the BOP. The formulation put forward in this section follows the interpretation of the transfer problem in terms of finding a level of the exchange rate to improve the trade balance and is carried out under the assumption of a managed floating exchange rate regime. Thus, here, this thesis concentrates on the development of one of many possible methods to correct the BOP difficulties: an exchange rate that works as a target to overcome these problems.

This second extension assumes that there is a movement in the BOP position. The initial situation is one in which there is an unfavourable balance in the financial account, which represents both the pressures and the fact of the movements of capital (Keynes, 1930). Consequently, it forces policymakers to start a process to guide throughout the hypothetical future time, the size of previously accumulated external liabilities towards a sustainable path. This exchange rate aims to preserve external equilibrium and assumes that the central bank is committed to achieving only the external equilibrium. It aims to achieve a healthy and sustainable balance between B and L from the angle of a net debtor country. A healthy and sustainable balance between B and L is understood as the reduction of L and the increase of B through the hypothetical future time that could start a virtuous cycle. Such a virtuous cycle is expected to lead to higher rates of growth through boosting the levels of investment, and the consequent increase in the demand of labour and the factors of production producing in high productivity sectors. This model assumes that the exchange rate is an instrument to achieve the desired BOP

equilibrium, capable of increasing the size of B over time. As such, it aims to have cheaper exports than those considered in the first model and thus, at first, looks for an adjustment to the real exchange rate supportive of competitiveness s_i, that the PTER aims to stabilise given that it is assumed a movement in the BOP position.

The starting point of this model is the BOP identity:

$$(4.21)\ B = L$$

where B is the trade balance or the non-income current account (NICA) and L is the financial account. In what follows this thesis uses trade balance or the NICA indistinctively. One of the advantages of using the NICA for this analysis is that it assumes away interest and transfer payments and preserves the material transactions (exports and imports) in the current account, being exports a source of foreign currency generation.

As flows generate stocks, a country's NICA deficit is financed through financial flows. Financial flows, in turn, generate increases in foreign liabilities, which lead to increases in the stocks of foreign liabilities. As this relationship is analysed from a BOP perspective, net external positions are important to analyse its development *vis-à-vis* the rest of the world. To represent such an interaction, it is possible to write:

$$(4.22)\ L = \Delta NFA = NFA_t - NFA_{t-1}$$

where, NFA is the net foreign asset (NFA) position or the net international investment position. The NFA is computed as the stock of external assets minus the stock of external liabilities, which indicates whether an economy is a net debtor or net creditor.

Considering the above situation, if a country has to pay back outstanding external liabilities, it means that it has to run a NICA surplus. The NICA is specified as a function of domestic and foreign output and the exchange rate for present purposes. The specification follows the trade balance specification as in Rose and Yellen (1989) and Rose (1990). Following Rose (1990), the trade balance, B, is given by the difference between the values of exports

and imports. The specification is derived from demand curves that determine the demand for domestic imports and exports, which are a function of the real exchange rate, s, and domestic and foreign income levels, y, $y*$, respectively. That is:

$$(4.23)\ B_t = X(s_t, y_t) - M(s_t, y_t^*)$$

or

$$(4.24)\ B_t = f(s_t, y_t, y_t^*)$$

Substituting 4.22 in 4.21 and considering 4.24 we can write:

$$(4.25)\ B_t = f(s_t, y_t, y_t^*) = \Delta NFA$$

The first element of equation 4.25 is assumed to affect B positively, such that a real exchange rate depreciation improves the NICA as exports become cheaper and imports more expensive; the domestic output affects B negatively as increasing income levels lead to a rise in the domestic consumption and an increase in the demand for imports, and the foreign output affects B positively as it leads to a rise in the foreign consumption and consequently an increase in the demand for exports. Changes in the NICA must be balanced by the inflow/outflow of capital, which is represented in the last term of equation 4.25.

The main point of this extension, however, is to make the hypothetical case in which a change in the exchange rate allows a country to operate with a NICA surplus and, thus, a partial repayment of outstanding external liabilities. This means that a country's ability to generate such a trade surplus is translated into its ability to achieve a successful process of foreign currency generation. In equation 4.26, we present the hypothesised ideal BoP position. The way we see the BoP in the next expression is in adjustments that will help to achieve desirable or sustainable values for some variables, mainly the NICA. For simplicity, we consider that the hypothetical case can be made considering the current values of both the domestic and the foreign output and an adjustment to the real exchange rate, that helps to achieve a desirable change

in the trade balance, ΔB_t. If a change in the NICA is thought as one which drives the NFA towards a sustainable value, we can write:

$$(4.26)\ \Delta B_t = f(\Delta s_{TP_t}, y_t, y_t^*) = \Delta NFA$$

where, the desired change in the NICA, ΔB_t, is a function of a change in the real exchange rate Δs_{TP_t}, the domestic output y_t, and the foreign output, y_t^*.

The success of achieving a sustainable NICA for a debtor country is associated to the sensitiveness of the parameters in 4.26 and, in particular, in the trade balance elasticity with respect to the real exchange rate. For a depreciation in the exchange rate to improve the trade balance, this model considers the argument in terms of four elasticities following Robinson (1937). That is, on the exports side: the foreign elasticity of demand for exports, and the home elasticity of supply; on the imports side: the home elasticity of demand for imports and the foreign elasticity of supply for imports. On the one hand, an exchange rate depreciation that makes exports cheaper in the foreign market requires the foreign elasticity of demand to be greater than unity and the home elasticity of supply to be elastic. In other words, the combination of an elastic foreign demand and an elastic home supply allows a country increasing exports at its maximum. On the other hand, when the depreciation makes imports more expensive in the domestic market, it requires that both the home elasticity of demand for imports and the foreign elasticity of demand to be elastic. That is, a currency depreciation will lead to the desired results if the Marshall-Lerner condition holds ($\varepsilon_x + \varepsilon_m > 1$).

Assuming that $\Delta B_t = \Delta NFA$, to determine an adjustment to the real exchange rate supportive of competitiveness s_i, that the PTER aims to stabilise, the following equation must be solved:

$$(4.27)\ \Delta s_{TP_t} = f(\Delta B_t, y_t, y_t^*)$$

However, since it is our interested to determine the level of the exchange rate that neutralises the financial forces, we can connect equation 4.27 with equation 4.15:

$$(4.28)\ e_{PTER-tp_{t+h}} = \left[s_i \frac{P_i}{P_i^*} + \Delta s_{TP_t} \frac{\Delta P_t}{\Delta P_t^*}\right] \cdot \left[\frac{g_{ulc\,0-i}-1}{g^*_{ulc\,0-i}-1} \frac{\pi_{0-i}-1}{\pi^*_{0-i}-1}\right] \cdot \left[\frac{1+R_t}{1+R_t^*}\right]$$

Equation 4.28 shows an exchange rate that promotes trade surpluses to overcome BOP difficulties. In this vein, the PTER becomes the level of the exchange at which the most efficient manufacturers remain competitive in the domestic and foreign markets allowing a country to run the necessary trade surpluses for the partial repayment of outstanding external liabilities. $e_{PTER-tp_h}$ is a hypothetical exchange rate, consistent with external equilibrium for a highly indebted country. The central authority targets an exchange rate, which is sufficient to pay for a country's outstanding foreign liabilities. The exchange rate is, therefore, effective as it adjusts the BOP disparities.

4.5. Conclusions

This chapter has presented two frameworks to determine policy target exchange rates. These have extended the existing ND exchange rate theory with two facts that have been remarkably absent from their modelling: the role of speculative financial flows and the pressures that an existing stock of foreign liabilities exert on the exchange rate. Therefore, financial flows are no longer considered a cyclical issue and, rather, are a permanent, structural feature in the two proposed extensions of this chapter.

Based on chapter 1 and Keynes' writings on the *Currency Question*, the chapter has argued that the IEER concept is regarded as a PTER, an optimum situation from the point of view of producers, which is reached through policy. Therefore, such a concept is consistent with low-level historical time, and no automatic tendency towards this equilibrium is assumed to exist. Based on these considerations, the chapter then connected the proposed extensions this thesis to two leading criteria, suggested by Keynes (1941) to decide the policy target exchange rates: firstly, the e*xchange rate, trade balance and external competitiveness* criterion, where the exchange rate is at a competitive level. Secondly, the *exchange rate and national debt sustainability* criterion, which has in mind the reduction of the burden of the national debt to sustainable levels.

In addition, the two extensions proposed addressed two structural pressures arising from financial variables. First, the chapter used the interest rate parity theory, highlighting the role of short-term interest rates as one of the main drivers of short-term money market flows to shape the first extension that is labelled as PTER in line with the interest rate parity theory. The resulting policy target exchange rate is one that aims to neutralise the possibility of interest rate gains. Second, the chapter used Keynes' transfer problem and Thirlwall's law that show the pressures that capital flows and in particular foreign-currency-denominated liabilities create on the BOP and the exchange rate. The resulting policy target exchange rate is one that aims to general foreign currency to meet external obligations.

There are, of course, several shortcomings of these approaches. First, these models ignore the structure of the global value chains which makes the definition of competitive currencies much more complex since these countries depend on imports to manufacture their products. Rather, these types of countries try to keep the exchange rate low in order to reduce the price of their imports [and reduce their price levels]. Secondly, these exchange rate levels have to be interpreted carefully as they are time and context-specific and depends on several factors such as active macroeconomic management, which will allow the policy target exchange rates to be effective. Thirdly, policy target exchange rates should be accompanied by industrial policies and capital inflow and outflow regulations (Carvalho, 2018). Fourthly, these models do not consider the difficulty that policymakers face when trying to reach the policy targets. The global financial markets and international institutions are one of the major constraints to establish these types of policies.

Chapter 5
Estimating the Policy Target Exchange Rates

5.1. Introduction

In the previous chapters, this thesis has shown how a policy target approach to the exchange rate can be reconciled with Post Keynesian analysis. The third chapter developed an argument for the existence of an optimum level of the exchange rate, corresponding to a hypothetical situation: a long-period position, adequate to a given context, which is an ideal state from the point of view of production. The fourth chapter has given theoretical substance to the concept of the policy target extending the Post Keynesian concept of the Industrial Equilibrium Exchange Rate (IEER). As a result, the chapter gives rise to the Policy Target Exchange Rate (PTER) - a concept in which financial variables are taken seriously for exchange rate determination. It is our contention that both the yield-driven foreign financial flows and the previously accumulated stock of foreign currency liabilities, generate structural pressures on exchange rates. In this scheme, policy is fundamental to counteract these forces pushing the exchange rate towards the reference rates -or the policy targets.

Two theoretical considerations shape the PTER approach: i) Keynes' interest parity condition and ii) Keynes' transfer problem. Keynes' interest parity condition acknowledges the determining role of short-term capital flows for currency movements, and allows this thesis to think about the existence of a point in which "no profit is made". On the other hand, Keynes' transfer problem and Thirlwall's Law allow for the acknowledgment of the structural pressures that foreign-denominated financial obligations create for the balance of payments (BoP) and, thus, the exchange rate. The role of the PTER here is to facilitate the foreign currency generation through higher trade balances to reduce the burden of foreign-denominated external liabilities.

This chapter presents the methodology followed to estimate the PTER based on the idea of Keynes' interest rate parity theory (PTER-irp), and the PTER considering features from both Keynes' transfer problem and Thirlwall's Law (PTER-tp) discussed in Chapter 4. It then applies the methodology to the cases

of Mexico, Brazil, and South Korea to calculate the values that would have been suggested following the target rates. These case studies are selected on the basis of the different industrialisation experiences of these economies and the different behaviour of the key core variables to compute the target rates, namely the interest rates and the net foreign assets position (NFA).

This chapter represents an effort to estimate the appropriate targets for the exchange rate, which deal with the neutralisation of the negative effect that yield-driven foreign financial flows and stock of foreign currency liabilities create. The estimated levels of the PTERs are calculated on an ex-post[38] basis. Therefore, these values represent levels that, hypothetically, would have been appropriate to allow domestic producers to remain competitive abroad and, at the same time, a level at which the effect of financial factors over the exchange rates would have been neutralised and stabilised. It is worth highlighting that the target rates are nominal variables following the notion that prices are expected to be sticky and much harder to manipulate. Importantly, as previously discussed, in contrast to neoclassical equilibrium exchange rate modelling, there is no expectation that market forces themselves will ever work to situate the exchange rate at this level. There is also no expectation that policymakers will have the capacity to fully target that nominal level (i.e., through the existence of frictions or external shocks). The rates here estimated are purely theoretical values to give policymakers some guidance as to what would be an appropriate exchange rate level to maintain competitiveness (both in the presence of differential price developments and destabilising carry trade operations) and meet external obligations. Thus, this thesis does not ignore that there may be events that are out of control of central authorities which will not allow a country to reach the target levels of the exchange rate.

This chapter is structured as follows. Section two presents the structure of the conceptual models presented in chapter 4 with further clarifications and specificities to inform the empirical operationalisation. Section three shows the methodology, data construction and data sources used to estimate both PTER

[38] By ex-post, this thesis means “after the event” and by ex-ante “before the event”.

models. It presents the methodology followed to obtain four main inputs for the computation of the PTER models: the benchmark level of the real exchange rate, the benchmark level of the NFA, the trade balance semi-elasticity and the income balance semi-elasticity. Section four presents the results and the assessment for the Mexican, the Brazilian and South Korean case.

5.2. The Policy Target Exchange Rates: incorporating Keynes' Interest Rate Parity Theory and Keynes' Transfer Problem and Thirlwall's Law

This section presents the two PTER models developed in chapter 4. One of the main purposes of this section is to show how the two PTER models developed in Chapter 4 can be operationalised empirically. It starts by recalling the equations and clarifies the aspects that should be considered when computing these appropriate targets. While both models are explained in detail, more weight is put on the second model as its relation to different BOP categories makes it more complex to compute.

A key input for both the PTER-irp and PTER-tp computation is a predefined or benchmark value of the exchange rate of a particular year to which the relative change of the unit labour cost, the relative change in inflation and the interest rate are applied. Such a benchmark value is selected normatively based on the observation of the external and manufacturing sectors' behaviour and the exchange rate.

The PTER-tp computation, on the other hand, borrows heavily from Cubeddu et al. (2018), an External Sustainability (ES) approach in the lines of Lee et al. (2008) and the novel extension proposed by Colacelli et al. (2021). The ES approach is used by the International Monetary Fund (IMF) for exchange rate assessment, and it is based on the notion of external debt sustainability by using an equation that relates a country's net external foreign debt stock position or the net foreign assets (NFA) to its flow current account situation.

The ES assessment is complementary to the PTER approach for three main reasons. First, it is a normative approach that considers the sustainability of the external debt basing the analytical focus on achieving the NFA's desired

level over time[39]. The NFA position is a broad measure of a country's stock position *vis-à-vis* the rest of the world, it is the "sum of the net debt position, the net equity stock position and the net FDI [Foreign Direct Investment] position" (Lane & Milesi-Ferretti, 2001, p. 265). This measure allows one to capture, at a macroeconomic level, the factors that may eventually lead to a transfer of income abroad as it is concerned about an existing stock of foreign-currency-denominated liabilities as a by-product of persistent current account imbalances, and its pressures on the BOP. Second, it uses some sort of a BOP identity to determine the level of the sustainable current account balance which guides the NFA towards sustainable levels, with the advantage that it considers a restricted number of variables such as output growth and the benchmark level of the NFA. The idea of selecting a benchmark NFA position is linked to the notion of the sustainability of external imbalances and a country's solvency. Third, it is an approach that enables one to operationalise external sustainability using Keynes' lens. The ES is indeed an approach in which "the process of borrowing from abroad cannot go on indefinitely" (Keynes, 1929, p. 3). Therefore, it suggests an exchange rate adjustment capable of generating a trade surplus allowing a country to generate foreign currency.

The approach put forward in this thesis poses an essential question from the planning method perspective. More concretely, at what point in time is our policymaker? The exchange rate level in the subsequent period is calculated according to the information in the current period, that is, in period t and a level of the real exchange rate in period i. The central authority can manipulate the exchange rate value based on the knowledge they have in time t. Therefore, the government policy action is based on the current values and, thus, they have to rely on them to determine the target exchange rate for the hypothetical future period as it is all the information they get. This suggests

[39] Although one could argue that a gross external debt position is more in line with the notion of foreign liabilities, two factors are important to consider. First, the starting point is the BOP relationship and as such both sides of the equation should look at net aggregates. Second, and in line with the theory adopted in this thesis is the fact that the analytical focus is on the relationship of the BOP and exchange rate, and from that perspective it is not possible to make a complete separation between debits from credits, and assets from liabilities. That is, the focus in on the pressures that a stock of external liabilities creates on the BOP and exchange rates. This point is further clarified in the chapter.

that the point in time where the policymaker is situated and planning the policy is time t. This can be understood as a real-time planning method by taking into consideration the feasibility of the contemporary and the forthcoming attainable outcomes. An approach like this has the advantage of not relying on expected values in a highly uncertain environment. Under this scenario, the policymaker knows that some of the variables are out of their control, and their development is unknown. In order to tackle this, the policymaker makes the best use of the available information when facing unexpected states. This approach recognises the complexities that moving through time can involve. Estimated values are, therefore, always optimum and hypothetical, and realised values are unlikely to be at where they should be.

5.2.1. The Policy Target Exchange Rate in line with Keynes' Interest Rate Parity Theory

Recall equation 4.15 in chapter 4, which shows the PTER-irp determination. The PTER-irp is a level of the exchange rate that, by assumption, trims yield-driven foreign financial flows' profitability. The subscript h in left-hand-side of equation 5.1 denotes that the exchange rate corresponds to a hypothetical situation that aims to be achieved. This is expressed as equation 5.1:

$$(5.1)\ e_{PTER-irp_{t+h}} = s_i \frac{P_i}{P_i^*} \cdot \left[\frac{g_{ulc\,0-i}-1}{g^*_{ulc\,0-i}-1} \frac{\pi_{0-i}-1}{\pi^*_{0-i}-1}\right] \cdot \left[\frac{1+R_t}{1+R_t^*}\right]$$

where the first element of the equation corresponds to the competitive level of the real exchange rate, s_i, which prevailed in the past (in the period i) and that is normatively determined (described in more detail further below). The second and the third element of equation 5.1 are three main components of the policy rate, the percentage variation in unit labour costs in the domestic economy from time $t = i$ to time $t = 0$ denoted as $g_{ulc\,0-i}$, the inflation rate in the home economy from time $t = i$ to time $t = 0$ denoted as π_{0-i}, and the interest rate, R_t, where "*" denotes foreign. The "*i*" in s_i denotes a past period in which the real exchange rate is thought as a competitive one. Foreign exchange policy, therefore, aims to stabilise the level of the real exchange rate (s_i) which is considered supportive of the competitiveness of domestic manufacturers, integrating effectively the IEER approach. In other words, the PTER-irp aims to target a real exchange rate relationship between domestic

and foreign manufactured goods so that a country can remain competitive both in the domestic and the foreign market.

This thesis follows a two-stage procedure to compute equation 5.1. First, the real exchange rate series is built. This allows one to normatively determine a year in which the exchange rate is considered to lie at a competitive level - the benchmark level of the real exchange rate. This is carried out by comparing the behaviour of the real exchange rate against the criteria stated in the next section. Second, once the real exchange rate's benchmark level is identified and converted to a nominal exchange rate, variations over time in the unit labour costs, prices and interest rates are applied.

5.2.2. The Policy Target Exchange Rate in line with Keynes' Transfer Problem and Thirlwall's Law

DEEs, however, do not only face the issue of structurally high interest but also must service the foreign-denominated liabilities that yield-driven foreign financial flows create. In what follows, equation 5.1 remains as the baseline equation in which foreign-currency-denominated liabilities is analytically considered.

Recall equation 4.28 that is an exchange rate that, by hypothesis, allows a country to achieve a surplus in the trade balance sufficient for foreign currency liabilities repayment. The exchange rate which enables the country to attain external equilibrium and stabilise the stock of foreign-currency denominated liabilities over time, is given by:

$$(5.2)\quad e_{PTER-tp_{t+h}} = \left[s_i \frac{P_i}{P_i^*} + \Delta s_{TP_t} \frac{\Delta P_t}{\Delta P_t^*}\right] \cdot \left[\frac{g_{ulc\,0-i}-1}{g^*_{ulc\,0-i}-1} \frac{\pi_{0-i}-1}{\pi^*_{0-i}-1}\right] \cdot \left[\frac{1+R_t}{1+R_t^*}\right]$$

where the benchmark level of the real exchange rate is augmented by a factor s_{TP} which represents the necessary adjustment to the exchange rate provided that there is an unfavourable balance in the financial account that needs to be corrected.

The underlying rationale of equation 5.2 allows this thesis to adopt the path put forward by Lee et al. (2008), Cubeddu et al. (2019) and Colacelli et al. (2021) to compute such an equation by relying on the ES approach. The ES

approach is based on the relation between the NFA, the current account and the real exchange rate (RER) (Castillo, 2016). The analytical model used in this chapter is a variant of the type of model suggested by Lee et al. (2008) and Cubeddu et al. (2019), where one can analytically obtain an exchange rate adjustment to close the gap between the projected medium-term current account balance and the sustainable current account that stabilises the NFA or the net international investment position (NIIP)[40] as a proportion of GDP. However, in contrast to what is put forward by the original model, this thesis uses the ES approach with current values rather than projected values. This is preferred given the importance this thesis gives to the concept of uncertainty. The resulting equation is that the PTER-tp is hypothetically capable of generating a current account surplus with the aim to reduce gradually, over time, the NFA for a debtor economy.

The computation of such an exchange rate is not straightforward and requires several steps. This thesis follows a five-stage procedure to compute the PTER-tp. The first step involves the selection of a benchmark level of the NFA as a proportion of GDP following the criteria set out further below. The second step involves the computation of a current account balance norm that stabilises the NFA as a proportion of GDP at the NFA benchmark level. Such a sustainable current account is computed by using the actual growth rate and the benchmark level of the NFA. Third, the determination of the current account gap. For the PTER-tp approach, the current account gap is the difference between the observed current account balance and the current account norm which stabilises the NFA at its desired level, as we compute these values on an ex-post basis. Fourth, the computation of the exchange rate gap, that is to say, the adjustment that needs to be made to the real exchange rate's benchmark level. Given that the outcome is a real relationship, the last step involves the computation of the nominal exchange rate using the baseline PTER equation.

40 This chapter uses the net international investment position, the net foreign assets and liabilities and the foreign denominated liabilities interchangeably.

The ES approach has two key inputs: i) the sustainable current account norm according to a predetermined NFA level, and ii) the current account real exchange rate (CA-RER) semi-elasticities. With regards to the sustainable current account norm, the ES approach leans on an inter-temporal budget constraint, which states that the prospective trade surpluses' current value is enough "to pay a country's outstanding external liabilities" (Lee, et al., 2008, p. 14) . One way to fulfil a country's inter-temporal budget constraint is to prevent the NFA unlimited growth.

Following Cubeddu et al. (2019) a sustainable current account norm is built from an equilibrium relation which considers stocks and flows. Let NFA_t denote the stock of foreign assets and liabilities at the end of year t, g_t the real economic growth rate, π_t the inflation rate, CA_t the current account balance or the NICA, and VC_t the valuation changes on the NFA - dismissing errors and omissions. Equation 5.3 describes the behaviour of the NFA and states that changes in the stock of net foreign assets and liabilities are the result of the NFA position in time $t-1$, the NICA, and valuation changes:

$$(5.3)\ NFA_t = NFA_{t-1} + CA_t + VC_t$$

Cubeddu et al. (2019) consider it useful to normalise the variables in equation 5.3 by a measure that reflects a country's ability to meet its financial obligations, in this case the Gross Domestic Product (GDP). Equation 5.3 is rewritten as equations 5.4 and 5.6, assuming that $VC_t = 0$[41] and denoting by lowercases the ratio of the variables to the nominal GDP.

$$(5.4)\ \frac{NFA_t}{P_tY_t} = \frac{P_{t-1}Y_{t-1}}{P_tY_t}\frac{NFA_{t-1}}{P_{t-1}Y_{t-1}} + \frac{CA_t}{P_tY_t}$$

Defining the GDP nominal growth as n, real GDP growth as g and the inflation rate as π:

[41] This assumption is made as the ES approach assumes a forward-looking view and valuation movements are uncertain. It is said to take a forward-looking view as its main concern is to look for a level of the current account that would stabilise the NFA-to-GDP ratio.

$$(5.5)\ \frac{Y_t}{Y_{t-1}} = (1+n) = (1+g)(1+\pi)$$

And substituting the inverse of 5.5 into 5.4, we get:

$$(5.6)\ nfa_t = \frac{1}{1+n} nfa_{t-1} + ca_t$$

Equation 5.6 tells us that the evolution of the NFA depends on both the overall balance and the nominal GDP growth. Solving for the current account, we get:

$$(5.7)\ \ nfa_t - \frac{1}{1+n} nfa_{t-1} = ca_t$$

Decomposing the current account into net exports and transfers (nxt_t) and net interest payments and assuming that for both lagged external assets and liabilities, the real rate of return, r, is the same. Equation 5.7 can be rewritten as:

$$(5.8)\ nxt_t + \frac{1+r_t}{1+g} nfa_{t-1} = \ nfa_t$$

Solving for the net exports and transfer balance, we get:

$$(5.9)\ nfa_t - \frac{1+r_t}{1+g} nfa_{t-1} = nxt_t$$

Following Cubeddu et al. (2019), in steady-state and denoting variables in equations 5.8 and 5.9 without a time subscript, we can rewrite the current account and the net exports and transfer balance as 5.10 and 5.11:

$$(5.10)\ nfa - \frac{1}{1+n} nfa = ca$$

$$(5.11)\ \ nfa - \frac{1+r_t}{1+g} nfa = nxt$$

Simplifying 5.10 and 5.11 we get 5.12 and 5.13 further assuming that both the net foreign assets and the current account relative to the size of the economy are at their sustainable levels:

$$(5.12)\ \left(1-\frac{1}{1+n}\right)nfa^{s}=\left(\frac{n}{1+n}\right)nfa^{s}=ca^{s}$$

$$(5.13)\ -\left(\frac{\mathrm{r-g}}{1+g}\right)nfa^{s}=nxt^{s}$$

Equation 5.12 and 5.13 show the current account norm ca^{s} and the net exports and transfer balance that stabilise the stock of foreign assets and liabilities relative to the GDP at a benchmark level, nfa^{s}. In other words, the equation states that levels such as those suggested by ca^{s} and nxt^{s}, drive the stock of the existing foreign debt to sustainable levels. From 5.12 it can be inferred that a debtor economy experiencing low rates of growth necessitate higher current account surpluses to bring the NFA as a proportion of GDP into a sustainable path. In a similar way, from 5.13 it can be inferred that a debtor economy with higher rates of return on assets and liabilities necessitates a higher net exports and transfers balance to bring the NFA as a proportion of GDP into a sustainable path (Cubeddu, et al., 2019)..

The second key input is the country-specific CA-RER elasticities. These elasticities are an essential input to obtain a RER adjustment capable of closing the gap between the underlying current account and the current account norm. The current account gap is defined as the difference between the underlying current account as a proportion of the GDP, $\overline{ca}$ and the current account balance that would stabilise the NFA position at its benchmark level ca^{s}. That is:

$$(5.14)\ CA^{gap}=\overline{ca}-ca^{S}$$

In this approach when a country's current account balance that would stabilise the NFA position at its benchmark level surpasses its underlying current account - a positive CA^{gap} -, the country needs to run a positive current account balance to stabilise the net foreign assets position (Castillo, 2016) and vice versa. Such a stabilisation process is mainly brought about by an adjustment in the current account balance, which will close the current account gap. In turn, such an adjustment is brought about by an exchange rate adjustment, which is later incorporated into our baseline equation as will be shown further below.

The real exchange rate gap, which we denote as Δs_{TP_t}, is the adjustment to the level of the RER that policy aims to stabilise, the adjustment, in turn, suggests either if the currency has to adjust downwards (stronger currency) or upwards (weaker currency) to close the current account gap. This value is in percentage terms and can be obtained by solving the following equation:

$$(5.15)\ \Delta s_{TP_t} = \frac{CA^{gap}}{\eta^{TB}+\eta^{IB}}$$

To obtain the semi-elasticities of the trade balance and the income balance with respect to the RER, one needs to break down the CA 's semi-elasticity with respect to the RER. The latter relationship is the sum of the trade balance's semi-elasticity relative to GDP, η^{TB}, plus the semi-elasticity of the income balance relative to GDP, η^{IB}. Equation 5.16 shows this relationship:

$$(5.16)\ \frac{\Delta CA/GDP}{\Delta RER/RER} = \eta^{TB} + \eta^{IB}$$

Where $\eta^{TB} = \frac{(\Delta TB/GDP)}{\Delta RER/RER}$ and $\eta^{IB} = \frac{\Delta IB/GDP}{\Delta RER/RER}$. The relationships show analytically how responsive the trade and income balance are to exchange rate variations.

Cubeddu et al. (2018) break down the trade balance semi-elasticity as shown in 5.17, while Colacelli et al. (2021) break down the income balance semi-elasticity as represented in 5.18:

$$(5.17)\ \eta^{TB} = \eta^{X}s^{X} - \eta^{M}s^{M}$$

$$(5.18)\ \eta^{IB} = \eta^{IC}s^{IC} - \eta^{ID}s^{ID}$$

Where $\eta^{X} = \frac{\Delta(X/GDP)/(X/GDP)}{\Delta RER/RER}$and $\eta^{M} = \frac{\Delta(M/GDP)/(M/GDP)}{\Delta RER/RER}$ are the elasticities of the nominal exports and imports to GDP with respect to the RER, and s^{X} and s^{M} are the nominal exports and imports as a share of GDP. And $\eta^{IC} = \frac{\Delta(IC/GDP)/(IC/GDP)}{\Delta RER/RER}$and $\eta^{ID} = \frac{\Delta(ID/GDP)/(ID/GDP)}{\Delta RER/RER}$ are the elasticities of the income credit and income debit to GDP with respect to the RER, and s^{IC} and s^{ID} are the nominal income credit and income debit as a share of GDP, defined as $s^{IC} = \frac{IC}{GDP}$ and $s^{ID} = \frac{ID}{GDP}$.

Putting everything together, the PTER-tp is computed following equation:

$$(5.19)\ e_{PTER-tp_{t+h}} = \left[s_i \frac{P_i}{P_i^*} + \frac{\overbrace{CA^{gap}}^{\Delta s_{TP_t}}}{\eta^{TB} + \eta^{IB}} \frac{\Delta P_t}{\Delta P_t^*} \right] \cdot \left[\frac{g_{ulc\,0-i}-1}{g^*_{ulc\,0-i}-1} \frac{\pi_{0-i}-1}{\pi^*_{0-i}-1} \right] \cdot \left[\frac{1+R_t}{1+R_t^*} \right]$$

Equation 5.19 shows the PTER approach incorporating the pressures that the NFA position of a country exerts on the exchange rate, a rate which we call the PTER-tp. The RER adjustment consistent with Keynes' transfer problem along the lines of the ES approach and the novel extension proposed by Colacelli et al. (2021). The RER adjustment is applied to the benchmark level of the real exchange rate that the PTER-tp aims to stabilise. A positive or negative Δs_{TP_t} will suggest defending either a weaker (depreciated) or a stronger (appreciated) real exchange rate relationship, respectively.

As already noted, the value of the Δs_{TP_t} depends on normative assumptions to compute the current account norm (such as the benchmark level of the NFA), the trade balance semi-elasticity with respect to the RER obtained from a country's trade balance regressions and the income balance semi-elasticity with respect to the RER obtained from the two-step methodology proposed by Colacelli et al. (2021) which involves the estimation of two panel regressions as will be explained in detail further below.

Two important considerations emerge from the incorporation of the Δs_{TP_t} into the baseline equation. First, a positive value for the Δs_{TP_t}, one in which the current account norm is higher than the actual current account, indicates that the exchange rate is currently *overvalued*. Therefore, the PTER approach suggests depreciating s_i in a specific amount given by Δs_{TP_t} to run a higher positive current account and thus allow a country to stabilise a portion of the debt balance. Second, a negative value for the Δs_{TP_t}, and the case where the current account norm is below the actual current account, suggests appreciating s_i as the exchange is currently *undervalued*.

5.3. Methodology, Data Construction, and Data Sources

This section presents the process followed to obtain four key inputs of our calculations: i) s_i, -the benchmark level of the real exchange rate; ii) nfa^s -the benchmark level of the net foreign assets position; iii) η^{TB} -the trade balance semi-elasticity; and iv) η^{IB} -the income balance semi-elasticity. Moreover, the data and the definition of variables used in this chapter are briefly presented and described.

5.3.1. Selecting a Benchmark Level of the Real Exchange Rate, s_i

One difficulty arises when identifying the real exchange rate's competitive level, which prevailed in the past -s_i. As above mentioned, the real exchange rate s_i is the real exchange rate in period i considered supportive of competitiveness of domestic manufacturer producers, maintaining this exchange rate stable would contribute to increasing their market share and profits. More importantly, it is a base from which to start our calculations.

Therefore, we put forward a criterion inspired by the one suggested by Marconi (2012) and that indicated by Nassif et al. (2017)[42] in which we pay particular attention to a favourable trade balance in that period. The criteria this thesis follows is based on four main principles:

1. A period in which the exchange rate was managed (i.e., it is assumed that the exchange rate's competitive levels were pursued).

2. A period which showed a positive trade balance.

3. A period in which the real exchange rate was not appreciated compared to previous values (i.e. the level of the real exchange

[42] It is important to note that both methodologies and its estimates differ in the way they perceive whether the appropriate or optimal exchange rate is undervalued. Whereas Marconi (2012) follows Bresser-Pereira (2012) argument that such a competitive level does not correspond to a relatively undervalued level of the exchange rate, Nassif et al. (2017) estimate the long-run path of the real exchange rate to identify the "optimum" level appropriate for economic development. According to Nassif et al. (2017), such an optimum corresponds to an undervalued level of the real exchange rate which is identified using ordinary least squares (OLS) and an error correction model (ECM).

rate was not lower if compared to the ones which prevailed in the past).

4. The value-added in the manufacturing sector was not decreasing.

To identify a competitive level of the RER, which will be our base year for the PTER series, we follow a simple and normative procedure following the four main principles stated above. These principles are essential when computing values on an ex-post basis and the search for its historical validity is important. That is to say, the analysis of whether the exchange rate, along with strategic policies were the main reason for a trade surplus and not contractionary measures, such an adjustment in domestic spending, for example. It is also important that the reader keeps in mind that once a strategy of exchange rate management occurs, the value of s_i simply becomes the past realised value of the real exchange rate, s, if the target is achieved in the previous period.

5.3.2. Selecting a Benchmark Level of the Net Foreign Assets Position, nfa^s

A central element for the computation of the PTER-tp is the benchmark level of the NFA position as a fraction of the GDP, the nfa^s. The NFA position comprises stock values for debt, portfolio equity, Foreign Direct Investment (FDI) and reserves (Lane & Milesi-Ferretti, 2001). Its direction shows whether an economy is a net creditor or a net debtor.

The use of the NFA position as an accurate external indebtedness metric may be called into question. In this vein, the IMF's BoP manual argues that it is more applicable to see the NFA's non-equity components as debt, which is more in accordance with the definition of the gross external debt (International Monetary Fund, 1993). However, this can be controversial when the analytical focus is on debt servicing by altering the exchange rate. The manual points out that debt servicing can occur without incurring in said changes if the investment impacts positively in the productivity of the economy. This impact is evidenced in two processes (International Monetary Fund, 1993). First, the profitability of the investment is enough to pay for the rate of return that will lead to the attraction of funds to finance the investment. Second, the additional investment must increase the debt servicing capacity of the economy. In as

much as the foreign funds are invested in productive activities, a country can finance its current account deficit through the inflow of funds.

The discussion above is necessary as one cannot disregard the problem of transition imposed on highly indebted countries and their external vulnerability. Such considerations are the cornerstones of Keynes' transfer problem and Thirlwall's Law extensions (see Moreno-Brid, 1998; and Bhering et al., 2019), which highlights the limits to external financing or current account financing. That is, even though the benefits that foreign investments may bring to the economy, such flow of funds can stop financing current account deficits and, at some point, may need to be serviced, which shows the importance of considering the net external positions.

For our purposes in choosing a benchmark level of the NFA one must consider whether the economy is in a high or a low sustainability risk to inform this decision by assessing a country's NFA composition. Particularly because the position of the NFA to GDP ratio allows one foreseeing external crisis[43] risk (Catão & Milesi-Ferretti, 2014) as it is indicative of a country's external vulnerability (Lane & Milesi-Ferretti, 2001).

On the one hand, a country at high sustainability risk is one which its NFA position is mainly made up of net debt, portfolio equity and FDI[44]. And whose NFA to GDP ratio is close to or tends to -44% of GDP (Catão & Milesi-Ferretti, 2014)[45]. For these types of countries, a level consistent with a stronger external position is prescribed (i.e., this could be done by taking the average of a regional group as Cubeddu et al., 2018 suggest). Thus, the NFA level

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[43] Catão and Milesi-Ferretti (2014) define an external crisis as the occurrence of defaults, debt rescheduling and the assistance of multilateral institutions such as the IMF.

[44] Kregel (2014) notes that recent innovations in financial markets have removed the "permanent" nature of FDI. As such, it has complicated its differentiation from other types of capital flows and its impact on flows and exchange rate management (Kregel, 2014).

[45] Turrini and Zeugner (2019) conduct an extensive study to compute country-specific benchmarks of the NIIP. Their study comprises a sample of 65 develop and emerging economies from 1995 to 2016. Note, however, that it is also possible to consider values beyond such a norm provided that these do not exceed the threshold or -44% of GDP, a point beyond which the NIIP position becomes risky (Turrini & Zeugner, 2019).

corresponding to -17% of GDP can be taken as a benchmark in line with the country-specific median value for the NFA to GDP ratio norms as suggested by Turrini and Zeugner (2019).

On the other hand, a country at low sustainability risk is one whose level is lower than the benchmark of -17% of GDP. For these countries, a level of its most recent NFA to GDP ratio can be prescribed as a benchmark level. Or, when applied ex-post, an average of the most favourable balances can be taken as a benchmark level for the NFA to GDP ratio.

One must recognise that these benchmarks are not fixed and are not unique values, but the aim is to provide a reference. Its value is a function of the institutional and historical conditions of each economy.

5.3.3. Computing the Trade Balance Semi-Elasticity, η^{TB}

Estimating the trade balance semi-elasticity, η^{TB}, is another key input to compute the e_{TP_t}. To estimate the semi-elasticity of the trade balance with respect to the RER three methodologies can be used: i) calibration methods; ii) panel regression for import and export equations (Cubeddu, et al., 2019); and iii) country-specific elasticities derived from country's trade balance regression in the lines of Rose and Yellen (1989). This thesis builds on the ES approach and suggests that the latter is a more direct approach to estimating the trade balance semi-elasticity and more appropriate when dealing with country-specific assessments.

This thesis' estimation follows the path put forward by Rose and Yellen (1989) and computes a trade balance reduced-form equation for each country to obtain country-specific elasticities. Their approach focuses on estimating the response of a country's trade balance to real exchange rate variations in the short and the long-run. This implies estimating an equation to test for the reaction of the country's trade balance to the real exchange rate, and the domestic and foreign income levels. The reduced-form equation estimated to obtain η^{TB} is:

$$(5.20)\ B = f(s, y, y*)$$

where, s is the real exchange rate, y the domestic income and $y*$the foreign income. The theoretical framework suggests a positive relationship of the trade balance with the real exchange rate and the foreign real income, and a negative association with the domestic real income.

A useful approach to base our estimation is an autoregressive distributed lag (ARDL) model. We consider this model useful because it allows one to deal with variables of different orders (i.e. I (0) and I (1)). Moreover, the ARDL technique will capture both the short and the long-run dynamics between the dependent variable and the regressors (Iossifov & Fei, 2019).

Therefore, a dynamic trade balance equation is estimated using an ARDL model for Mexico, Brazil, and South Korea. Using quarterly data for different periods of times based on data availability. For Mexico: 1980Q1 and 2018Q4; for Brazil 1996Q1 and 2018Q4; and for South Korea 1982Q1 and 2018Q4. The trade balance equation is estimated in the form:

$$(5.21)\ BT_t = \alpha + \sum_{i=1}^{n} \delta_i BT_{t-i} + \sum_{i=0}^{n} \beta_i \Delta GDP_{t-i} + \sum_{i=0}^{n} \tau_i \Delta GDP*_{t-i} + \sum_{i=0}^{n} \gamma_i \Delta RER_{t-i} + \varepsilon_t$$

Equation 5.21 models the trade balance. It denotes the trade balance as BT, measured as the ratio of exports minus imports over GDP, using as regressors the domestic GDP and world demand (proxied by the United States' GDP expressed in US dollars) and the real exchange rate measured as the nominal exchange rate adjusted by the ratio of foreign to domestic producer price indices. Given that we are interested in obtaining the trade balance's semi-elasticities and, as such, we intend to obtain a level-log model, the model requires taking the logarithms of the real exchange rate, the domestic and foreign GDP. The estimated coefficients thus tell us how much an increase of 1% in the regressor is associated with an absolute change in the dependent variable.

Using the regression estimates, the long-run trade balance semi-elasticity can be derived from the ARDL model following 5.22:

$$(5.22)\ \eta^{TB} = \frac{\sum_{i=0}^{n} \gamma_i}{1-\sum_{i=1}^{n} \delta_i}$$

5.3.4. Computing the Income Balance Semi-Elasticity, η^{IB}

Another relevant input to estimate the Δs_{TP_t} is the income balance semi-elasticity, η^{IB}. The empirical strategy to estimate the income balance semi-elasticity is based on the novel decomposition of income flows put forward by Colacelli, et al., (2021). This strategy constitutes an extension of the approach put forward by Lee et al. (2008) and Cubeddu et al. (2019). Although country-specific elasticities derived from a country's regression are considered more appropriate when dealing with country-specific assessments, in this case, a panel estimation is preferred given the relatively low number of observations for some countries in our core sample (i.e. South Korea) and for some of the regressors such as the foreign asset and foreign liabilities, which are reported on an annual basis.

The estimations carried out in this thesis follow Colacelli et al. (2021) indirect method. This method consists of two steps. First, the income credit, , η^{IC}, and income debit,η^{ID}, elasticities need to be estimated separately. Second, the elasticities need to be combined with the income debit and income credit ratios to GDP, s^{IC} and s^{ID} to obtain the long-run semi-elasticity of the income balance, η^{IB}.

Dynamic income credit and income debit equations are estimated using a strongly balanced panel covering 15 Latin American and Asian[46] DEEs with annual data between 1970 and 2020. The specifications are defined as follows:

$$(5.23)\ ln\Delta IC_{it} = \sum_{j=1}^{n} \delta_1^{IC} ln\Delta IC_{it-j} + \sum_{j=0}^{n} \beta_j^{IC} ln\Delta RER_{it-j} + \tau_1^{IC} ln\Delta FA_{it-j} + \varepsilon_{it}$$

[46] Antigua y Barbuda, Bahamas, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, South Korea, Malaysia, Mexico, Paraguay, Singapore, Trinidad and Tobago, and Uruguay.

$$(5.24)\ ln\Delta ID_{it} = \sum_{j=1}^{n} \delta_1^{ID} ln\Delta ID_{it-j} + \sum_{j=0}^{n} \beta_j^{ID} ln\Delta RER_{it-j} + \tau_1^{ID} ln\Delta FL_{it-j} + \varepsilon_{it}$$

where IC_{it} is the nominal income credit of country i in time t as a share of the GDP; ID_{it} is the nominal income debit of country i in time t as a share of the GDP; RER_{it} is the real effective exchange rate index of country i in time t; FA_{it} represents the nominal foreign assets of country i in time t as a share of the GDP; FL_{it} represents the nominal foreign liabilities of country i in time t as a share of the GDP.

Equations 5.23 and 5.24 represent the decomposition of income flows. These two equations allow one to estimate the panel-based income credit and income debit elasticities. In addition, these equations account for the estimation of the responsiveness of income flows to the exchange rate.

Using the regression estimates, the long-run income balance elasticities can be derived from the panel ARDL models following 5.25:

$$(5.25)\ \eta^{Flow} = \frac{\sum_{j=0}^{n} \beta_j^{Flow}}{1-\delta_1^{Flow}} \text{ with } Flow = IC, ID$$

The long-run semi-elasticities are then derived following 5.18. That is, the semi-elasticities of the nominal income balance are obtained for each country by using the common values for η^{IC} and η^{ID} as derived from 5.25 (the responsiveness of income flows to the exchange rate) and the country-specific shares of the nominal income credit, s^{IC}, and income debit, s^{ID} (the size of income flows).

5.3.5. Data Construction

One of the major difficulties in computing the PTER exchange rates is the availability of the unit labour costs data, particularly for the Mexican and the Brazilian case.

The unit labour costs relationship is equal to the sum of wages and salaries in the national currency -total costs- for the manufacturing sector divided by productivity in real terms. The unit labour costs are defined as the total labour compensation over labour productivity. It is a measure for international price

competitiveness, which implies deflating both the labour compensation and the output per worker. To build a series for the domestic and foreign unit labour costs, this section follows the methodology stated in Martinez-Hernandez (2015) which relies mostly on manufacturing surveys and, therefore, allows us to obtain longer series of the unit labour cost as expressed in 5.26:

$$(5.26)\ ulc = \frac{totalreallabourcost}{productivity} = \frac{totalrealwages + totalrealsalaries}{realoutput/employment}$$

Alternatively, given the difficulty of calculating 5.26 for Brazil and the unavailability of the total wages and salaries, the formula adapted is as follows:

$$(5.27)\ \ ulc = \frac{realaveragewage}{productivity}$$

The unit labour costs are then indexed to a common base year. Following equation 5.26, for Mexico, the total labour remunerations were deflated using the Consumer Price Index. Whereas the manufacturing output was deflated using the implicit prices of the manufacturing sector. For Brazil, due to data availability, we follow 5.27 and use the annual real average wages and labour productivity. For the case of the US, total remunerations were deflated by using the US Consumer Price Index. For the manufacturing output, the average of implicit prices of durable and non-durable goods indexes was used.

5.3.6. Data Sources

The empirical analysis covers various periods ranging from 1970 to 2020. The sample size is reduced in some cases due to data availability. This is mainly due to the availability of the unit labour costs data and the difficulty in calculating them for each country. This thesis uses both annual and quarterly data. Annual data is preferred for the computation of both PTER-irp and PTER-tp series, given the difficulty of constructing monthly and quarterly unit labour costs series. Quarterly data is preferable for the trade balance semi-elasticity with respect to the real exchange rate, η^{TB}, which is a key component of the PTER-tp series. Regarding the computation of the income balance semi-elasticity, η^{IB}, annual data is preferred.

The data used in this chapter has several sources. A first and essential element to estimate the PTER is the construction of the series for the unit labour costs. The manufacturing unit labour costs are computed as a proxy for the ones in the manufacturing export sector. All data on Mexican wages, salaries in the manufacturing sector consumer and manufacturing implicit price indices, output and employment in the manufacturing sector were taken from the Mexican National Institute of Statistics and Geography (INEGI). Such data involve the use of different manufacturing surveys, which are not homogeneous given the continuous changes in the sectors that are considered. The same collection of data for the US were obtained from the Bureau of Economic Analysis (BEA). For Brazil, data on real average wages was obtained from the Economic Commission for Latin American and the Caribbean (ECLAC), and the labour productivity data were obtained from the World Bank Open Data. For South Korea, the unit labour cost series was directly obtained from the Organisation of Economic Cooperation and Development (OECD).

The nominal interest rates were obtained from different sources. It is worth noting that both rates are short-term interest rates at which government bonds are issued[47]. For Mexico, the nominal interest rates, Treasury Certificates yield (91-days), were obtained from the Bank of Mexico statistics. For Brazil and South Korea, we obtained the Treasury Bills and the Certificates of Deposit rates (90-day), respectively, from the Federal Reserve Bank of St. Louis. The US 's interest rates are the Treasury Bill Rate, and they were taken from the OECD.

The quarterly data to estimate the reduced form of the trade balance and the s_{TP_t} have several sources for our sample of countries. The GDP data were obtained from the OECD. These series are in millions 2005 US Dollars and are indexed to a common base year. The trade balance and the net international investment position data are the United Nations Conference on Trade and Development (UNCTAD), and the International Monetary Fund (IMF) and the

[47] Although Keynes was referring to money market rates, this thesis relies on short-term government bond rates given the reference rate's nature proposed in this thesis.

External Wealth of Nations Mark II database (Lane & Milesi-Ferretti, 2007), respectively. The current account data is obtained from the International Monetary Fund (IMF).

The annual data to estimate the income flows panel regressions and the η^{IB} have several sources. Data on income balance, GDP and the real effective exchange rate were obtained from the IMF's World Economic Outlook and International Financial Statistics datasets. Data on foreign assets and liabilities were taken from the External Wealth of Nations database (Lane & Milesi-Ferretti, 2021). The data were obtained for a panel of 15 countries: Antigua y Barbuda, Bahamas, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, South Korea, Malaysia, Mexico, Paraguay, Singapore, Trinidad and Tobago, and Uruguay.

Finally, the nominal exchange rate for our sample of countries, domestic currency per US Dollar, is obtained from the OECD.

5.4. Results

The exercise carried out in this section aims to compute the values for the PTER-irp and PTER-tp and compares them to the values derived from the traditional IEER approach.

Before moving on, it is worth reminding the reader that the values computed below are purely hypothetical policy references according to the model's preferred parameters. Such levels are nominal values of the exchange rate that maintain a competitive real exchange rate. In what follows we take the case of three countries which different structural characteristics: Mexico, Brazil, and South Korea. The first two countries, Mexico and Brazil, are characterised by a strong tendency towards the overvaluation of the RER, as well as a deindustrialisation process. The case of South Korea contrast to those experiences. South Korea is one of the Asian countries that has followed a strong industrialisation agenda and has paid sufficient attention to the exchange rate and external balance administration (Bresser-Pereira, et al., 2020).

5.4.1. The Latin American Experience "The Best Industrial Policy is None at All": Computing the PTERS for Mexico and Brazil

Let us first take two Latin American economies which share a characteristic in common. Their governments chose the path that *"The Best Industrial Policy is None at All".* During the last decades, Latin American countries have undergone a radical change in their economic development strategies. Such a change involved a significant process of trade and financial liberalisation that led these economies to put an end to a long process of state-led industrialisation state (Palma, 2005). In Mexico, a series of negative shocks, such as the debt crisis in 1982 and the oil prices collapse in 1986, were followed by a process of macroeconomic reforms which involved trade liberalisation and financial markets liberalisation, privatisations, and the disappearance of industrial policies (Moreno-Brid & Ros, 2009). Similarly, Brazil's catching up experience ended after the 1982 external debt crisis, which forced the government to focus on renegotiating external debt and controlling inflation (Cimoli, et al., 2020).

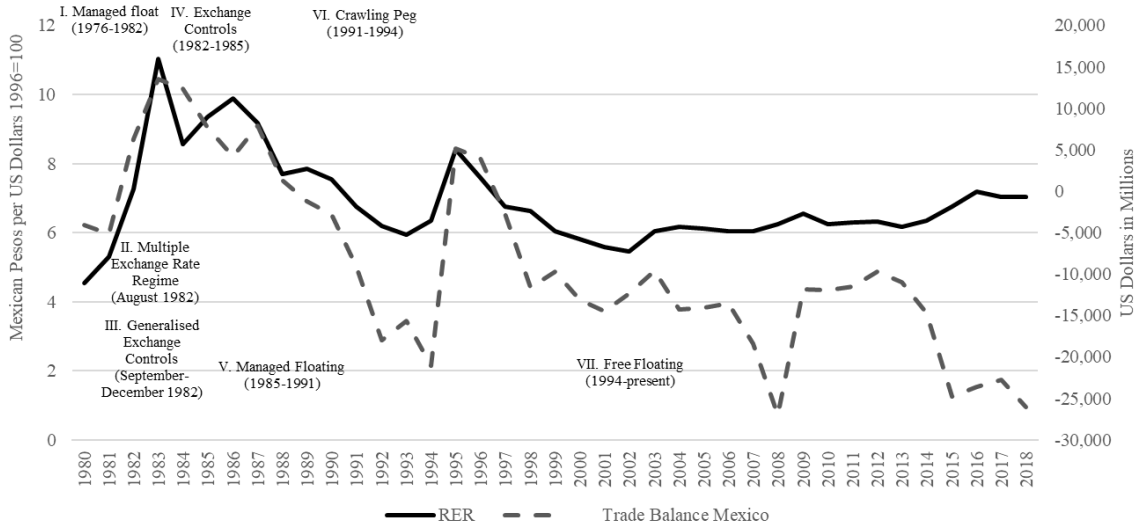
A series of exchange rate regimes accompanied the above scenario, in order to make the exchange rate more flexible. In addition, Latin American economies have experienced poor performances in the external balance that has worsened their NFA positions. These structural changes will be briefly considered to select the key inputs for the PTER-irp and PTER-tp.

A first element to consider is that since 1980 exchange rate regimes have gradually moved from intermediate exchange rate regimes to a free-floating exchange rate regime. This has an important implication for our purposes. Following the four principles of section 5.3, these changes in exchange rate policy imply that the values to be observed are those corresponding to the period from 1980 to 1994.

The process of identifying a *benchmark level of the real exchange rate* is done by contrasting two facts with the behaviour of the RER (i and iii) and the behaviour of two leading indicators: the merchandise trade balance for Mexico and the US, and the value-added in the manufacturing sector as a share of the GDP (ii and iv).

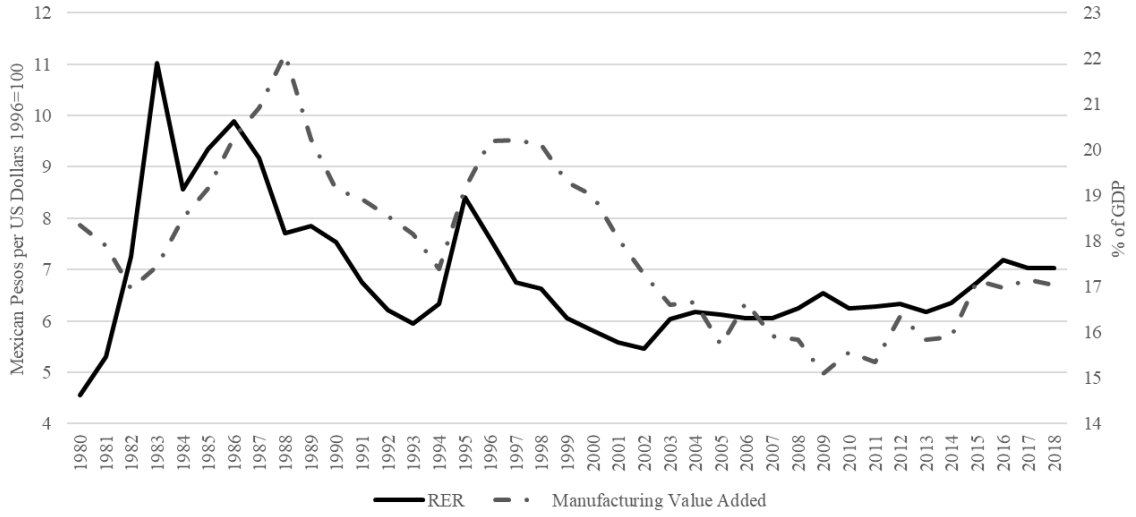
GRAPH 1 and GRAPH 2 show these relationships. GRAPH 1 shows two main episodes in which a higher RER was associated with a surplus in the trade balance 1984 and 1988. It is important to note that similar levels of the RER were observed during 1984 and 1988 (8.5 and 7.7 Mexican Pesos per US Dollars). For the case of 1984 and 1988, the value-added of the manufacturing sector, as a percentage of the GDP, rose from 18.3 per cent of the GDP in 1980 to 22.1 per cent in 1988, where it found its highest peak. In addition, both years showed a positive trade balance, 1984 being the year in which the balance trade was the highest combined with an increasing trend in the value-added for the manufacturing sector (see GRAPH 2), and a year in which exchange rate controls were taking place. Therefore as 1984 satisfies conditions i to iv. In 1984, the real exchange rate was at a rate of 8.5 Mexican Pesos per US Dollars, which is then converted to a nominal exchange rate to compute the policy exchange rate.

GRAPH 1. Bilateral Mexican-US Real Exchange Rate and Trade Balance for Mexico in US Dollars, 1980-2018



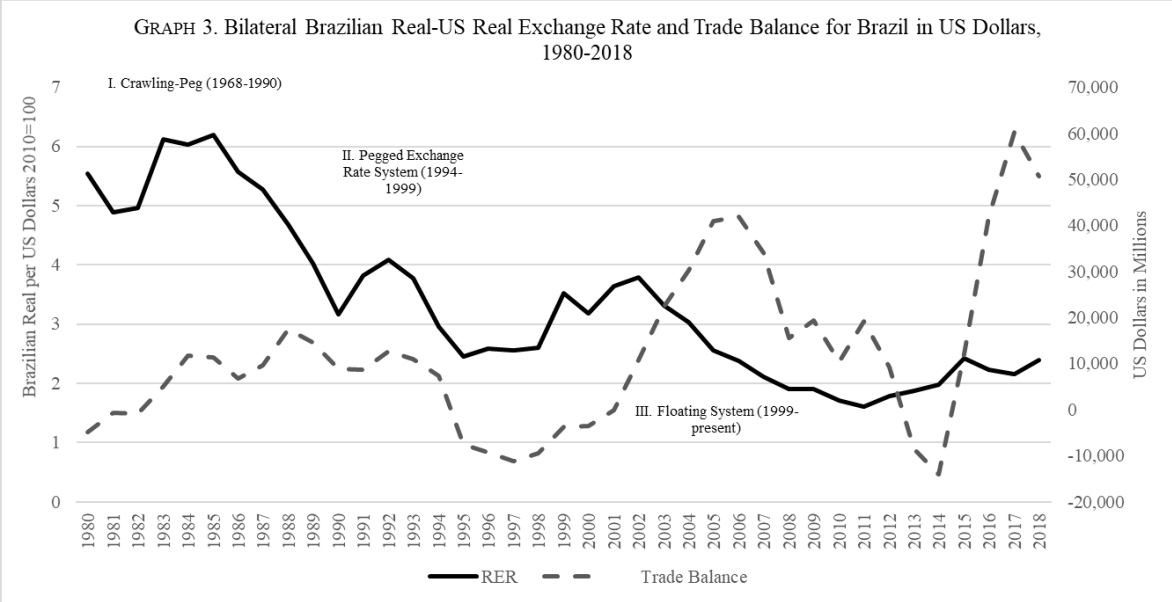
Source: Authors' own calculation based on the Mexican National Institute of Statistics and Geography (INEGI), the Federal Reserve Economic Data and the United Nations Conference on Trade and Development (UNCTAD).

GRAPH 2. Bilateral Mexican-US Real Exchange Rate and Manufacturing Value Added (% of GDP), 1980-2018

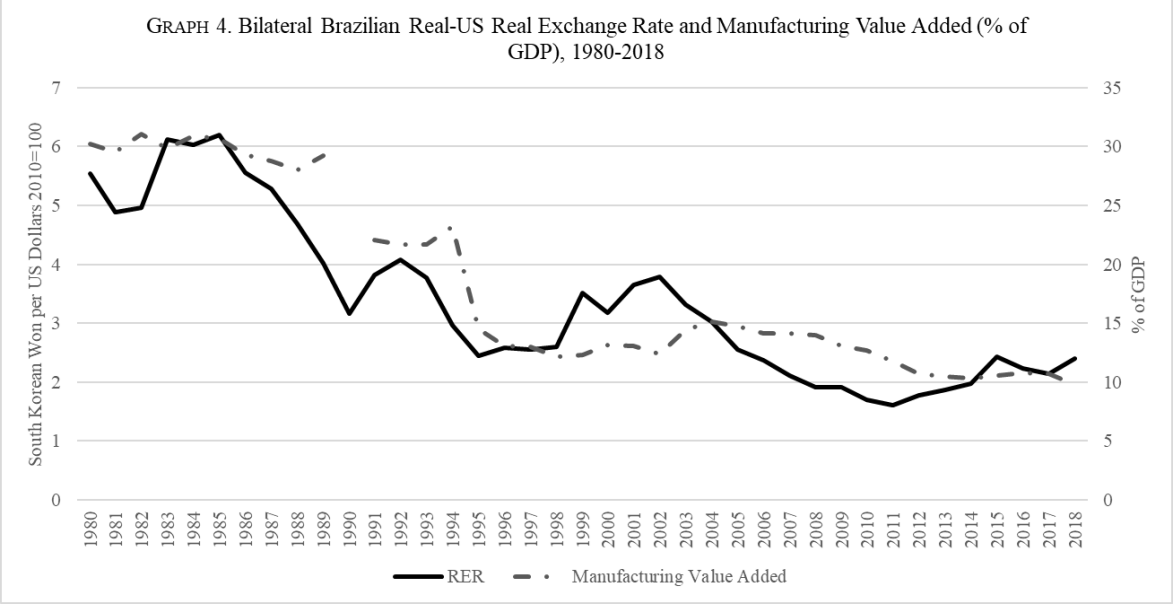


Source: Authors' own calculation based on the Mexican National Institute of Statistics and Geography (INEGI), the Federal Reserve Economic Data and the World Bank Economic Indicators.

Notice that the case of Brazil in terms of exchange rate regimes has followed a similar path as the Mexican experience. Following the exploration of the series, GRAPH 3 and GRAPH 4 show two main episodes in which a higher RER was associated with a surplus in the trade balance and an increasing manufacturing value-added: 1984 and 1985 with 6.02 and 6.19 Brazilian Real per US Dollars. Both years satisfy conditions i to iv, but we select 1984 as the *benchmark level of the real exchange rate* given that such a year the balance trade was at its highest level. Again, we convert the value of the benchmark level in 1984 to a nominal exchange rate level.



Source: Authors' own calculation based on the OECD, and the United Nations Conference on Trade and Development (UNCTAD).

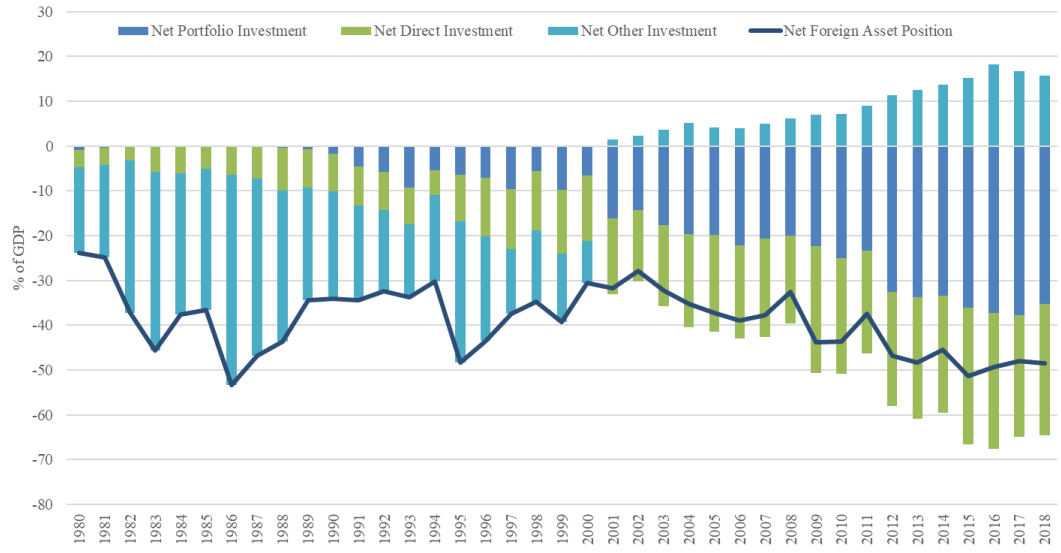


Source: Authors' own calculation based on the OECD and the World Bank Economic Indicators.

As outlined in section 5.3.2. to select a *benchmark level of the Net Foreign Assets Position,* one must consider if a country is at a high or low sustainability risk. GRAPH 5 shows the series for the NFA as a share of GDP from 1980 to 2018 and by its components. The series shows a worsening of the NFA as a share of GDP in 2009 comparable to levels close to those observed in 1986, 1987 and 1988. After 2012, Mexico's NFA position has surpassed the threshold of -44% of GDP suggested above. Indeed, the mean value for the NFA position, -

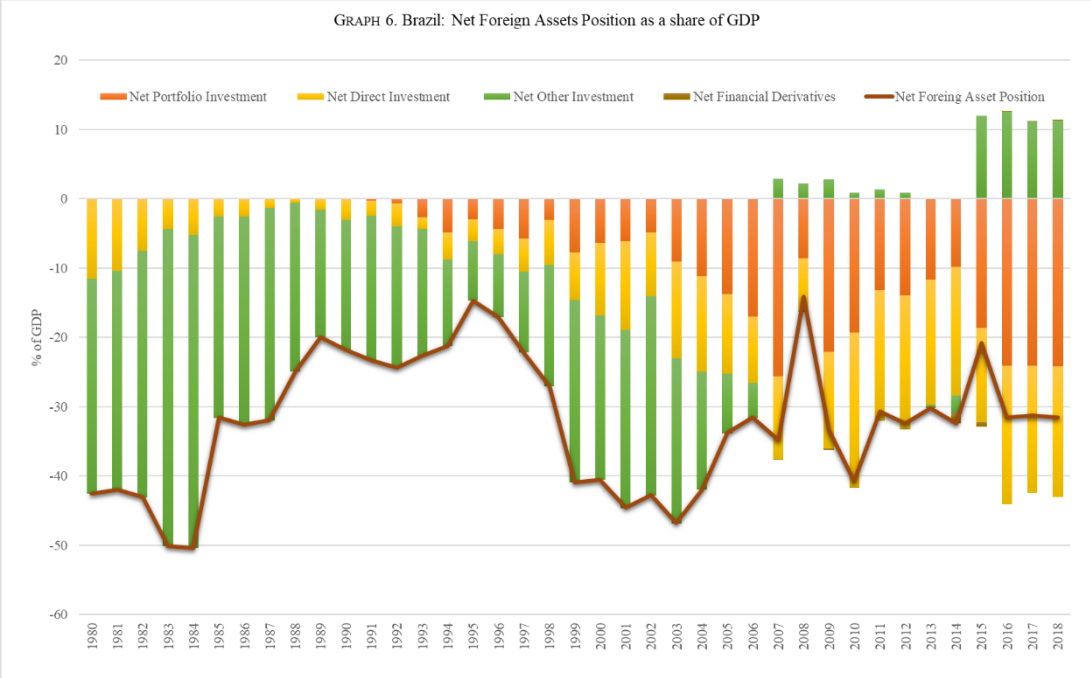
39% of GDP, is close to the threshold. These facts indicate that over the period of analysis, Mexico can be classified as one at high sustainability risk. Therefore, to carry out the computation of our policy rates, a level of the NFA corresponding to -17% of GDP is taken as a benchmark.

GRAPH 5. Mexico: Net Foreing Assets Position as a share of GDP



Note: Net other investment includes debt instruments and reserve assets.

Source: Authors' own calculation based on the IMF'S Balance of Payments and International Investment Position Statistics and the External Wealth of Nations Mark II database (Lane & Milesi-Ferretti, 2007) .



Source: Authors' own calculation based on the IMF'S Balance of Payments and International Investment Position Statistics and the External Wealth of Nations Mark II database (Lane & Milesi-Ferretti, 2007) .

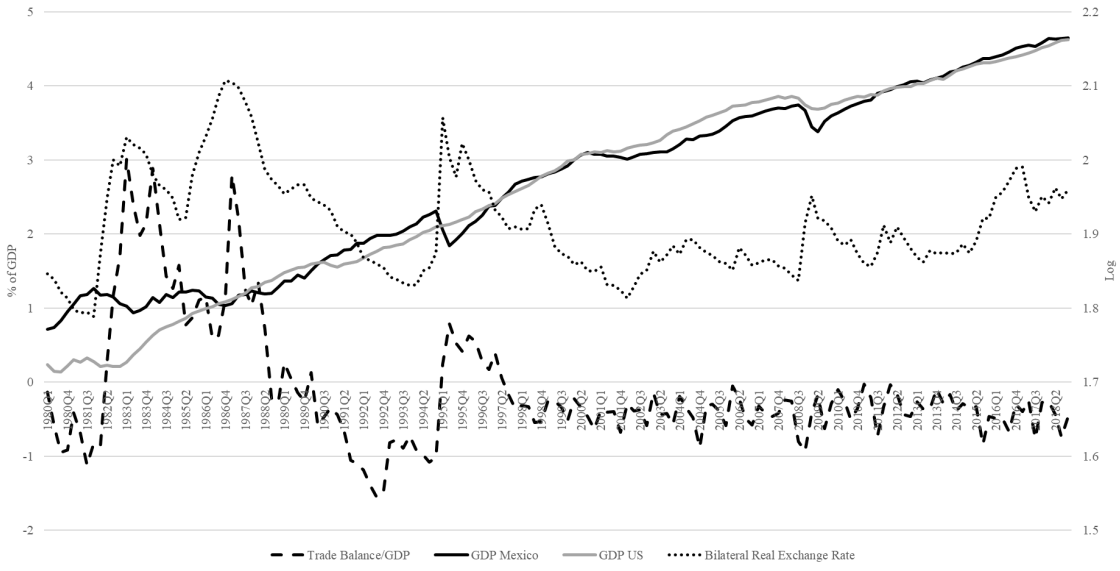
The case of Brazil, again, resembles the Mexican experience but with episodes consistent with stronger NFA positions during the first half of the '90s. However, at the beginning of the 2000s, the values equalled those observed by the beginning of the '80s. During the sample period, the NFA position has surpassed the threshold of -44% of GDP in which there is a high external risk. The tendency has stabilised in recent years, but the values are still close to the threshold. Thus, a level of the NFA corresponding to -17% of GDP is also taken as a benchmark.

Using our benchmark level of NFA means that the PTER-tp tries to stabilise, over time, the NFA at -17% of GDP levels. The stabilisation of the NFA around such a level, intuitively, will imply several positive CA gaps leading to suggest depreciating the *benchmark level of the real exchange rate*.

As outlined in section 5.3, we estimated the reduced form equation for the trade balance to compute the *trade balance semi-elasticity*. To do so, we follow equation 5.21.

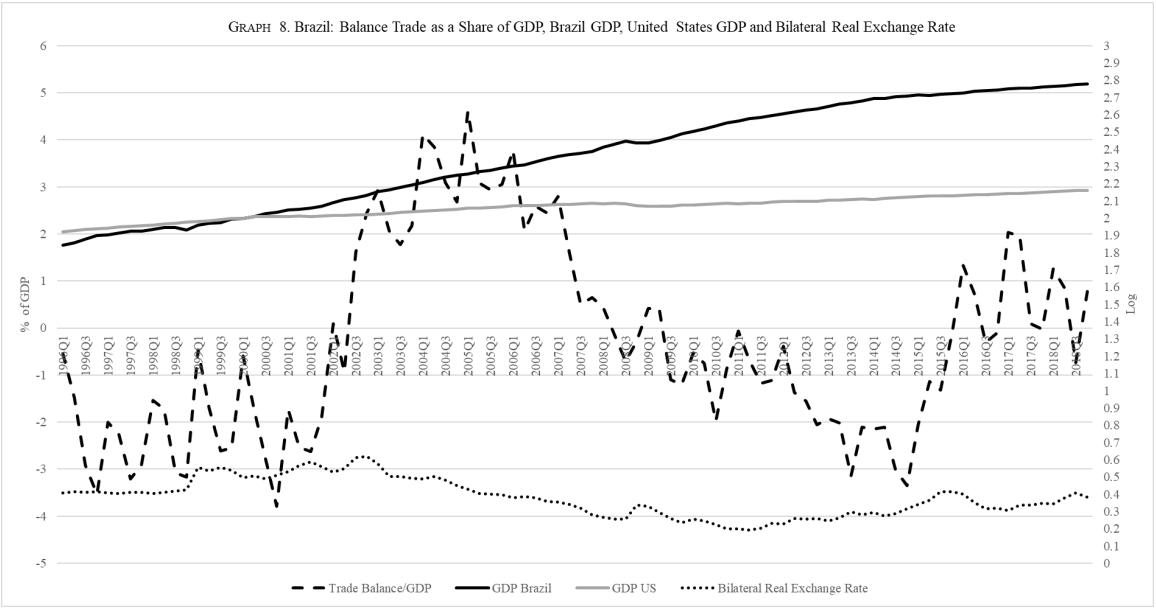
As a preliminary step for our estimations, GRAPH 7 and GRAPH 8 show the quarterly series for our selected variables. GRAPH 7 shows the series for the trade balance, real output for Mexico and the US, and the RER for 1980 to 2018. Similarly, GRAPH 8 shows the same set of variables (the trade balance, real output for Brazil and the US, and the RER) for 1996 to 2018. The trade balance is represented as a share of the GDP; real output for Mexico, Brazil and the US are in constant, 2005, US Dollars; and the RER is at 1996 prices for Mexico and at 2010 prices for Brazil. The values of the trade balance are represented on the left vertical axis, and the logarithms for the real output and the RER are represented on the right axis.

GRAPH 7. Mexico: Balance Trade as a Share of GDP, Mexico GDP, United States GDP and Bilateral Real Exchange Rate



Source: Organisation of Economic Cooperation and Development (OCDE), United Nations Conference on Trade and Development (UNCTAD) and the International Monetary Fund (IMF) and Bank of Mexico Statistics.

GRAPH 8. Brazil: Balance Trade as a Share of GDP, Brazil GDP, United States GDP and Bilateral Real Exchange Rate



Source: Organisation of Economic Cooperation and Development (OCDE), United Nations Conference on Trade and Development (UNCTAD).

In general terms, the macroeconomic variables seem to be correlated. The trade balance and the RER seem to be positively correlated for Mexico. For Brazil, it does not seem to be the case. The series of the RER and the trade balance show some correlation before the 2000s but not for the rest of the period. The series of the real GDP for Mexico, Brazil and the US show an upward trend. For Mexico, the series for the trade balance shows the major surpluses before the last quarter of 1997, the year after which the series starts to show continuous deficits. On the other hand, the series for the RER appreciates sharply after 1998. From there on, the RER stood relatively stable but appreciated if compared to the first years of the series. In the case of Brazil, trade surpluses appear after the third quarter of 2003 until the second quarter of 2008. During the whole sample period, the RER stood relatively stable with a tendency towards the appreciation.

The variables are tested for unit-roots using the Dickey-Fuller test (including the intercept and an automatic selection of a maximum 13 lags). For Mexico, the results show the existence of a single unit-root for the regressors (Mexico GDP, the US GDP and the RER series are I (1)) but not for our dependent variable (trade balance is I (0)). For Brazil, results show that all the variables are I (1) (trade balance, Brazil GDP, the US GDP and the RER series).

To avoid “spurious” regression, the first-differencing of the regressors is necessary. We take the first differences of the log form of Mexico GDP, the US GDP and the RER series, whereas the trade balance remains in a level form. While we take the first difference of the log form of all the variables for Brazil (Brazil GDP, the US GDP and the RER). One major advantage of differencing the variables is that it will reduce multicollinearity (Rose & Yellen, 1989).

TABLE 1 shows the estimates of the short and long-run semi-elasticities of the trade balance regressions over the sample period for Mexico and Brazil. Such coefficients are important to derive η^{TB} and therefore, the values corresponding to the PTER-tp, particularly to compute the Δs_{TP_t} [48]. The trade balance estimation, which is a level-log representation, involves up to 5 lags for the dependent variable, and the current and up to 5 lags for the regressors. The results of the parsimonious ARDL models are shown in TABLE 1.

TABLE 1. Mexico and Brazil: Short-Run and Long-Run Semi-Elasticities

		Mexico	Brazil
		1980q1-2018q1	1996q1-2018q4
Short-run coefficients			
	BT (-1)	0.75***	-0.16**
		-0.05	0.08
	BT (-2)		-0.18**
			0.08
	BT (-4)	0.49***	0.60***
		-0.06	0.08
	BT (-5)	-0.4	
		-0.06	
	GDP Mex	-0.25	

[48] For our purposes we only include the significant coefficients to compute the long-run trade balance semi-elasticity. We rely on a parsimonious model and therefore the long run coefficient is computed with coefficients statistically significant at a 10% level

		-2.02	
	GDP Br		6.13
			5.42
	GDP US	6.92**	-15.47
		-3.48	13.59
	RER	1.51***	2.37*
		-0.37	1.25
	RER (-1)	2.27***	2.70**
		-0.39	1.28
	RER (-2)	0.92**	2.28*
		-0.36	1.28
	C	-0.09	0.00
		-0.03	0.16
Long-run coefficients			
	GDP Mex	-8.73	
		-29.92	
	GDP Br		7.43
			7.12
	GDP US	8.93	-18.49
		45.08	19.02
	RER	34.79**	9.07**
		16.46	3.88
	C	-0.32	-0.00
		-0.31	0.20
R2		0.84	0.53
Adjusted R2		0.83	0.49
N		130	87
Residual Diagnostics			

	P-Value	
Normality Jarque Bera	0.77	0.10
Serial Correlation LM (2)	0.88	0.86
Heterokedascitiy Test B-P-G	0.00	0.31

Note: The lag structure is selected based on a general to specific procedure. We perform the Wald Test to create a parsimonious model. However, the long-run specification is obtained from an ARDL model with automatic selection of the lag structure based on AIC criteria. The long-run coefficients are the result of an overparameterized model. Therefore, the long-run coefficients used in this thesis are calculated using significant coefficients following 5.18. ***p<0.01, **p<0.05, *p<0.1

Using the long-run coefficients derived from TABLE 1, the estimated η^{TB} for Mexico and Brazil are 0.31[49] and 0.09, respectively.

Furthermore, as shown in section 5.3, to compute the *income balance semi-elasticity,* η^{IB}, we follow a two-sept procedure. We first estimate the income flows panel regressions to obtain the income credit and income debit elasticities estimating 5.23 and 5.24.

The variables are tested for unit-roots using the Im-Pesaran-Shin test (including a constant, trend and one lag). Results show the existence of unit root for the variables income credit, foreign assets, income debit and foreign liabilities, while the RER series is stationary.

In addition, we conduct a Hausman test to determine the most appropriate estimator. Results show that the desired estimation procedure for both panel regressions is the Pooled Mean-Group (PMG) estimator. The PMG estimator allows short-term coefficient and error variances to differ across all panels, while long-term coefficients are constrained to be equal across all panels.

[49] This value differs from the long-run coefficient presented in TABLE 1 as it is derived following equation 5.22 using significant values from the parsimonious model regression.

TABLE 2 shows the estimates of the short and long-run elasticities of the income credit and income debit panel regressions over the sample period. Estimates in TABLE 2 display the responsiveness of income flows to the exchange rate, that is, the elasticities of income credits, η^{IC}, and income debits, η^{ID}. The income credit and income debit panel estimations, log-log representations, involve 1 lag of the dependent variables and 1 lag for the regressors.

TABLE 2. Income Credit and Income Debit Elasticities to the Exchange Rate: Short-Run and Long-Run Semi-Elasticities

		(1)	(2)
		D.lnIC	D.lnID
		1970-2020	1970-2020
Long-run coefficients			
	ECT		
	lnRER	-1.529***	-1.396***
		(0.235)	(0.169)
	lnFA	0.0738**	
		(0.0333)	
	lnFL		-0.0893**
			(0.0372)
Short-run coefficients			
	SR		
	ECT	-0.120***	-0.163***
		(0.0285)	(0.0381)
	D.lnRER	-0.374***	-0.0381
		(0.108)	(0.0890)

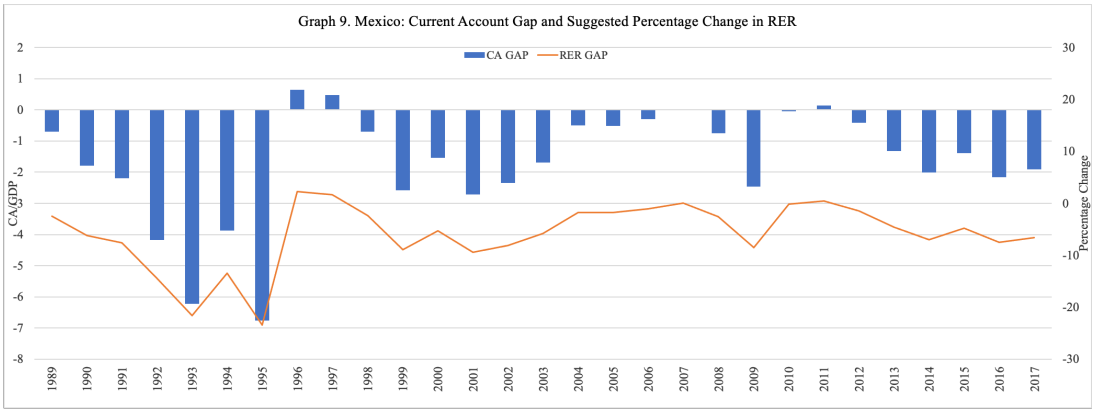
D.lnFA	0.134	
	(0.0724)	
D.lnFL		0.0293
		(0.0951)
_cons	1.170***	1.683***
	(0.296)	(0.396)
N	595	595

Note: Standard errors in parentheses
***p<0.01, **p<0.05, *p<0.1

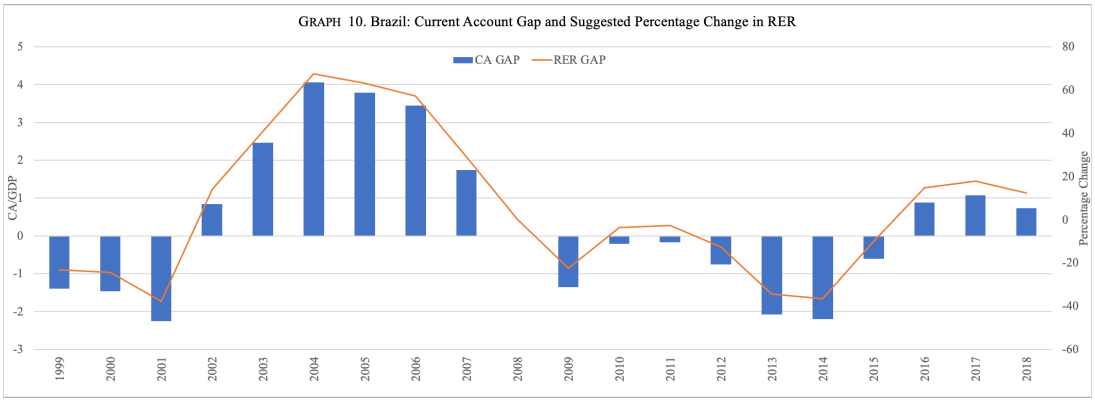
The panel estimation yield statistically significant values for η^{IC}, and η^{ID} of -1.52 and -1.39, respectively and are assumed to be common across all countries in the panel. Following equation 5.18, to derive the country-specific η^{IB}, we use the country-specific shares of the nominal income credit, s^{IC}, and income debit, s^{ID} for Mexico and Brazil, over the 1970-2020 period. The values for Mexico are: for s^{IC} is 0.19 and s^{ID} is 0.20. While, the values for Brazil for s^{IC} is 0.10, and s^{ID} is 0.08. The η^{IB} values for Mexico and Brazil are -0.02 and -0.03, respectively. Thus, while income credit and income debit elasticities are common across countries, the semi-elasticity of the income balance may change according to the size of income flows.

The values for the η^{TB} and η^{IB} allow us to compute the corresponding exchange rate adjustment, Δs_{TP_t}, which would, hypothetically, close the CA gap. GRAPH 9 and GRAPH 10 show the current account gap (left axis) - the difference between the underlying CA and the CA balance that would stabilise the NFA position at its benchmark level- and the percentage change in the RER or s_{TP_t} (right axis). The procedure of computing the CA norm has been outlined above. For Mexico and Brazil's case, the exchange rate adjustments below presented would have been appropriate to guide the NFA position towards levels of -17% of GDP as our criteria suggest. Thus, the case of countries with

large net debtor positions which will require higher current account balances to stabilise the NFA position towards sustainable levels.



Source: Authors' own calculation.



Source: Authors' own calculation.

The case of Mexico contrasts with the one presented for Brazil. Perhaps a noteworthy aspect is that a positive CA gap would require an upward adjustment to the benchmark level of the RER. In contrast, a negative CA gap would necessitate downward adjustments of the RER. For example, during the sample period, Mexico's current account was predominantly in deficit. Therefore, it would have needed higher levels of the CA balance that would stabilise the NFA position at its benchmark level compared to the underlying CA levels, which, in turn, would have needed downward adjustments to the benchmark level of the RER to stabilise the NFA position at its benchmark level. On the other hand, the case of Brazil shows periods in which it would have required upward adjustments to the benchmark level of the RER to guide the NFA position towards the preferred level. As mentioned earlier, the underlying

rationale of this approach is that the adjustment to the RER will, hypothetically, lead to desired levels in the trade balance, which, in turn, would close the CA gap.

It is worth underscoring that in GRAPH 9 and GRAPH 10, different factors play key roles in the close dynamic observed between the current account gap and the RER adjustment series.

The first element to consider that explains the observed dynamics is that the RER adjustment is a function of the size of the current account gap. A higher current account gap will suggest a higher RER adjustment in order to close the gap and vice versa, keeping everything else constant. The model suggests higher sustainable levels for the current account, although not always positive, during periods of low growth rates to drive the level of NFA position towards the desired path. This, in turn, will suggest a positive current account gap which will need to be close by a corresponding exchange rate adjustment. One crucial assumption to recall is that the model assumes that the current account will be closed by the trade balance adjustment, achieved through a RER adjustment as suggested in equation 5.15. Thus, the trade balance is assumed to adjust positively, given the appropriate RER adjustment, and, thus, it is the factor that closes the current account gap, ensuring the convergence forwards the NFA to GDP target.

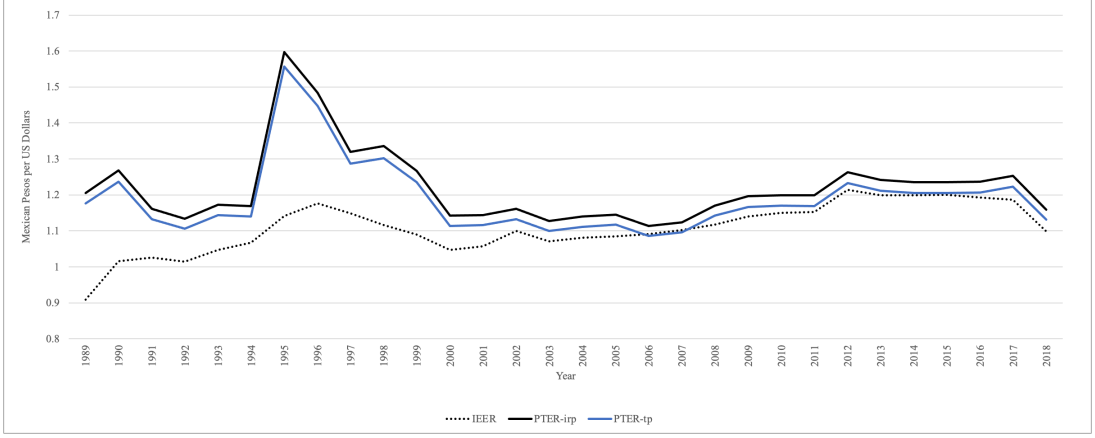
A second element that explains the observed dynamics is the size and the sign of the sum trade balance and income balance semi-elasticities, which is the current account response to real exchange rate variations. The relatively low trade balance and income balance semi-elasticities (the sensitiveness of the trade balance and income balance to variations in the RER) explain why the RER adjustments needed to close the current account gap are high. If these semi-elasticities were higher, the necessary RER adjustment would be lower. Our results point to a smaller response of the income balance to exchange rate variations than those suggested by the trade balance for Mexico and Brazil, which suggest that the trade balance response is more prominent in these countries. The income balance response to variations in the real exchange rate would reduce but not offset the trade balance response. However, the overall current account response to real exchange rate

variations will be reduced, being the trade balance semi-elasticity positive and the income balance semi-elasticity negative but to a lesser extent, suggesting that necessary RER adjustments will be higher. The magnitude of RER adjustment, thus, will be partially determined by both the trade balance and income balance semi-elasticities and whether one dominates over the other.

In sum, the close dynamics between the current account gap and the real exchange rate gap are explained by the fact that the RER gap is a function of the size of both the current account gap and the sum of the trade balance and income balance semi-elasticities. On the one hand, higher current account gaps will require higher RER gaps and vice versa, keeping everything else constant. On the other hand, the size of the RER gap is also determined by the size of the sum of the trade balance and income balance semi-elasticities and whether the trade balance of the income balance semi-elasticity dominates. While a lower value derived from the sum of the trade balance and income balance semi elasticities (if the trade balance dominates) will require higher RER adjustments, a higher value derived from the sum of the trade balance and income balance semi elasticities will require lower RER adjustments. Finally, a relevant thing to note is that if the trade balance dominates over the income balance, given the size and the signs of resulting semi-elasticities, the resulting RER gap must be positive. Conversely, if the income balance dominates over the trade balance, the resulting RER gap must be negative, keeping everything else constant.

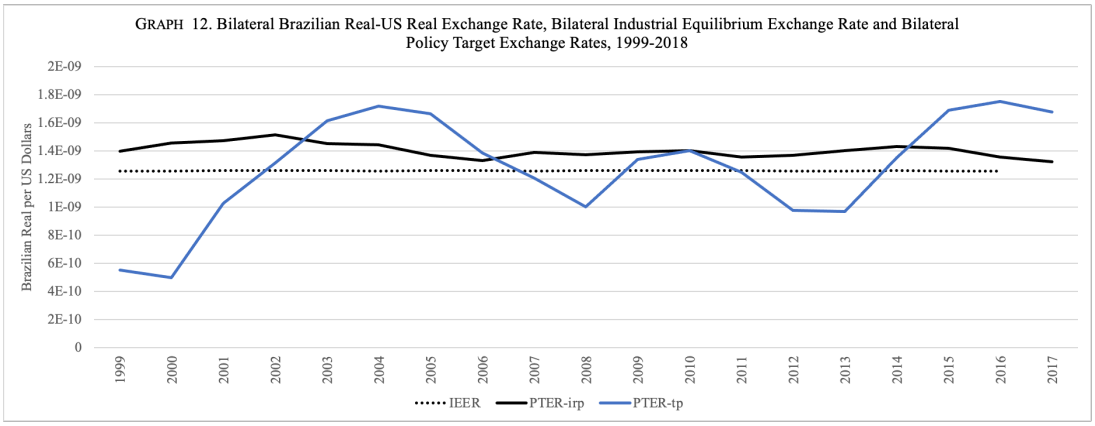
Finally, GRAPH 11 and GRAPH 12 shows the final estimation results based on equation 5.1 and 5.2.

GRAPH 11. Bilateral Mexican-US Real Exchange Rate, Bilateral Industrial Equilibrium Exchange Rate and Bilateral Policy Target Exchange Rates, 1980-2018



Source: Authors' own estimations.

GRAPH 12. Bilateral Brazilian Real-US Real Exchange Rate, Bilateral Industrial Equilibrium Exchange Rate and Bilateral Policy Target Exchange Rates, 1999-2018



Source: Authors' own estimations.

The exchange rate values in the graphs are policy targets that would have been needed to reduce, hypothetically, both the pressures from yield-driven foreign financial flows and a stock of foreign-currency-denominated debt. The least depreciated exchange rate indicates the level of the IEER. The series of the PTER-irp is obtained adjusting the IEER, by a factor determined by the relative excess of the nominal interest rates of what can be earned in the domestic market over what can be earned in the foreign market over time. The weaker exchange rate, the PTER-tp stands, as the level compatible with a sustainable current account that helps to stabilise foreign obligations. It is important to note that the values in GRAPH 11 and GRAPH 12 represent nominal levels of the exchange rate, taking as reference value periods in which the old Mexican pesos and cruzeiros were in circulation. The low values observed,

particularly for the Brazilian case, are explained by their redenomination to new Mexican pesos and Brazilian real.

The addition of financial variables modifies the whole picture in two different ways. The higher interest rate differential would have required a higher level of the exchange rate to counteract the damaging effect of yield-driven foreign financial flows as shown in the PTER-irp series. Of course, a negative differential would have required an appreciated level of the exchange rate compared to the IEER. it would have trimmed the profitability of short-term capital flows, preventing the economy for the long-lasting effects of these types of investments on exchange rates and industrial development. One can argue that targeting level corresponding to the PTER-irp could have been a useful tool to prevent capital flows from overvaluing the exchange rate in the following years chronically and could have been useful in creating economic development conditions.

5.4.2. The Asian Experience "The Best Industrial Policy is to have an Industrial Policy": Computing the PTERS for South Korea

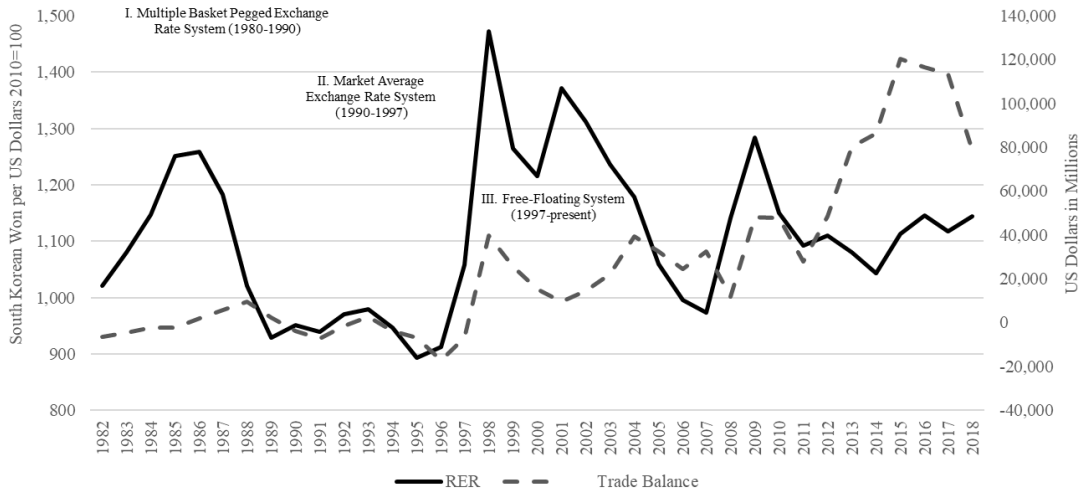
Let us now consider the case of South Korea, one of the East Asian Newly Industrialising Economies (NIEs), which is often presented as an "economic miracle" (Hassink, 1999). Opposite to the two cases above presented, these types of economies followed a path in which it can be argued that governments acknowledged that "*The Best Industrial Policy is to have an Industrial Policy".* The case of South Korea has got the attention of policymakers and scholars such as ND authors. Bresser-Pereira, et al. (2020) argue that South Korea is a country which has applied an economic strategy similar to those proposed by the ND approach. South Korea's success, in general lines, has been based on four ND's main principles: i) a symbiotic relationship among the state and the market; ii) a symbiotic relationship between macroeconomic policy and industrial policy; iii) a central role of public banks financing economic development; and iv) both the exchange rate and BOP management (Bresser-Pereira, et al., 2020).

One central characteristic of South Korea's development is the timing of their catching-up process, which began in the 1970s. Since then, GDP growth has

averaged 7.1% annually driven by a dynamic export sector that has grown at a rate of 13.6% between 1970 and 2018.

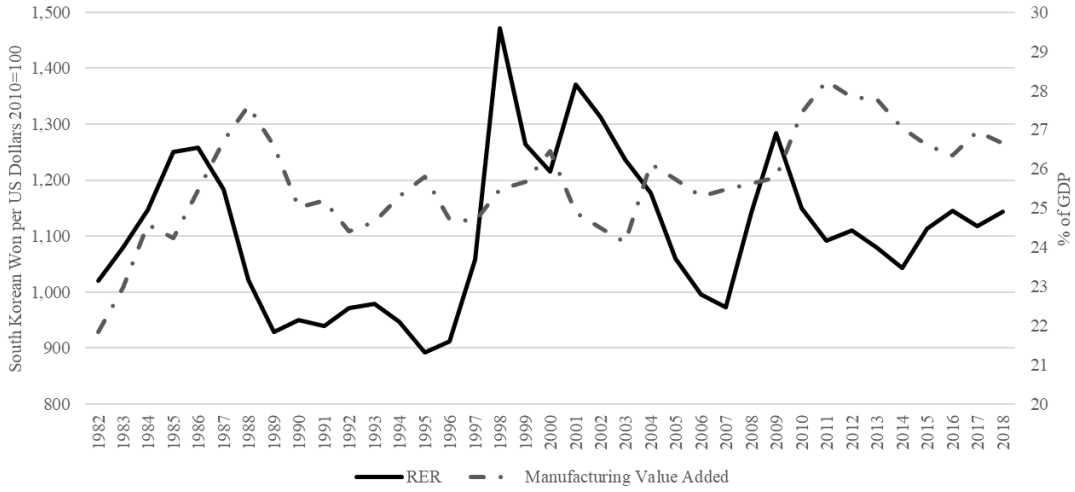
Although we do not cover the whole period, this section makes the most of the available data to compute the policy rates. South Korea, like Mexico and Brazil, shows a process of gradually shifting to more flexible exchange rate systems during the period of study, as shown in GRAPH 13. Exchange rate regimes arguably changed according to financial market circumstances. The pegged exchange rate system and the market average exchange rate system were in line with the state's view of the exchange rate as a tool for macroeconomic management. On the other hand, prior to the adoption of a free-floating exchange rate regime, South Korea started a process of capital account liberalisation as a requirement to become an OECD member state (Cimoli, et al., 2020). In terms of its external performance, South Korea has changed from being a net debtor economy to a net creditor economy, which is explained by the shift from current account deficits to current account surpluses following 1998. These structural changes, again, will be briefly considered to select the key inputs for the PTER-irp and PTER-tp.

GRAPH 13. Bilateral South Korean Won-US Real Exchange Rate and Trade Balance for South Korea in US Dollars, 1982-2018



Source: Authors' own calculation based on the OECD and the World Bank Economic Indicators.

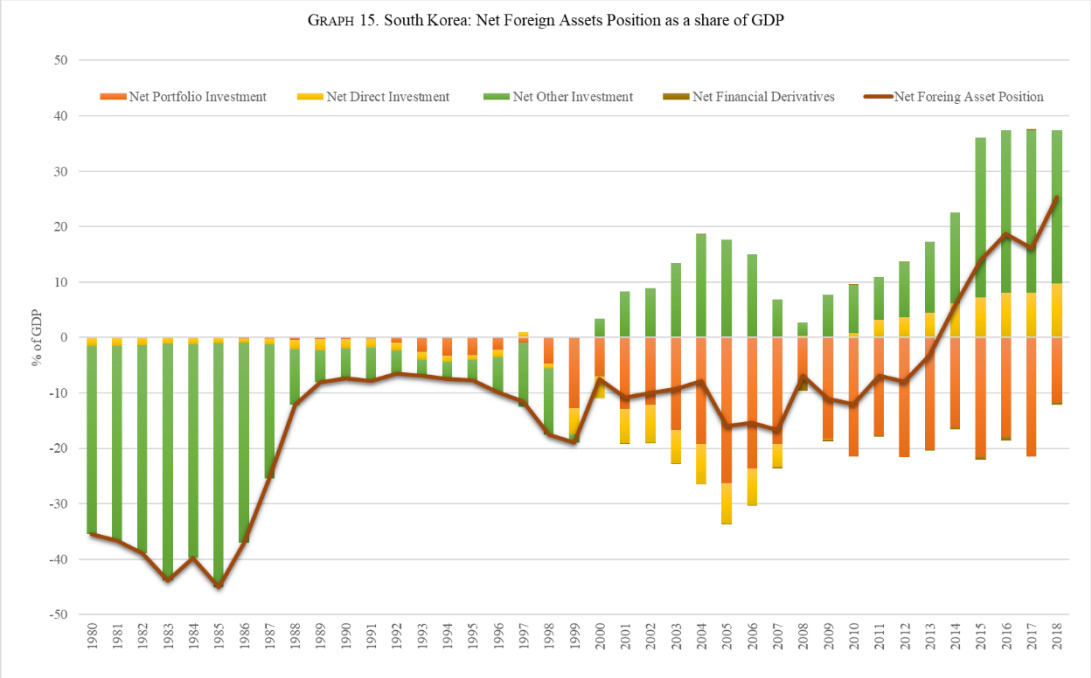
GRAPH 14. Bilateral South Korean Won-US Real Exchange Rate and Manufacturing Value Added (% of GDP), 1982-2018



Source: Authors' own calculation based on the OECD and the World Bank Economic Indicators.

According to the principles set out in section 5.3.1., the most appropriate values to look at are those from 1980 to 1997 so as to identify a *benchmark level of the real exchange rate*. The value of the RER in 1988 fulfils the criteria i to iv (as it is a value in which the exchange rate was managed and was not appreciated, in addition, it accompanies a period with a surplus in the trade balance and the value-added in manufacturing shows an increasing trend). Such a RER level corresponds to 1021 South Korean Won per US Dollar, which is then converted to a nominal level of the exchange rate.

To select a *benchmark level of the Net Foreign Assets Position,* one must consider if a country is at a high or low sustainability risk. South Korea has shifted from being a net debtor economy to a net creditor economy, as shown in GRAPH 15. GRAPH 15 also indicates that South Korea has become a country at a low sustainability risk -except for the first half of the 80s where it was at a high sustainability risk following our criteria. The implications of these facts and considering that the unit labour costs for South Korea are only available since 1991, is that South Korea is catalogued as a country at a low sustainability risk for the computation of the PTERs. Thus, a level of South Korea's most recent NFA to GDP ratio can be prescribed as a benchmark level (i.e., each year's NFA position is taken as a benchmark). However, for illustration purposes, when computing the CA gap, we take for the period before 1987, the benchmark NFA level as -17 % of GDP.

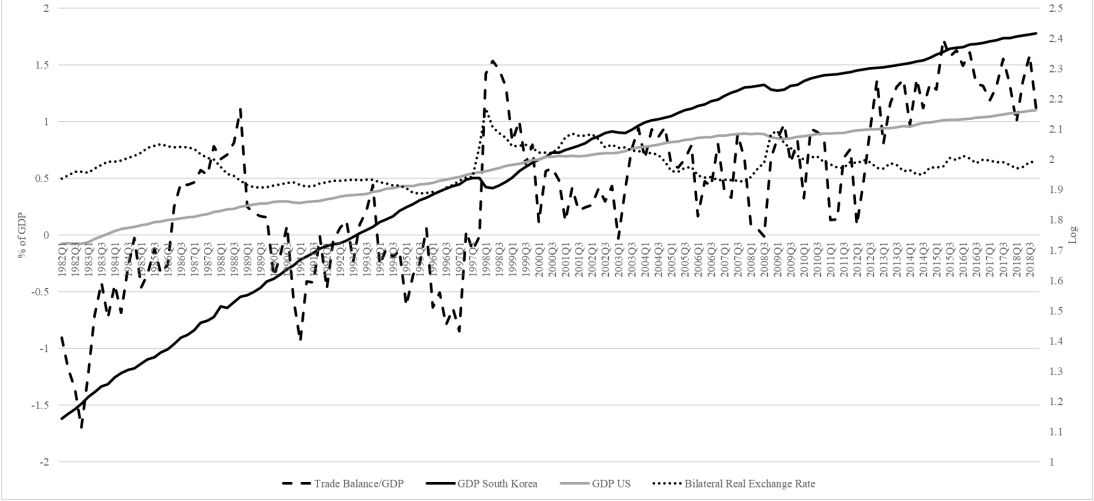


Source: Authors' own calculation based on the IMF'S Balance of Payments and International Investment Position Statistics and the External Wealth of Nations Mark II database (Lane & Milesi-Ferretti, 2007) .

An interesting thing to note in GRAPH 15 is that the large volume of external indebtedness recorded in the first half of the 80's served as instruments to fund the development process in South Korea (Bresser-Pereira, et al., 2020). And indeed, the exchange rate and BOP management served as a means to help the economy to follow a trend in order to become a net creditor.

A key input is to estimate the trade balance's reduced form to compute *trade balance semi-elasticity.* GRAPH 16 shows the quarterly series for the trade balance as a share of the GDP, the real output for South Korea and the US, and the RER for 1982 to 2018. The trade balance is represented on the left vertical axis and the logarithms for the real output and the RER on the right axis. The graph's clearest trend is that the trade balance has increased over time while the RER has remained relatively stable with an appreciating tendency. The real output for South Korea and the US shows an increasing trend.

GRAPH 16. South Korea: Balance Trade as a Share of GDP, South Korea GDP, United States GDP and Bilateral Real Exchange Rate



Source: Organisation of Economic Cooperation and Development (OCDE), United Nations Conference on Trade and Development (UNCTAD).

The variables are tested for unit-roots using the Dickey-Fuller test (including the trend and intercept and an automatic selection of a maximum of 13 lags). For South Korea, unit-root tests show that the log transformation of the South Korea GDP, the US GDP are I (1) while the log transformation of the RER series and the trade balance are I (0). This implies that taking the first difference of South Korea GDP and the US GDP series is necessary.

The trade balance level-log representation involves up to 5 lags for the dependent variable, and the current and up to 5 lags for the regressors. The results of the parsimonious model are shown in TABLE 3.

TABLE 3. South Korea: Short-Run and Long-Run Semi-Elasticities

		South Korea
		1982q1-2018q4
Short-run coefficients	BT (-1)	0.66***
		-0.06
	BT (-4)	0.43***
		-0.07

	BT (-5)	-0.23***
		-0.07
	GDP South Korea (-1)	-4.59***
		1.6
	GDP US	11.31**
		4.35
	RER	2.55***
		0.53
	RER (-1)	-1.96***
		0.55
	C	-2.6
		0.96
Long-run coefficients	GDP South Korea	-38.00**
		16.93
	GDP US	47.09
		39.88
	RER	3.64**
		1.69
	C	-15.64**
		7.8
R2		0.82
Adjusted R2		0.81
N		143
Residual Diagnostics		
		P-Value
Normality Jarque Bera		0.78

Serial Correlation LM (2)	0.65
Heterokedasciticy Test B-P-G	0.18

Note: The lag structure is selected based on a general to specific procedure. We perform the Wald Test to create a parsimonious model. However, the long-run specification is obtained from an ARDL model with automatic selection of the lag structure based on AIC criteria. The long-run coefficients are the result of an overparameterized model. Therefore, the long-run coefficients used in this thesis are calculated using significant coefficients following 3.17. ***p<0.01, **p<0.05, *p<0.1

Following TABLE 3, the estimated value for η^{TB} is 0.03.

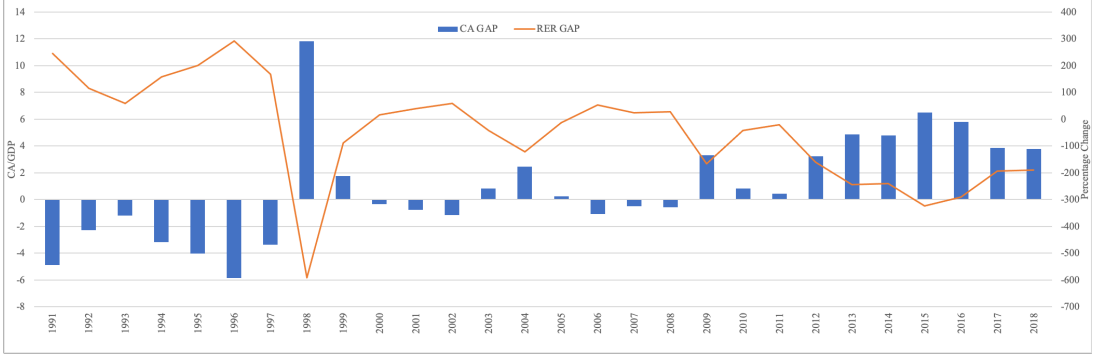
The South Korean economy follows a pattern in which a higher RER is associated with a positive trade balance both in the short and the long-run. Moreover, foreign income, proxied by the US GDP seems to improve the trade balance in a much higher amount than the RER does. The association between foreign output and the trade balance is the strongest both in the short and long run. This suggests that there may be some non-price characteristics of tradable goods driving the trade balance behaviour, which can be explained by the characteristics of South Korea's insertion to the international trade (the competitive position achieved in their catching-up process).

One last key input is to estimate the *income balance semi-elasticity*. With regards to η^{IB} we follow equation 5.18. Following TABLE 2, the panel estimation yield values for η^{IC}, and η^{ID} of -1.52 and -1.39, respectively. Using the country-specific shares of the nominal income credit, s^{IC}, and income debit, s^{ID}, that are 0.29 and s^{ID} 0.27, respectively, the η^{IB} value is -0.05.

Results of the ARDL regressions pose one big challenge for the estimation of the PTER-tp. This challenge is derived from the trade balance semi-elasticity, which is the lowest among our sample. In addition, the income balance semi-elasticity offsets the trade balance semi-elasticity suggesting that there is a

considerable reduction of the current account response to RER changes. Let us recall two essential characteristics in deriving the RER adjustment. First, the lower the sum of η^{TB} and η^{IB} the higher the suggested RER adjustment is to close the CA gap. If the sum is negative, the formula will lead to negative RER adjustments. Second, the CA gap's size, which, depends on the direction of the underlying CA and the CA balance that stabilises the NFA at its benchmark levels. And considering that the South Korean economy is a net creditor, there is no need to force the economy to operate with CA surpluses for external debt repayment, but still the approach would aim to guide the NFA towards sustainable levels, which in this case, the benchmark becomes an average of the most favourable balances. In this scenario, the CA balance that stabilises the NFA at its benchmark levels becomes small and sometimes negative. If to this is added that the underlying CA displays positive values or surpluses, the outcome will be that these considerations would lead to extremely high RER adjustments (s_{TP_t}). The above is confirmed in GRAPH 17, that shows three-digit RER adjustments.

GRAPH 17. South Korea: Current Account Gap and Suggested Percentage Change in RER



Source: Authors' own calculation.

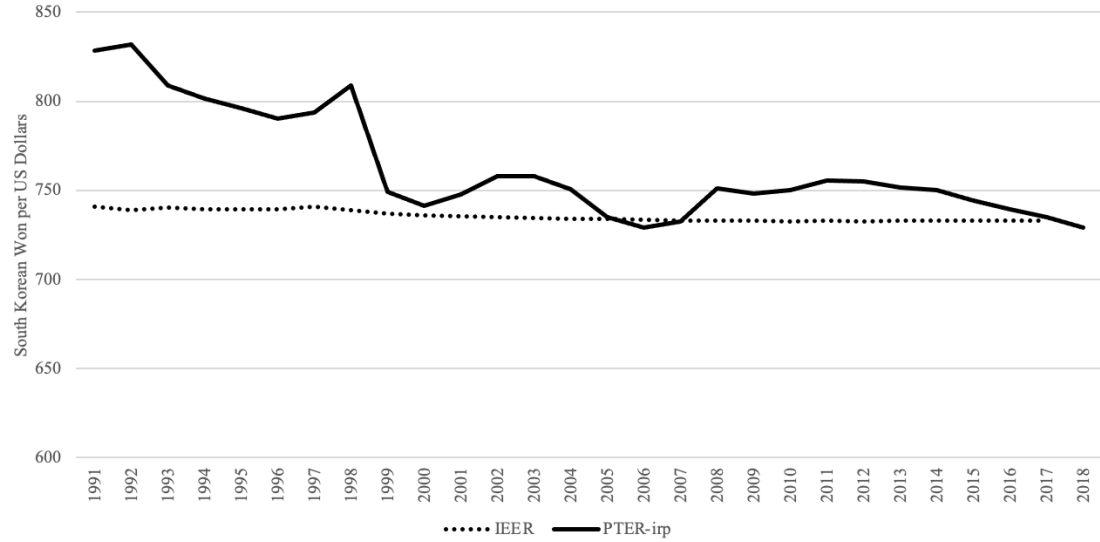
Following GRAPH 17, it can be inferred that the approach would have suggested depreciating and appreciating the exchange rate in large magnitudes which could have led to unrealistic scenarios. However, one important consideration emerges. This is related to the fact that the PTER-tp rate is one which could be too hard to implement in countries with relatively low trade balance semi-elasticities, where the income balance semi-elasticity offsets the trade balance one, and countries with large CA gaps (which could be the result of a country operating with CA surpluses and low CA norms as it

is the case of South Korea) given that these are two key inputs to compute such a rate.

Finally, GRAPH 18 shows the estimates for the IEER and the PTER-irp. We do not present the estimates for the PTER-tp due to the low η^{TB} and the extremely high Δs_{TP_t} values as discussed above. The hypothetical series in GRAPH 18 shows close behaviour, which is explained by the low-interest rate differentials that prevailed during the period of study. As discussed before, the estimates for the IEER and the PTER-irp aim to compute levels of the nominal exchange rate that seek to maintain a real exchange rate relationship that is considered at a competitive level. As expressed in the ND jargon, a level of the exchange rate that can be thought of as the industrial equilibrium (or an IEER real relationship).

One interesting thing to note from GRAPH 18 is that from the second half of the '90s, when a flexible exchange rate was adopted, the PTER-irp estimates would have suggested appreciating the exchange rate to levels close to the IEER so as to maintain price competitiveness in the South Korean economy and thus compensating from variations in the interest rate differentials.

GRAPH 18. Bilateral South Korean Won-US Real Exchange Rate, Bilateral Industrial Equilibrium Exchange Rate and Bilateral Policy-Target Exchange Rates, 1991-2018



Source: Authors' own estimations.

Estimations should be interpreted carefully for three reasons.

First, our results are calculated on an ex-post basis, and the PTER levels show the exchange rate that would have, hypothetically, neutralised the effect of financial variables in the past to remain competitive abroad. However, we acknowledge that this could not be true as a strong process of deindustrialisation took place during the period of study, mainly in the Latin American economies.

Second, and perhaps more importantly, a simple reason underlying this thesis argument is that the PTERs are policy targets, policy constructs, according to a particular assumed policy in which a set of appropriate conditions are a necessary condition for that value to prevail and be effective. Strategic policies such as appropriate market conditions along with a process of industrialisation and exchange rate controls would have allowed keeping manufacturing producers competitive.

Third, the computed values should not be taken as exact values. Marconi (2012) suggests that it can be appropriate to think of these levels as an interval over which the IEER should lie. For Marconi, if the exchange rate remains at a level close to the most recent industrial equilibrium level, the most efficient manufacturer producers would remain competitive. In a similar vein, this thesis argues that exchange rate levels that the PTER approach suggests act as a reference to the policymaker. These values are hypothetical situations that the policymaker aims to achieve under some type of managed exchange rate regime and does not mean that the goal is to temporarily adjust the exchange rate to some sort of ‘true’ and ‘unique’ value. On the contrary, the PTER approach considers the existence of multiple ‘equilibrium’ exchange rates considering two structural mechanisms through which capital flows exert persistent pressures on exchange rate levels in DEEs.

5.5. Conclusions

This chapter has proposed a methodology to compute the two PTER models developed in this thesis. It has exemplified the working of the two PTER models by taking different country cases in which the experience with regards to

economic development has differed as well as in their behaviour of monetary variables such as interest rates and the NFA position.

It has been shown that it is not possible to make a complete separation between nominal and real exchange rates. The focus on the nominal exchange rate is because yield-driven foreign financial flows are encouraged by nominal interest rates and, therefore, discouraged by seeing their profitability affected in nominal terms. Moreover, stabilising the real exchange rate around a sound competitive position is achieved much faster when the nominal exchange rate is depreciated rather than producing movements on prices (Wray, 2012). Keynes (1930), for instance, argues that "the foreign-exchange method has the characteristic that it operates directly (whether upwards or downwards) on relative price levels, whereas the bank rate method [to alter the domestic price level] only does so indirectly, and therefore with a time-lag" (pp. 322-323). Therefore, a nominal depreciation is assumed to be effective, given that it leads to a real depreciation of the exchange rate in this approach.

A methodology to compute the PTERs as suggested in this chapter is subject to several advantages and disadvantages.

In terms of the advantages, first and foremost, the approach relies on current rather than expected values to compute the Keynesian policy target rates (when calculated ex-ante). This is in line with this thesis' view that there is no expectation in any point of time that the exchange rate will be situated at such levels. And thus, policy is not trying to adjust the exchange rate at some sort of 'true' long-run equilibrium to which the exchange rate is automatically fluctuating or to which the exchange rate has a reverting tendency. As discussed earlier, the approach taken by this thesis to defining the future exchange rate with a subscript $t+h$ keeps the planning and realisation problem together by considering the feasibility of the forthcoming outcomes in a highly uncertain environment. This does not mean that the future has not to be respected. However, it aims not to fall into the trap of forecasting what things will be like in time $t+1$ assuming that the future will unfold just as a deterministic representation of a time series—thus assuming that the

policymaker has a perfect knowledge of how the time-series will unfold. We acknowledge that these levels could not be achieved. Still, instead, we consider that the formulation could act as a reference to guide exchange rate policy decisions under a managed exchange rate regime.

Second, the addition of financial factors into the policy rates determination, particularly for the case of the PTER-tp, shows how monetary factors affect the RER target or our s_i value. Thus, the extension acknowledges the importance of monetary disturbances adjusting the RER target between the base period and the consequent period.

Third, the methodology deals with the subjectivity of normatively selecting a benchmark level of the NFA. It does so by relying on a norm derived from country-specific median values for the NFA to GDP ratio suggested by Turrini and Zeugner (2019). Thus, it deals with the difficulty of quantifying the level of the NFA as a share of GDP that is considered as a sustainable value, which is a common problem associated to estimations that consider some sort of "normal" or sustainable capital flows.

On the downside, one disadvantage is related to the difficulty of finding an appropriate base year for the series, which is a RER target that policy aims to maintain. Ideally, the RER target that policy aims to maintain could be a current level of the RER, however, if one picks a current level of the RER and set it as a base period, it is likely that it corresponds to an overly appreciated level of the RER, and thus it would imply defending a non-competitive level of the exchange rate. Ultimately, the importance of s_i is to target an exchange rate to deliberately preserve the actual exchange rate close to the benchmark or appropriate level or the real exchange rate. The policymaker needs to ensure to change s_i as often as necessary to keep it realistic and avoid diverging from the target.

Another disadvantage which is crucial for the case of the PTER-tp is the trade balance semi-elasticity, η^{TB}, estimate. Considering that it is an important input to obtain the RER gap, a relatively low estimate for the η^{TB} would yield to extremely high RER gap estimates that could be implausible (as it was the case of South Korea). To this is added the possibility that the income balance semi-

elasticity, η^{IB}, offsets the trade balance semi-elasticity, which could impede the appropriate trade balance adjustment to close the current account gap and thus guide the level of the NFA towards sustainable levels.

It seems reasonable to conclude that one has to be careful taking these estimates as 'true' values. Estimates suffer from several data limitations ranging from the ones in the unit labour cost series, which are constructed from surveys based on different methodologies. However, this exercise is useful to confirm the importance of incorporating financial variables into the determination of appropriate exchange rates, as is the case of the PTER approach. Once we drop the assumption that the effect of capital flows on exchange rates is cyclical, and we assume that the these generate structural pressures on exchange rates, targets become a function of the direction dictated by interest rates and a preferred level of the NFA.

Finally, applying the PTER approach to a group of countries highlights the approach's context and time-specific nature. Even though the concept aims for general applicability and has hypothetical roots, its computation is not exempt from considering the economies characteristics, which can, at the same time, complicate its estimation. One has to keep in mind that moving the exchange rate to such levels is unlikely to solve, at once, the adverse effects of overvaluation over domestic producers. However, it is still important to think about possible ways to address the question of competitiveness from this perspective while keeping in mind that using the exchange rate as a policy variable can also call for the adoption of additional measures as will be discussed in the next chapter. For example, it will have to be complemented with capital account regulations to avoid another build-up of foreign-denominated liabilities and industrial policy.

Chapter 6
Conclusions and Policy Considerations

6.1. Introduction

This thesis has addressed the question of optimum exchange rates from a Post Keynesian perspective and has developed the policy target concept at a conceptual, theoretical and empirical level.

First, it has developed the policy target concept, a long-term optimum state, which are ideal states from the point of view of production. It is a hypothetical construction in which there is an assumption that the state of expectations remains constant. Second, and based on the policy target concept, this thesis built two concrete Policy Target Exchange Rate (PTER) models that incorporate the structural pressures emanating from financial factors in developing and emerging economies (DEEs), namely yield-driven foreign financial flows and stock of foreign currency liabilities. The PTERs are optimal rates conducive to structural change in DEEs as they neutralise and stabilise the adverse effect that financial factors exert on exchange rates. Such rates are thought as ones that provide the grounds on which to base policy decisions. In addition, it was argued that the PTERs are associated with achieving a satisfactory external balance and with structural change as it supports the manufacturing sector. Third, it has presented and proposed a methodology to compute the two PTER models. Notably, it proposed the criteria and one possible way to compute key inputs necessary for deriving the PTER models' values, taking the case of Mexico, Brazil and South Korea to demonstrate the challenges that country-specific characteristics pose to the computation of the PTERs.

This chapter is structured as follows. Section two proposes one potential way exchange rate policy can achieve the PTERs. Section three presents a summary of the core contributions of this thesis. Section four shows this thesis's limitations and analyses the economic and political obstacles to competitive exchange rate policies. Section five presents some final considerations.

6.2. How are the PTERs implementable?

The Policy Target Exchange Rate (PTER) approach assumes that the exchange rate is an important policy instrument to achieve higher growth and employment rates. The primary focus of this thesis has been on the justification, motivation, and empirical calculations of potential policy target rates. In practice, however, important questions about the implementability of such policy rates arise. This is particularly so in the presence of large – and often destabilising capital flows – which can overwhelm a central bank's capacity to achieve the targeted exchange rate level. As a result, several complementary policies might be necessary to support the attainment of the policy target exchange rate. In practice, these policies will have to be implemented in a complementary, dynamic fashion reacting to the changing nature of domestic and international financial markets.

Before discussing some of the complementary policy measures, it is essential to remember that under the PTER approach, the central banks attempt to influence the value of the future spot exchange rate. Several policies and instruments, which will be discussed in detail, can support this aim: i) influencing current exchange rate expectations through the public announcement of the PTER and its commitment to achieving such a value; ii) targeted foreign exchange market intervention in the spot and the forward markets and reserves accumulation, and; ii) comprehensive capital account management. More concretely, based on the original work by Williamson (1999), this thesis would propose a non-rigid and adjustable band, supported by a policy oriented towards building a solid buffer of foreign exchange reserves and a dynamic, targeted, and comprehensive capital account management techniques to support the implementation of the PTER that involves both permanent and cyclical capital controls on inflows and outflows. These specific ways of managing the exchange rate could address the problems created by destabilising expectations, shocks and capital account openness.

It is important also to note here that this thesis does not assume rational expectations which will align with government targets at any point in time. Indeed, financial market expectations are fickle, fast-changing, and might

fundamentally misalign with the government's attempts. This thesis recognises that it can be the case that such policy targets are never achieved, given the existence of surprises or a government's inability to manage the exchange rate around the PTER. Nevertheless, and this has been the thesis' primary motivation, should a central bank choose to manage its exchange rate, it needs a target towards which to do so. This thesis proposes such a target based on Post-Keynesian theory.

This section is structured as follows. Firstly, it discusses the general policies and instruments through which the central bank could potentially influence the future exchange rate and thus could, to some extent, make the PTER work. These are: the public announcement of the PTER, and targeted foreign exchange market intervention in the spot and the forward markets. Secondly, it examines the constraints posed by financial globalisation, which may make it difficult to achieve the exchange rate target. It does so by examining the constraints of such an exchange rate policy in light of the monetary policy trilemma and dilemma. Thirdly, building on the constraints of such an exchange rate policy, it presents three policies that are thought of as potential solutions to the limitations posed by financial actors in the context of capital account openness. These are a non-rigid and adjustable exchange rate band; the build-up of foreign exchange reserves, and a dynamic, targeted, and comprehensive capital account management.

6.2.1. How Can the Central Bank Achieve the PTERs?

This thesis has argued that under the PTER approach, the central bank has the objective of influencing the future spot exchange rate. Two basic measures could be taken into consideration to influence that rate (assuming no shocks): the public announcement of the PTER that guides exchange rate expectations, and targeted interventions in the spot and the forward market.

6.2.1.1. Influencing Exchange Rate Expectations through the Public Announcement of the PTER and its Commitment to Achieve such a Value

The first measure consists of the attempts to influence exchange rate expectations through the public announcement of the PTER by the central bank

and its commitment to achieving such value. In order to influence exchange rate expectations, the central bank could use a tool known as forward guidance –public statements made by the central bank with regards to the expected future settings of its policy tools (Nelson, 2021). The effectiveness of forward guidance in policymaking has been widely studied in the field of monetary policy. Eggertsson and Woodford (2003) have demonstrated that central bank forward guidance communication with regards to the future path of policy (i.e. policy tools such as interest rates) is relevant for a succesful monetary policy. Indeed, Swanson and Williams (2014) have empirically demonstrated that forward guidance have influenced medium and longer term interest rates -central bank's policy tools.

Similarly, the central bank could use forward guidance to influence the future path of the exchange rate by communicating the exchange rate target, the PTER, to influence agents' expectations regarding future policy actions. In using forward guidance for exchange rate management, agents can use the central bank's information about the probable future of the exchange rate policy to inform their buying and selling and thus influence exchange rate market conditions. Forward guidance thus helps agents to understand the way in which policymakers will respond to changes in the economic landscape and will commit policymakers to specific policies (Bernanke, 2020). Moreover, policy responses to deviations from the target level (considering a zero-width band), such as exchange rate interventions, can help reduce pressures on the exchange rate and stabilise it around sustainable levels. Interventions will, in turn, signal future policy actions regarding the future course of the exchange rate and consequently influence exchange rate expectations. This will guide agents' expectations of favourable and stable exchange rate levels and provide certainty regarding exchange rate policy.

6.2.1.2. Targeted Foreign Exchange Market Interventions in the Spot and the Forward Markets

A second instrument to achieve the PTER is the implementation of targeted foreign exchange market interventions both on the spot and in the forward market, and if deemed appropriate by the policymaker, its correspondent sterilisation by open-market operations to mop up the excess liquidity (either

by a central bank's planned action or by private agents' action (Boshinovska, 2015)). If interventions are sterilised, one must keep in mind that sterilisation can lead to operational losses, implying a financial cost for countries (Lavoie, 2014). This is because interest rates for the central banks' liabilities are doomed to be higher than the interest rates for the US treasury bills, leading to operational losses. Ultimately, however, sterilised interventions may not always be necessary, and the central bank may consider non-sterilised interventions.

The central bank could actively carry out foreign exchange interventions on the spot and in the forward market, which involves purchases and sales of foreign exchange reserves when the exchange rate moves away from the target. Moreover, foreign exchange interventions aim to affect the direction of the exchange rate through the expectations channel. If the central bank has better information about the coming policy stance, which is commonly the case, agents will perceive interventions as a signal of forthcoming exchange rate movements and, therefore, will expect the exchange rate policy to achieve the target (Ostry, et al., 2012).

The following scenarios need to be considered as to how the central bank needs to react to achieve the PTER concerning to the narrowing and the widening of the interest rate differential:

In the face of a narrowing of the interest rate differential driven by the increase of the foreign policy interest rate, in order to maintain the CIP verified, there is a need for a lower depreciation of the exchange rate from time t to time $t + h$. Such a narrowing of the interest rate differential could be explained by tightening conditions in the international financial markets. The requirement remains a depreciation as long as the interest rate differential remains positive. However, it will require a lower depreciation compared to the previous PTER value, as the approach will suggest an appreciation of the PTER relative to its previous PTER value. Under this scenario, the central bank will need to intervene in the spot and the forward market. Given the pressures arising from speculative movements, the central bank will intervene in the spot market since commercial banks will try to cover forward orders in the spot

market, reducing the central bank's foreign reserves. In the forward market, the central bank intervenes by forward operations committing to sell foreign currency versus domestic currency at time $t + h$ at the target future exchange rate or by swap transactions with commercial banks, given that commercial banks will need foreign currency to cover client orders. In addition, the central bank can force commercial banks to deposit into their account at the central bank the foreign currency they have acquired spot in order to increase the level of reserves. In this case, interventions in the spot market could or could not need to be accompanied by open market operations buying domestic currency-denominated bonds providing liquidity to the market.

In the face of a widening of the interest rate differential driven by the decrease of the foreign policy interest rate, in order to maintain the CIP verified, there is a need for a higher depreciation of the exchange rate from time t to time $t + h$. The PTER approach will suggest a depreciation of the PTER relative to its previous PTER value. The reduction of the foreign policy interest rate may encourage capital flows to enter the country as capital flows seeking higher yields will find more profitable in the domestic country. The central bank will intervene both in the spot and the forward market by limiting the demand for its currency in the spot market and selling it forward. In the forward market, the central bank can undertake such an intervention by outright sales of forward contracts on the market, committing to sell dollars versus domestic currency at time $t + h$ at the target future exchange rate or by entering swap transactions with commercial banks as commercial banks will need foreign currency to cover client orders. Under this scenario, the central bank acts as a speculator in the forward market against its own currency, intervening as a counterpart of speculative purchases (Coulbois & Prissert, 1974). In addition to limiting the demand for its currency in the spot market, the central bank will need to intervene by buying dollars and if deemed necessary conducting open market operations selling domestic currency-denominated bonds, thus mopping up the excess liquidity.

Two things are important to note from the above scenarios. First, sterilisation is more of an issue given the financial costs it implies to countries, as discussed previously, which may force the policymaker to conduct non-

sterilised interventions. Second, as discussed below, foreign reserve accumulation is important to avoid undesired movements beyond the band to avoid undesired depreciation and appreciations of the exchange rate.

However, the above two basic policies cannot be sufficient in the face of the constraints imposed by destabilising capital flows and the risk of speculative attacks, which poses a series of limitations to achieving the PTER. Furthermore, foreign exchange interventions by working alone are not likely to be sufficient to defend the exchange rate target in the face of severe market pressures (Williamson, 1999). The constraints imposed by financial globalisation will require a series of specific policies that aim to address these issues, as will be discussed in detail further below.

6.2.2. Constraints to the Implementation of the PTER in the light of the Trilemma and the Dilemma of Monetary Policy

Many scholarly papers often point to the monetary policy trilemma as one of the reasons, among others, why a country needs to give up its decision to manage the exchange rate. Indeed, one of the main conclusions of the monetary policy trilemma is that exchange rate management is not viable under financial globalisation. In what follows, this section discusses the constraints on implementing the PTER in the light of the trilemma and the dilemma of monetary policy.

The monetary policy trilemma suggests that a country needs to choose among three policy options: stabilise the exchange rate, free capital mobility and an independent monetary policy. Nowadays, most countries tend to favour free capital flows and independent monetary policy as their choice. It is argued that such a combination is only possible if a country adopts a free-floating exchange rate regime, given that such a regime is thought of as one that portrays stability into the economic system. In addition, it is argued that experience shows that it is difficult to limit cross-border capital flows and therefore the solution for the impossible trinity is pure float (Adam, 2012). Indeed, policymakers around the world have concluded that the solution for the trilemma is to operate under open capital accounts and free-floating

exchange rates in order to maintain an autonomous monetary policy, which is motivated by the inflation targeting frameworks (Moreno, 2012).

This thesis contends that the implementation of the PTER faces several constraints, namely: i) the increasing presence of destabilising capital flows and the high degree of capital account liberalisation in DEEs, and ii) the perception that managed exchange rate regimes may not be viable and credible in a world of financial globalisation given its susceptibility to crisis and speculative attacks.

The first major constraint to achieve PTER is the fact that DEEs face an increasing presence of destabilising capital flows and a high degree of capital account liberalisation, which may make problematic the transition from free floating exchange rate regime to a managed exchange rate regime. With higher interest rates relative to the developed, DEEs have become more profitable for offshore investors, which most often make decisions to profit in these countries in the short term. For example, recent trends show that Latin American and Caribbean (LAC) countries' debt issuance in the cross-border market reached $US145.3 billion in 2020, just near the record in 2017 that reached $US145.5 billion (ECLAC, 2020).

Massive capital flows are a by-product and interact with the high degree of capital account liberalisation in DEEs. Indeed, the constraint imposed by financial globalisation is further reinforced by the consensus that net capital inflows are seen as a "vote of confidence" in the economy from foreign financial investors (Blecker, 2005). Thus, persistent trade imbalances which are offset by capital account surpluses are not seen as a bigger issue, and, on the contrary, it is argued that these countries portray a comparative advantage when selling their financial assets (Blecker, 2005). Massive capital flows and liberalised capital accounts in DEEs pose a challenge to the design of strategies to implement a successful transition towards a managed exchange rate, which suggests that the implementation of the PTER requires careful planning.

The second constraint for implementing a policy that aims to achieve the PTER is the perception that managed exchange rate regimes may not be viable and

credible in a world of financial globalisation given its susceptibility to crisis and speculative attacks. Indeed, the monetary policy trilemma argues that managed exchange rate regimes are not feasible under financial globalisation given that such regimes make the economies more vulnerable to speculative attacks.

Following the currency crises and the severe consequences in countries operating with pegged exchange rate regimes (the United Kingdom in 1992, Mexico in 1994, Thailand in 1997, Russia in 1998, Brazil, 1999 and Turkey in 2000), the perception that managed exchange rate regimes are feasible, in the light of high capital account liberalisation, have come into question (Ghosh, et al., 2002). This perception is further reinforced by experiences that have shown that foreign exchange markets operating under such arrangements are subject to speculative crises and to the uncertainty around the ability of the central bank to defend a specific level of the exchange rate (Viñals, 1996). When a speculative attack occurs, authorities are forced to intervene to defend the target, leading to the erosion of reserves. It is worth noting that the credibility of the exchange rate commitment is crucial to preventing agents from altering their behaviour since, under a credible commitment, agents expect the exchange rate to maintain the desired path indefinitely. Such perceptions are ultimately a large part of the credibility that supports the exchange rate arrangement.

The above can lead to the possibility that expectations may not converge towards the target exchange rate, which may create pressures on the exchange rate, hindering the achievement of the PTER. There could be cases where market participants in the foreign currency markets guided by their expectations about the future exchange rate may not coincide with the target exchange rate. Especially when agents believe that the central bank is defending a disequilibrium exchange rate level, which may trigger a speculative attack given agents' appreciation that resistance from the central bank will be costly to maintain (Williamson, 1999). Furthermore, there could be disagreements among agents regarding the future path (Andrade, et al., 2019) of the exchange rate, and there could be different interpretations of the policy announcements made by the central bank. Therefore, their behaviour

will not help to stabilise the exchange rate around the target and instead, their behaviour can exert a destabilising behaviour which could be costly for the central bank and may difficult the achievement of the PTER. However, notwithstanding the central bank is defending an equilibrium level of the exchange rate, the changing nature of the foreign exchange rate market may need continuous efforts from the central bank to defend the band against market pressures (Williamson, 1999). Therefore, the achievement of the target will ultimately be conditional on the interaction of agents in the currency market and, thus, the importance of successfully implementing specific measures, as will be pointed out in the following section.

The above discussion touches upon the importance of financial integration and suggests the need to consider the global financial cycle in implementing policy efforts that aim to achieve the PTER. Financial integration brought about the rise of the global financial cycle, which is dominated by the US monetary policy (Miranda-Agrippino & Rey, 2015), has two main implications that are important for this thesis's purposes. First, the international asset prices co-movement makes it difficult to diversify away idiosyncratic shocks by acquiring assets abroad. Second, the global financial cycle reduces the capacity of the policymaker to separate domestic and global financial conditions (Habib & Venditti, 2019). These two implications underscore the importance of looking at the monetary policy dilemma, which has been recently explored.

The trilemma of monetary policy has been displaced by an apparent dilemma (Rey, 2015), making a bigger case for capital account management. The debate regarding macroeconomic management and regulated capital accounts has taken a different direction. In Rey's view, there is an irreconcilable duo, a dilemma, between independent monetary policy and free capital mobility, given that monetary policy is constrained by the global financial cycle no matter what the exchange rate regime is. Thus, independent monetary policy is only possible if the capital account is regulated. This conclusion is essential for foreign exchange management as a regulated capital account is important while managing the exchange rate, given that combining exchange rate management while operating with an open capital account can be unfeasible and detrimental (Kaltenbrunner & Painceira, 2017).

These arguments are reinforced by the empirical evidence that foreign exchange market intervention is seen as an effective tool to achieve target exchange rates. For example, Ostry, et al., (2012) suggest that if there are two available instruments for the central bank, namely the interest rate and foreign exchange market intervention, these need to be used together in order to achieve price and exchange rate objectives. Using the second instrument (foreign exchange market intervention) can boost credibility in the face of volatile capital flows and large swings in exchange rates (Ostry, et al., 2012). From the monetary policy dilemma standpoint, this thesis can conjecture that managed regimes that adopt a combination of the following specific policies are less prone to speculative attacks since they can boost the credibility of the exchange rate commitment.

In the following section, this thesis proposes three specific policies that can, to some extent, tackle the problem arising from destabilising capital flows and the continuous risk of speculative attacks.

6.2.3. Possibilities to the PTER and Specific Policies to Tackle the Challenges of Financial Globalisation

In light of the above limitations, to achieve the PTER, three specific policies and instruments could stabilise expectations in the currency market and build the credibility of the exchange rate commitment. The three policies and instruments listed and explained below constitute potential solutions to the limitations stated above: a non-rigid and adjustable exchange rate band, foreign reserve accumulation and a dynamic, targeted and comprehensive capital account management.

These three policies and instruments work together. In order to achieve the PTER s, the central bank may first need to accumulate a sound level of foreign reserves and put capital controls in place to prepare the ground for the announcement of a band linked to their PTER. That is to say, the build-up of foreign reserves and the enforcement of capital controls are two policies that may be needed to prepare the ground to achieve exchange rate levels as proposed in this thesis.

6.2.3.1. Non-rigid and Adjustable Exchange Rate Band

The non-rigid and adjustable band policy aims to influence exchange rate expectations through the public announcement by the central bank of the PTER and its commitment to achieving such value through the operation of the band. The non-rigid and adjustable band aim to crystalise market expectations and avoid speculative action. The central bank is committed, but not obliged, to keep the exchange rate within the announced band to avoid speculative action (Williamson, 1999). The framework proposed in this thesis can be thought of as one where the central bank has the discretion to react to shocks and, therefore, not be forced to intervene in case of speculative market pressures. Moreover, given the long-period focus, the central bank need not feel obliged to make all the necessary adjustments and need not carry the costs to achieve the target periodically.

Targeting the PTER requires transparency which in turn is important to build credibility. First, the non-rigid and adjustable band need to be declared. Second, the base period of the PTER need to be announced. Third, the exchange rate and the level of reserves must be published on a recurrent basis. Fourth, adjustments in the central parity need to be made public (Tarapore Committee , 1997). Therefore, the central bank will estimate and make public a PTER in line with the desired future path of the exchange rate and then attempt to guide the spot exchange rate towards the target.

A preannounced non-rigid and adjustable band can moderate the impact of agents' expectations regarding exchange rate movements (Cukierman, et al., 2004) and can contain speculative pressures (Williamson, 1999). According to Williamson (1999), the band crystalises market expectations regarding where the equilibrium exchange rate lies. Therefore the band stabilises expectations in the relevant time horizon in order to influence the foreign exchange market behaviour. A non-rigid and adjustable band has partial credibility as the central bank is committed but not obliged to defend the edges of the band. However, it still creates an attenuated stabilising effect on expectations (Krugman, 1991; Williamson, 1999). Supporters of the band argue that the proof that a band works typically to stabilise market expectations is supported by the fact that movements of the spot exchange

rate within the exchange rate band go along with slight movements in the forward exchange rate, which implies that the net impact of expectations is neutral and stabilising (Williamson, 1999). Thus, the market expects that the spot rate will go back towards the centre of the band despite how credible or realistic the band is.

Targeting the PTER in the form of a non-rigid and adjustable band can take two forms. First, the central bank can set an upper and lower band limit at the prefered bandwidth which can be adjusted on a period by period basis at the discretion of the central bank (i.e. the +/- 10-15% around the central parity to emulate float but around competitive levels). A wide band and adjustable may be preferred as it allows the central bank to avoid the danger of speculative pressures. The central bank has full discretion to respond differently to given circumstances in each period providing policymakers with the flexibility to respond to different scenarios. However, as a general rule, the central bank is not committed to intervening while the exchange rate moves within the band, and monetary authorities can still intervene to prevent currency speculation and smooth volatility (Reserve Bank of India, 2006) but are not obliged to do so as the vigorous defence of the edges of the band can lead to the erosion of reserves. Furthermore, the central bank could conduct continuous reviews of the central parity that can be changed as indicated by changes in the target's determinants. In case of overwhelming market pressures, the central bank can allow the exchange rate "to take the strain" notwithstanding if the exchange rate goes outside the band (Williamson, 1999).

Second, the central bank can set a single intervention floor without a ceiling. This case can set the floor of the intervention band considering the IEER as a single hard lower edge, while there is no ceiling of the band. Thus, the IEER can act as a lower point to prevent the erosion of international competitiveness. This is particularly crucial if the PTER suggest the exchange rate appreciation beyond the IEER levels. Thus, the IEER can perform as a floor for the central bank to drive the evolution of the exchange rate and thus preserve the competitiveness of the domestic manufacturer producers. This will ultimately depend on how overwhelmed the market is. Thus, in the face of the complexities brought about by the credibility of the exchange rate policy,

it could be the case that the central bank defines only a lower limit for the exchange rate allowing the nominal and the real exchange rate to move in an upward direction without a limit, which, in principle, may not represent a problem since competitiveness is preserved.

However, the second form of an exchange rate band may create the possibility of non-linear adjustments of exchange rate effects on industrial development. This may be particularly the case in the event of an overly depreciated exchange rate which might affect the domestic industry's profitability by raising the price of imported intermediate goods. Given the current nature of trade and production in DEEs, an overly depreciated exchange rate could have a negative impact on industrial production and trade flows. One leading explanation of such a negative impact is the high degree of import content of exports (Habibi, 2019), which has characterised the integration of DEEs in the global value chains. In the event of an overly depreciated exchange rate and assuming an industry with a high degree of import content, domestic manufacturer producers within such an industry may need to give up some of their profit margins in order to remain competitive in international markets, which, in turn, may reduce their incentives to export. Few exceptions can be found for those sectors without a high import content which may not see their profitability affected by the rise in the price of imported intermediate goods. Therefore, the dependency of industrial production on imports highlights the need to adapt the domestic production structure favouring the manufacturing industry to implement exchange rate policies that aim to achieve the PTERs. In sum, an overly depreciated exchange rate in the context of a high degree of import content of exports would not help boost exports and industrial production, and, on the contrary, it could be contractionary.

The non-rigid band policy does not work alone and could be implemented with other instruments and measures (i.e. targeted foreign exchange market interventions and capital account regulation). In what follows, this thesis shows another potential policy needed to build credibility, the build-up of foreign exchange reserves, which could add to favourable expectations formation.

6.2.3.2. Foreign Reserve Accumulation

The reserve accumulation policy aims to build the credibility of the exchange rate commitment and indirectly contributes to influencing exchange rate expectations as a sound level of foreign reserve accumulation will allow the central bank to intervene in the foreign currency market when deemed necessary to keep the exchange rate within the band. Indeed, many DEEs have opted for holding large amounts of international reserves for prudential purposes and for dealing with the issue of credibility of their exchange rate arrangements.

The accumulation of reserves could follow the global liquidity cycle following a "leaning-against-the-wind" policy. A "leaning-against-the-wind" policy requires the central bank to buy reserves to prevent domestic currency appreciation and sell reserves during sudden stops in capital flows (Kiguel & Yeyati, 2009). In other words, the central bank will need to build up reserves during expansions as a response to capital flows surges (Arslan & Cantú, 2019), which in turn, will allow the central bank to intervene when the exchange rate is moving outside the edges of the band during times of persistent exchange rate pressures.

However, the size of foreign reserves places critical limits on foreign exchange interventions that need to be considered by the central bank aiming to achieve the PTER. A central element to consider is that international reserves are finite, and, therefore, when implementing the PTER the central bank need to be aware that foreign exchange intervention has its limits, given the size of international reserves. In the case of deficit countries, as in many DEEs, the limits are even higher. In these countries, foreign exchange interventions can only be sustained as long as the country is creditworthy to borrow reserves, which can compensate for the continuous losses of foreign exchange reserves.

Central banks trying to achieve the PTER could consider that there may be episodes where foreign exchange intervention may not be possible. In particular, it could be the case that a country could run the risk of international reserve depletion, particularly in the face of sudden speculative exchange rate

movements and when panic strikes, both of which highlight the need for further measures such as capital account regulation as will be shown in the following subsection.

6.2.3.3. Dynamic, Targeted and Comprehensive Capital Account Management

A dynamic, targeted and comprehensive capital account management policy is essential in the light of central banks trying to achieve the PTER, especially when a country cannot operate with an open financial account. These controls are important as capital inflows besides appreciating the local currency, increase the risk of a currency crash (Hoffmann, 2013). This policy is particularly relevant to prevent an economy from a systematic speculative attack and panics, which may abruptly deviate the exchange rate from the band.

Capital account management need to be implemented dynamically, targeted and comprehensively. It needs to be used as a tool to improve financial stability to face the constraints and pressures imposed by the global financial cycle on exchange rates. Controls will prevent undesirable exchange rate movements caused by destabilising short-term capital flows and avoid speculative attacks. Therefore, capital controls targeted at achieving the PTER could be dynamically implemented and need to be differentiated between permanent and cyclical, considering the country's characteristics and the needs of the domestic economy. This measure is fundamental to the achievement of the PTER and adds to the significant change in the exchange rate suggested by this thesis approach, which somehow works as a penalty on unsteady yield-driven capital flows that routinely fly outside the country whenever market sentiment varies.

To achieve the PTER the central bank could implement both *permanent* and *cyclical* capital controls on inflows and outflows:

Permanent capital controls could be applied to certain assets for inflows and outflows, especially those short-term, which are intrinsically volatile, such as foreign investment in the form of managed portfolio funds who invest in bonds

and equities. Measures to discourage these type of capital flows include: taxes (income and transaction taxes such as Tobin tax) and minimum holding periods

Cyclical capital controls could be applied to credit flows and portfolio debt at the boom of the global financial cycle. Cyclical controls include unremunerated reserve requirements and taxes on equity inflows (Rey, 2015). Direct loans with maturities below a minimum, set by the policymaker, can be subject to reserve requirements, which in turn can be denominated in foreign currency or domestic currency. Loans to be subject to reserve requirements, the maturity, the amount of the reserve requirement, the maturity of the reserve requirement, and the denomination of the reserve requirement need to be assessed on a country basis.

In addition, the policymaker could introduce restrictions to foreign-currency borrowing according to the final use, where stable and company-to-company loans should not be discouraged. That is, long-term international borrowing and lending is preferred given the benefits that they can bring to the economy, such as expanding the productive capacity and leading to a transfer of technology and the promotion of financial development (Klein, 2012). However, the policymaker must remain cautious as a foreign direct investment does not always entail resources directed towards productive purposes.

6.3. Thesis Summary and Results

To inform this discussion, chapter 2 first presented an overview of existing "equilibrium" exchange rate in neoclassical and heterodox economics. It showed that whereas neoclassical approaches, like Purchasing Power Parity (PPP) or the Fundamental Equilibrium Exchange Rate (FEER)/Behavioural Equilibrium Exchange Rate (BEER), assume market-equilibrating forces and adjustment to equilibrium (at least in the long-term), heterodox approaches either take a positivist disequilibrium approach or a normative one. Such as the Alternative Approach to Long Run Exchange Rates (AALRER), which models the real exchange rate behaviour, and the Industrial Equilibrium Exchange Rate (IEER), which is an ideal or normative exchange rate concept. Such a level would allow the growth of a combination of manufacturing exports

that increase output and employment, sufficient to drive a nation's economic development. Thus, the exchange rate level constitutes a key and effective tool for the development of an economy. Moreover, whereas neoclassical approaches are mainly concerned with achieving the Balance of Payments (BOP) equilibrium, heterodox approaches are acutely concerned with industrial structure, and the implication exchange rate values might have for that structure. Particular emphasis was placed on the New Developmentalism (ND) concept of the IEER, which assumes a normative concept to the exchange rate. However, it remains deeply embedded in a 'real' economic analysis and does not consider the structural pressures from financial factors on the exchange rate. Moreover, the ND does not engage in methodological considerations on how to justify their approach from a conceptual/methodological level. There is an implicit assumption that the IEER is a normative approach, but the ND does not embed this normative approach in Keynes' and Post Keynesian methodology.

Chapter 3 aimed to address this lacuna. It presented the three main building blocks to construct a methodological understanding for the concept of the policy target exchange rate: Heise's (2009) market participation theory of economic policy (MPTEP), Sardoni's (1989) interpretation of chapter 18 of the General Theory (GT), and Keynes' notion of the long-period equilibrium position as shown in his writings towards the GT (Keynes, 1978a).

The MPTEP's claim that targeted outcomes should be normatively chosen and not determined by equilibrium solutions of models that assume atomistic behaviour, motivates the concept of the policy target. In the light of the market participation theory, which favours efficient interventionist policies to meet economic policy's 'societal objectives', the chapter raises the question of how those 'societal objectives' set? The chapter then argued that Keynes' chapter 18 of the GT becomes a key piece to understanding the anatomy and the process of making a reliable model to derive credible policy considerations as first suggested by Sardoni (1989). Such a method, explained in chapter 18, is mainly normative and relevant for this thesis purposes as variables should be selected on the basis that these can be affected through policy. Keynes' notion regarding the long-period becomes relevant in characterising the outcomes

derived from models built to obtain policy targets. In particular, Keynes' notion of the long-period corresponding to an optimum or ideal position from the production point of view. The chapter defined the policy target as a long-period optimum position, which is an ideal situation from the point of view of production. The concept is a hypothetical construction as the long-period position's notion implicitly assumes that the state of expectations remains constant.

Based on these methodological considerations, chapter 4 then proceeded to further specify the PTER theoretically. To do so, it started with the ND's IEER, which is an exchange rate that allows the most efficient domestic manufacturer producers to remain competitive abroad. However, as already indicated above, the IEER focuses exclusively on real factors and does not acknowledge the structural pressures arising from financial factors in the context of DEEs and rising financial globalisation. The chapter developed two models that emphasise the important role of financial variables in exchange rate determination and the need for neutralising and stabilise such persistent pressures on exchange rates in DEEs.

On the one hand, the chapter first presented Keynes' interest rate parity theory that permitted creating a policy target exchange rate, the Policy Target Exchange Rate in line with interest rate parity (PTER-irp). This extension is motivated by the empirical phenomenon of structurally high- interest rates in DEEs. It used Keynes' relationship to create a formula that shows the possibility that the parity holds artificially through adjusting the exchange rate by a factor equal to the excess of the interest rate at home and abroad. Thus, it is a level of the exchange rate in which the yield-driven foreign financial flows' profitability is trimmed.

On the other hand, Keynes' transfer problem and Thirlwall's law are two intertwined bodies of economic thinking that contributed to building the second model and highlight the structural inability of DEEs to borrow in domestic currency. The model is labelled as the Policy Target Exchange Rate based on Keynes' transfer problem and Thirlwall's law (PTER-tp). Both theories highlight the limits and pressures of external financing. While the PTER-tp is inspired by Thirlwall's law, the fact that countries cannot sustain ever-growing current

account deficits. It is heavily based on Keynes' transfer problem and an ideal BOP adjustment that policy should aim for. The central idea is how to create an exchange rate that takes into consideration the magnitude of foreign-currency-denominated liabilities that need to be repaid, and under this scenario, the exchange rate becomes an essential tool, but not unique, to adjust (increase) the trade balance to reduce the size of the external liabilities.

Finally, chapter 5 empirically implemented the PTERs developed in chapters 3 and 4. It presented further clarifications and the proposed methodology to operationalise the PTERs. It estimated both the PTER-irp and the PTER-tp for Mexico, Brazil and South Korea, countries that have followed different industrialisation paths and a heterogeneous behaviour of the concrete variables that are included into the models: interest rates differential and the net foreign assets position. With regards to methodology, it presented the criteria followed to estimate and select three key inputs for the estimation: the benchmark level of the real exchange rate; the benchmark level of the net foreign assets position; the trade balance semi-elasticity estimation; and the income balance semi-elasticity. Broadly speaking, results showed that estimations are not easy to derive, especially for the case of the PTER-tp, which becomes highly sensitive to the current account response to real exchange rate variations, that is the sum of the size of the trade balance semi-elasticity and the income balance semi-elasticity, underscoring that complexities may arise given the context and time-specific nature of these hypothetical rates. Results show that taking into account financial factors indeed modify the optimum exchange rate considerably. On the one hand, countries with high-interest rates, such as Mexico and Brazil, showed that a weaker exchange rate, given by the PTER-irp, would have been needed so as to neutralise yield-driven foreign financial flows' profitability. This contrast with South Korea's case, where the PTER-irp remained close to the IEER as interest rates remained close to the foreign interest rates. On the other hand, debtor countries will not always necessitate a 'weaker' PTER-tp as such a level depends on the size of the current account gap, the trade balance semi-elasticity and the income balance semi-elasticity. This is evidenced in the values of the PTER-tp for Mexico and Brazil. Although both countries were net debtors during the period of study, Brazil would have needed 'stronger' PTER-tp.

This thesis indeed has gone beyond theory and has provided policymakers with a reliable method to inform policy under a managed float exchange rate regime. As this thesis has argued, the PTER values work as a reference, and, as such, these are not rigid values that policy should aim for.

6.4. Thesis Limitations and Beyond: Economic and Political Limits to the PTERS

There are several limitations to the approach put forward in this thesis. One can argue that this thesis approach ignores factors such as the pass-through coefficient; the current state of the industrial structure in deindustrialised countries; global value chains; and global demand conditions. This thesis does not ignore these factors but acknowledges that their incorporation into the formulation of policy targets may be complicated. Below, it is analysed why these factors would be a problem for this thesis argument.

The pass-through coefficient. This thesis has largely assumed that prices and wages are rigid in practice. While it is a credible observation, most DEEs are highly import-dependent economies. Thus, a nominal exchange rate depreciation can lead to increases in the domestic price level, that is the pass-through from the exchange rate to prices is relatively high in DEEs. In this vein Lopez and Perrotini (2006) point out that a nominal depreciation will not bring about a real depreciation if nominal wages are indexed to domestic prices and if the pass-through coefficient is high. Thus, for nominal devaluation to be effective, rigid price and wage are required, and thus, a nominal devaluation is more effective in low inflation countries as prices and wages change slowly (Grekou, 2019).

The current state of the industrial structure in deindustrialised countries. It is not only a matter of having the correct price and but also having a sound industrial structure capable of responding to changing demand conditions and less import dependent. The current state of the industrial structure can pose a challenge for this thesis argument as the implementation of policy targets in deindustrialised countries would require a process of gradual industrialisation *pari passu* the implementation of policy target exchange rates.

Global value chains. The above challenge is intensified in those economies that have taken the maquila path where the imported inputs dependency is high and increases in price competitiveness through exchange rate realignments would affect these sectors' competitiveness. Rather, these countries' competitiveness is given by low labour costs.

Global demand conditions. Global demand conditions could be problematic for this thesis argument as these conditions may limit the effectiveness of the PTERs, in particular a fall in global demand. Facing a fall in external demand is not a simple problem and requires further macroeconomic management. The foreign-exchange method is no longer effective to overcome BoP difficulties. Under this scenario, an active role by the central authorities, to react and deal with adjustments in external demand, is required (Robinson, 1946). To guide the action of central authorities, it is convenient to differentiate between a temporary and a permanent fall. For Robinson (1946), if the fall is temporary, it would be necessary to preserve export industries and ensure that any transfer of labour to other sectors can be restored once such an episode has been overcome. If the fall is permanent, alternative export sectors must be promoted or imports must be reduced if it is difficult to find alternatives. Conditions in the global market impose one of the greatest limits in the context of the PTERs.

In addition to the limitations mentioned above, achieving the PTERs face a more general set of barriers that limit the realisation of competitive exchange rate policies.

Several potential resistances could emerge against central bank management around the PTERs, which are satisfactory positions from the producer's point of view. These resistances can be classified into three categories[50]: i) the opposition to government interference in influencing a variable such as the

[50] It is inspired by similar reasons as those given by Kalecki (2015)and Robinson (1946). While these authors analyse resistances to full employment, this paper analyses similar resistances applied to the sphere of a competitive exchange rate. For Kalecki, the three main reasons why industrial leaders oppose full employment are: i) "resistance to government interference in the employment problem as such"; ii) "resistance to the direction of government spending"; and iii) "resistance to social and political change resulting from maintaining full employment".

exchange rate; ii) the resistances to the direction of the benefits of an exchange rate realignment (as it is more beneficial to the manufacturing than to the financial sector); and iii) the resistance to changes resulting from a successful exchange rate policy (the social and political changes it promotes).

The first resistance could emerge as a general rejection of targeting the exchange rate with government policies. As discussed in chapter 2, traditional exchange rate theory holds that market-determined exchange rates under a pure free-floating regime will move in line with economic fundamentals. In this view, markets act as benevolent systems (Harvey, 2001) and, thus, as the best form of organisation.

Under this scenario, the central authorities' role is to keep the fundamentals at an appropriate level to ensure the proper functioning of the currency markets. According to Puyana (2006), a country's economic fundamentals are correct when the fiscal balance is close to zero, inflation does not exceed the foreign, the central authority pursues liberal policies, and sound monetary and fiscal policies (restrictive policies). Keeping the fundamentals at the right level would lead to efficient markets allowing the exchange rate to reach its optimal level. Therefore, fundamentals are seen as natural, consistent and balancing forces relevant for exchange rate determination (Harvey, 2001).

The validity of economic fundamentals as relevant forces is not an issue. Issues arise when the direction of economic fundamentals lead agents to expect movements in the currency. Thus, changes in a variable assumed to be an economic fundamental would produce reactions predicted by theory (Eatwell & Taylor, 2000).

The second resistance this thesis has in mind emerges from the direction of the benefits of an exchange rate realignment. Undoubtedly, in the current financialisation context, strong resistances emerge from a large group of speculative investors who benefit from exchange rate appreciation. Exchange rate realignments, especially one directed towards correcting an overvalued exchange rate, could create resistances from the financial sector that sees their profitability trimmed, while it would be favourable for the manufacturing industry. Thus, an exchange rate realignment, particularly a currency

depreciation, represents a risk for those speculating on the foreign exchange markets.

However, an exchange rate realignment, again a currency depreciation, may benefit the manufacturing industry and a nation's economic development. A nominal depreciation will be successful according to the context in which it takes place. That is, a competitive exchange rate policy does not act alone. It needs to be accompanied by a set of policies such as trade, resource allocation, government procurement, and science and technology promotion. As such, the PTERs must be accompanied by what Heise (2009) calls 'market constellations', understood as the environment that forms "a set of purposefully created norms and institutions (external institutions) in combination with cultural norms and conventions (internal institutions)". These market constellations help shape political and private market participants (Heise, 2009), which makes it possible to shape the hypothetical situation favourable to the national economy as the one sought by the PTERs.

Added to these conflicting positions is the firmly held belief, supported by academics, governments, and society, that a currency's strength is reflected in continuous exchange rate appreciation. The latter is a solid political obstacle to the PTERs. It is commonly argued that exchange rate appreciations are a sign of a country's economic stability and that they make the domestic market more attractive to foreign investors. It is even now part of the political discourse on the achievements of incumbent rulers. What is suitable for some is not necessarily good for others. One might ask: is the exchange rate appreciation beneficial for everyone? As a large part of the products that are consumed are imported in the current context, and price stability is privileged, increases in the exchange rate would lead to price increases. Just as these exchange rate appreciations end up guaranteeing favourable rates of return for foreign investors. Therefore, misleadingly, such a situation appears beneficial to both the domestic consumer and investors[51].

[51] In cases such as the Mexican economy, experience shows that exchange rate appreciation is an alternative anti-inflationary tool to wage control, with well-known repercussions, as was the case during the economic crisis of 1994-1995.

The story is different in terms of economic growth and employment, given that exchange rate appreciation causes irreparable damage to the manufacturing industry by reducing its competitiveness (Carvalho, 2018). This adds to a series of factors, such as the lack of industrial policies, which end up dismantling a nation's industry's productive capacity. Then there is a class conflict behind the exchange rate issue. There is no doubt that a strong currency makes imported goods cheaper, but the contraction of demand in the face of a fall in national income and employment resulting from the deterioration of the manufacturing sector configures an adverse scenario for the consumption of goods.

Therefore, it is a resistance in which, today, the balance leans towards the financial sector and where conflicts of interest and ideologies persist. Society's strong support for this idea seems to add to this resistance. Although a democracy decides as a whole what is desired, the policy maker has the power and responsibility to decide what is best for the development of a nation in terms of economic growth and employment, recognising that: i) exchange rate appreciation cannot last forever, and ii) the deterioration in productive capacity that it causes.

The third resistance emerges from the success itself an exchange rate policy brings about. It is the resistance of business leaders to the social and political changes it creates. This resistance is related to the consequences attached to the effectiveness of the PTERs, given the pressure, it creates in the face of employment and price increases. That is, an increase in employment leads to an increase in workers' bargaining power and consequently wage increases (production costs), leading to increases in prices promoting further demand for wage increases[52] (wage push inflation). The above could be problematic to business leaders as it entails a change in the correlation of forces between workers and business leaders.

[52] This assumption is debatable. Experience shows that price increases are a function of exchange rate increases, so central institutions have often maintained the exchange rate as an anti-inflationary tool.

These changes and emerging resistances in the relationship between workers and employers can be summarised as follows and are similar to those emerging from a full-employment policy. First, there are changes related to discipline as workers do not risk losing their jobs (Kalecki, 1942; Robinson, 1946). To this is added the fact that political tensions emerge from the formation of class consciousness, leading to strikes demanding wage increases and improvements in working conditions. Thus, Kalecki (1942) argues that, although profits increase in the face of a full-employment policy, the increase in the working class' bargaining power tends to increase prices rather than decrease profits. Therefore, it will only affect the interests of business leaders. A successful policy of full employment involves a strong inflationary risk (Robinson, 1946).

The threat of an inflationary spiral is precisely the main risk to the success of an exchange rate policy. Since the demand for labour and goods is high, wages and prices (in the face of rising costs) tend to grow (Robinson, 1946). As argued above, the success of an exchange rate realignment is heavily dependent on price and wage rigidity. Thus, price increases that may result from the working class' increased bargaining power could be a major factor jeopardising the success of a successful exchange rate policy. Consequently, a competitive exchange-rate policy must be accompanied by strong deflationary policies, while the structural adjustment process is on its way (Kaldor, 1965).

6.5. Final considerations

To this point, it has been argued that this thesis faces several limitations ranging from those arising from the current characteristics of the economies and global factors, to the limits that a successful competitive exchange rate policy may face.

One cannot ignore the fact that exchange rate adjustments can be ineffective, particularly given the current structure of the economies that have faced a deindustrialisation process and are highly import-dependent. Exchange rate realignments, particularly those that depreciate the exchange rate, are likely to lead to inflation and the worsening of real wages without any perspective of

improving in the long term. Thus, not yielding to the ultimate desired results (the improvement of the trade balance, output and employment). In addition, global value chains question the feasibility of exchange rate policies of PTERs type. In particular, those maquila countries whose import coefficient is high and their competitiveness is based on low labour costs, and exchange rate depreciations may deteriorate rather than ameliorate their competitive position in the global economy.

The reader must not ignore that the PTERs have in mind that a set of conditions are necessary to make a competitive exchange rate policy successful. Among these, one can point to the implementation of an industrial policy. An industrial policy is strictly necessary to develop strategic export sectors and produce most of the inputs needed domestically. Moreover, implementing the PTERs may require a set of policies and instruments such as those examined in this chapter; however, it is essential to acknowledge that it is one possible way among others through which the PTERs could be implemented.

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List of Abbreviations

AALRER	Alternative Approach to Long-Run Real Exchange Rates
ARDL	Autoregressive Distributed Lag
BEER	Behavioural Equilibrium Exchange Rate
BEA	Bureau of Economic Analysis
CAEER	Current Account Equilibrium Exchange Rate
CA-RER	Current Account Real Exchange Rate semi-elasticities
CGER	Consultative Group on Exchange Rate Issues
CIP	Covered Interest Parity
DEEs	Developing and Emerging Economies
ES	External Sustainability approach
FEER	Fundamental Equilibrium Exchange Rate
FDEER	Foreign Debt Equilibrium Exchange Rate
IEER	Industrial Equilibrium Exchange Rate
IRP	Interest Rate Parity
INEGI	Mexican National Institute of Statistics and Geography
NAIRU	Non-Accelerating Inflation Rate of Unemployment
NIEs	East Asian Newly Industrialising Economies
ND	New Developmentalism
NICA	Non-income Current Account
NFA	Net Foreign Assets
MPTEP	Market Participation Theory of Economic Policy'
OECD	Organisation of Economic Cooperation and Development
PPP	Purchasing Power Parity
PTER	Policy Target Exchange Rate
PTER-irp	PTER based on an application of Keynes' Interest Rate Parity
PTER-tp	PTER based on Keynes' transfer problem and Thirlwall's law
UNCTAD	United Nations Conference on Trade and Development
UIP	Uncovered Interest Parity