

## The real exchange rate matters, but why? A new developmentalist assessment

*A taxa de câmbio real é importante, mas por quê?  
Uma nova avaliação desenvolvimentista*

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RESUMO: A doutrina do Novo Desenvolvimentismo defende o papel central desempenhado por uma taxa de câmbio real competitiva na promoção do *catch-up* nas economias em desenvolvimento. Recentemente, essa teoria foi questionada pelos críticos; a principal crítica tem sido a de que uma estratégia de crescimento externo baseada em uma taxa de câmbio real competitiva prejudicaria a distribuição de renda/salários reais e teria um efeito negativo sobre a economia. Este estudo discute como a taxa de câmbio real influencia o crescimento à luz da nova doutrina desenvolvimentista e das experiências contrastantes dos países asiáticos e latino-americanos. Sua principal contribuição é documentar a influência da taxa de câmbio real no desempenho econômico, especificamente por meio de determinados canais de transmissão. As conclusões do artigo sugerem que uma RER competitiva é um aspecto importante na trajetória de crescimento de um país, na medida em que favorece lucros, acumulação de capital, exportações líquidas e ganhos em capacidades sociais.

PALAVRAS-CHAVE: Taxa de câmbio real; desenvolvimento econômico; novo desenvolvimentismo.

ABSTRACT: New Developmentalism doctrine defends the central role played by a competitive real exchange rate in promoting catch-up in developing economies. Recently, this theory has been questioned by critics; the main criticism has been that an outward growth strategy based on a competitive real exchange rate would harm income/real wage distribution and have a negative effect on the economy. This study discusses how the real exchange rate influences growth in light of the new developmentalist doctrine and the

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contrasting experiences of Asian and Latin American countries. Its main contribution is to document the influence of the real exchange rate on economic performance, specifically through certain transmission channels. The article's findings suggest that a competitive RER is an important aspect in a country's growth path, insofar as it favors profits, capital accumulation, net exports, and gains in social capabilities.

KEYWORDS: Real exchange rate; economic development; new developmentalism.

JEL Classification: O1; O11; O19.

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## 1. INTRODUCTION

An ample and robust literature documents the positive effects of pursuing a stable and competitive real exchange rate (henceforth RER) on long-term growth (Cottani et al., 1990, Dollar, 1992, Razin, 1997, Rodrik, 2008, Bahlla, 2012, Rapetti, 2020, Demir and Ramzi, 2021). The literature also describes various channels that explain the influence exerted by a competitive RER on economic performance, such as: enhanced profitability in the tradable sectors (Rodrik, 2008, Bahlla, 2012, Rapetti, 2020); income distribution, since it reduces real wages, leading to income redistribution from workers to entrepreneurs (Blecker, 1989, Bahduri and Marglin, 1990, Gluzmann et al., 2012, Guzman et al., 2018) and, consequently, greater capital accumulation, with possible effects on technological progress (Rodrik, 2008, Bahmani-Oskooe and Hajilee, 2010); a “learning by doing effect”, since a competitive RER promotes structural change from non-tradable to tradable activities (Mbaye, 2013); the modernization of the productive structure, caused by a competitive RER that favors the manufacturing sectors and eases external constraints (Missio et al., 2015); and the influence a competitive RER has on investment decisions and the allocation of resources within the economy (Demir and Ramzi, 2021).

From a historical perspective, in developing economies, an active RER policy has been disregarded by many economists – such as Raul Prebisch and Hans Singer – as a means of attaining a more developed society, because of the assumption of elasticity-pessimism (Rapetti, 2020). This led to the adoption of an import substitution strategy for economic development in Latin American countries, which was endorsed by the structuralist thinkers associated with the policy prescriptions of the Economic Commission for Latin America and the Caribbean. This strategy consisted of adopting an inward-oriented model in order to industrialize these economies and ease their external constraints to economic growth. In Latin America, the period between 1930 and 1980 was notorious for a national developmentalism strategy that combined industrialization via import substitution and state intervention for this purpose (Bresser-Pereira, 2010). From the 1980s, the prescriptions of the Washington Consensus were adopted (Bresser-Pereira, 2019). Institutions and tools for economic policy, built up over almost 50 years of national developmentalism, were replaced by privatization and the populist use of an artificially overvalued RER, either to control the inflation rate, or increase real wages.

The Asian experience stands in contrast to the Latin American story (Bresser-

Pereira, 2022). There, the adopted development strategy was export-led and industrialization was outward-oriented (Bresser-Pereira, 2022). Pursuing a stable and competitive RER was a cornerstone of both industrialization and the accumulation of social capabilities associated with the export of manufactured-goods in Asian countries (Amsden, 1992, Bresser-Pereira, 2010, 2019, Bresser-Pereira et al., 2020, Ang, 2016). In this sense, the export-led experience of Asian countries was notable for its adoption of a competitive RER – which created uniform subsidies for all sectors. In contrast, Latin American countries adopted controls on imports and selective export subsidies (White and Wade, 1988) and, more recently, have experienced an artificially overvalued RER. This is an important point, which helps to explain the better economic performance of Asian countries (Frieden, 2015, Bresser-Pereira, 2019, Ramzi, 2021).

In light of the numerous studies about the positive growth effects of pursuing a stable and competitive RER, and the successful experience of Asian economies compared to Latin American ones, the new developmentalism doctrine has emerged as a policy to promote catch-up in the poorest economies (Bresser-Pereira, 2010, Bresser-Pereira et al., 2015). This doctrine brings together the mistakes and successes of old structuralist thinkers, and elements of the “Asian miracle”, while disregarding the Washington Consensus. Among the many prescriptions for economic policies, one notable feature is the importance of an active RER policy oriented towards economic development, either to neutralize the Dutch disease, or to promote catch-up.

Considering the recent debate between Luiz Carlos Bresser-Pereira and Carlos Medeiros (discussed throughout our study), this article seeks to investigate the other effects of a competitive RER on the economy, beyond rapid economic growth. It provides a number of contributions to the existing literature. First, the article examines whether a competitive RER is associated with changes in income distribution and consumption, investment, and net export contributions to GDP. The article examines whether a competitive RER is associated with social capability and Total Factor Productivity (TFP).<sup>1</sup> In light of the suggestion in the literature that RER is an important variable for explaining the contrasting economic performances of developing countries (such as those in Latin America and Asia), the paper examines whether this assertion is valid for the study variables of interest in economies in Africa, Latin America, and Asia. We analyzed panel data from a cross-country database of 151 countries. The results suggest that a competitive RER is associated

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<sup>1</sup> It is important to recognize that Total Factor Productivity (Solow’s residuals) is associated with the neoclassical approach, which has serious limitations to the understanding of economic growth, income distribution, technological progress, etc. (see the seminal study of Shaikh (1974) to obtain a critic on the assumption of aggregate production function and its theoretical shortcomings, a more recent study in this line is also provided by Felipe and McCombie (2020)). Therefore, we stress that our results should be interpreted carefully as this is an initial effort to fulfill the existing gap within the literature represented by the scarcity of studies that seek to document the influence of RER on labor productivity and/or economic efficiency.

with worse functional income distribution in favor of profit-share and improved personal income distribution. Moreover, the findings indicate that a competitive RER reduces consumption to the detriment of greater investment, while it also expands net exports both directly, by making them cheaper, and indirectly, by reducing labor costs. The results also indicate that social capability and productivity growth are associated with elements other than labor, capital, and human capital, in this case, with a competitive RER. Finally, our regressions indicate that RER is an important variable for explaining these aspects in African, Asian, and Latin American economies, as the New Developmentalism states.

The article has other four sections, besides this introduction. The next section discusses the channels through which the RER affects economic growth in light of the New Developmentalism doctrine. This discussion was based on the recent debate between Luiz Carlos Bresser-Pereira and Carlos Medeiros. Section 3 presents the empirical strategy and database employed in our estimates. Section 4 presents our baseline results, followed by our findings for Asia, Africa, and Latin America. Section 5 concludes the article.

## 2. RER AND ECONOMIC GROWTH

There is extensive empirical literature demonstrating the positive impact of a competitive RER on economic growth (e.g., Cottani et al., 1990, Dollar, 1992, Razin, 1997, Aguirre and Calderón, 2005, Rodrik, 2008, Berg, 2010, Bahlla, 2012). Most recently, Rapetti (2020), and Demir and Ramzi (2021) have provided in-depth surveys of this literature and are unanimous in asserting a positive and robust empirical association between a competitive RER and growth in output. Our study is not concerned with this association. Instead, we are interested in exploring the secondary effects of a competitive RER upon the economy, ones that occur hand-in-hand with greater economic growth.

Several of the above-mentioned effects are actually mechanisms through which a competitive RER drives the economy towards enhanced performance. In this vein, the Rodrik (2008) article is one of the most important contributions to the existing literature by identifying the transmission channels through which the RER influences economic growth. His argument is that the RER impacts the size of the tradable sectors within the productive structure, principally the manufacturing sectors, in detriment to the non-tradable sectors (services), and that this boosts economic growth. The link between a competitive RER and this structural change is located in its expansionary effects on tradable sector profitability. Rodrik (2008) provides two explanations for the influence of a competitive RER on growth:

1. In part, it is bad institutions that explain poor economic growth. Bad institutions damage capital accumulation due to social issues related to contractual incompleteness, hold-up problems, corruption, a lack of property rights, and poor contract enforcement, which reduce an entrepreneur's

ability to benefit from their investments (Rodrik, 2008). Moreover, Rodrik (2008) argues that this problem imposes higher tax on the modern tradable sectors because of their greater complexity. A competitive RER may offset this problem by increasing the profitability, and then the investment, of the tradable sectors. In this case, a competitive RER is the second-best mechanism for boosting economic growth (Rodrik, 2008);

2. The tradable sectors, particularly in developing countries, are more likely to suffer from market failures: learning and coordination externalities, credit market imperfections and wage premiums, leading to a suboptimal level of output and investment. In this case, pursuing a competitive RER is a substitute for industrial policy (Rodrik, 2008).

In Rodrik's (2008) view, therefore, a competitive RER boosts economic growth by encouraging production, capital accumulation, and technological progress in the tradable sectors. This influence is more relevant in developing countries, because it provides a remedy for bad institutions. Other authors emphasize the importance of a competitive RER in spurring growth, especially in the context of countries with bad institutions. Acemoglu (2003) claims that a non-competitive RER is associated with high volatility in economic growth, and that this is an indication of faulty institutions, since a non-competitive RER favors the continuation of the elites in positions of power. Johnson et al. (2007) show that poor countries can escape from the institutional weaknesses and poverty inherited from their colonial history, in the way that Asian countries have been doing since the 1960s, by adopting an export-led strategy to promote manufacturing exports. For this reason, it is essential to avoid a non-competitive RER (Johnson et al., 2007).

In light of the abundant empirical evidence about the positive influence of a competitive RER on economic growth, Gluzmann et al. (2012) investigated the transmission channels from RER to economic performance. The authors found that a competitive RER had a positive effect on investment, savings, and employment. Gluzmann et al. (2012) outlined an additional channel to that seen in Rodrik (2008). Specifically, a competitive RER reduces real wages, transferring income from a class with a lower propensity to save to a class with a greater propensity to do so (Gluzmann et al., 2012). In other words, a competitive RER increases national savings by transferring income from workers to financially constrained firms, enhancing the economy's investment capacity (Gluzmann et al., 2012).

Bahlla (2012) claims that one important channel from RER to economic growth is through its capital accumulation effects. Bahlla's argument (2012) is that the RER changes the profitability of investments by directly affecting the cost of labor. A non-competitive RER discourages investment due to its positive (negative) effect on labor costs (profitability) (Bahlla, 2012). In contrast, by reducing (increasing) labor costs (profitability), a competitive RER drives investment and thus economic growth (Bahlla, 2012). Furthermore, a competitive RER compensates for some of the problems of poor countries: real interest rates, bureaucratic costs, the investment environment, and corruption (Bahlla, 2012).

One branch of literature highlights the influence exerted by the RER on the productive structure. By affecting a firm's profit rate, a competitive RER affects its decisions concerning production, worker employment and capital accumulation (Frenkel and Ros, 2006), favoring the tradable sectors (Rodrik, 2008). Insofar as these productive activities include manufacturing firms, pursuing a competitive RER reallocates national resources from non-industrial (non-tradable) sectors to industrial (tradable) ones, leading to a more industrialized, diversified, and modern productive structure (Ros and Skott, 1998, Gabriel and Missio, 2018, Gabriel and Ribeiro, 2019). Lower real wages and higher profits (generated by a competitive RER) expand profits and capital accumulation in manufacturing activities (Ros, 2015). As a result, there is a new long-term equilibrium, with more developed manufacturing, fewer natural resources and service sectors, and expanded output (Ros, 2015). As a result, a competitive RER induces the exports of manufactured goods, leading to changes in the productive structure towards manufacturing sectors, which increases the importance of sectors with greater income-elasticity and, hence, expands the growth rate of output a la Thirlwall's law (Marconi, et al., 2021).

However, we note that the "path towards prosperity and development,"<sup>2</sup> which comes from adopting a competitive RER, is not painless.

Bahmani-Oskooe and Hajilee (2010) argue that a competitive RER positively influences company profits by redistributing income from workers to firms (if wages are not readjusted *pari passu* to the inflationary acceleration caused by the RER devaluation), while at the same time having a negative impact, because imported inputs become more expensive. Therefore, the effects of a competitive RER on capital accumulation depend on which channel prevails (Bahmani-Oskooe and Hajilee, 2010). Guzman et al. (2018) point out that a competitive RER is associated with a trade-off between its effects on income distribution and economic performance. Pursuing a competitive RER means accepting, in the present, lower real wages and income, by promising a better standard of living in the future (Guzman et al., 2018). In other words, a developing strategy based on a competitive RER means lowering consumption (and the real wage) in order to increase savings and, thus, the economy's investment capacity, in the present. If the investment does, in fact, materialize, society achieves considerable economic growth, with all the fruits of a faster pace of capital accumulation: technological progress and labor productivity. However, it seems that not all individuals pay the price of a competitive RER in the present, and it is not clear whose life will be improved following economic growth (Guzman et al., 2018).

Ribeiro et al. (2020) studied the net influence of RER on economic growth taking two conflicting partial effects of a competitive RER into account: (i) its positive influence on technological progress, which fosters economic growth, and (ii) its negative influence on the real wage and, thus, its positive influence on income inequality, which damages economic growth. For developing countries, their find-

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<sup>2</sup> To use a term coined by Bahlla (2012).

ings indicate that, in fact, RER devaluations increase income inequality in terms of the wage share of GDP and the level of relative technological capability, indirectly influencing economic growth via these channels. However, this indirect effect of RER devaluation is negative (Ribeiro et al., 2020).

In a nutshell, the main arguments from the literature (especially Rodrik (2008)'s article) that we have discussed in this section assert that institutions are an important driver of long-term growth. Moreover, a competitive RER might offset the deleterious effects that the (historically inherited) bad institutions in poor countries have on economic performance. Such bad institutions act as a lock-in point for poor economies within a specialized productive structure with few goods and low labor productivity, creating a poor long-term growth trajectory. Pursuing a competitive RER is a way of breaking the circular and cumulative process of poverty associated with the trap of bad institutions. A competitive RER helps to change the growth path of poor societies, encouraging capital accumulation and technological progress (to the detriment of worse income distribution and lower consumption in the present) so that they can obtain a more developed economy in the future. This, in a few words, is the central argument within the New Developmentalism doctrine; a competitive RER induces a faster pace of capital accumulation, with positive effects on the long-run growth and economic development.<sup>3</sup>

### **Organizing ideas: new developmentalism as a doctrine for economic development**

Recently, a debate has taken place between two distinguished Brazilian economists, Luiz Carlos Bresser-Pereira and Carlos Medeiros, about the effectiveness and consistency of the doctrine of new developmentalism in promoting economic development. This section discusses the theory of new developmentalism in light of this debate, in order to better comprehend and organize the argument about how the RER should be managed so as to instigate social progress. To this end, we draw on two articles to summarize the arguments of the new developmentalism doctrine – Bresser-Pereira (2016) and Bresser-Pereira (2020), using the Medeiros (2020) article to establish a critical counterpoint. Despite the many economic elements in this debate, we focus on one specific aspect: the role of a competitive RER on economic development.

Inspired by the experience of Asian economies, the doctrine of new developmentalism outlines a set of macroeconomic policies that should be adopted in order to attain the desired level of development, with particular emphasis on managing the RER (Bresser-Pereira, 2016, Bresser-Pereira, 2020). The notion behind this emphasis on the RER is linked to the existence of the Dutch disease, that is, the tendency for the overvaluation of the RER caused by the existence of cheap and abundant natural resources that keep overvalued the national currency in develop-

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<sup>3</sup> The idea according to which a competitive RER may offset the deleterious effects that the bad institutions in poor countries have on economic performance comes from Rodrik (2008) and it is not part of New Developmentalism doctrine.



ing countries (Bresser-Pereira, 2018). The principal cause of Dutch disease is the commodity boom, insofar as better trade terms strengthen (appreciate) the national currency. Complementarily, economic growth with foreign savings, high interest rate levels, and using the RER to control the inflation rate are policy options that reinforce the problems of cyclical and chronicle exchange rate appreciation generated by Dutch disease (Bresser-Pereira, 2016, Bresser-Pereira, 2020). This phenomenon damages long-term growth, in that a non-competitive RER is associated with deindustrialization and loss of productive sophistication. Ergo, developing economies should manage the RER in order to neutralize the Dutch disease and, ultimately, instigate industrialization (Bresser-Pereira, 2016, Bresser-Pereira, 2020).

What is the link between a competitive RER and economic development within the doctrine of new developmentalism? How does a competitive RER lead to a more developed economy? Bresser-Pereira (2016) states that the RER influences the profitability of the tradable sectors and, consequently, investment in them. A competitive RER leads to lower real wages (and income is not associated with the tradable-sectors) in the short-run and expanded profitability in tradable activities (Bresser-Pereira, 2016). It is precisely this mechanism that promotes economic growth, since it generates the funds required for firms to make new investments, since wage costs fall and exports grow. Adopting an export-led strategy for economic development based on a competitive RER follows the logic of profit realization and capital accumulation (which is the engine of long-term growth), rather than immediate consumption (which is associated with short-term/populist objectives) (Bresser-Pereira, 2016).

In contrast, Medeiros' (2020) critical assessment clarified certain theoretical shortcomings and important limitations of the doctrine of new developmentalism. In a few words, Medeiros' (2020) main arguments can be summarized according to two major pillars:

- i) *The monocausal explanation for structural change and economic growth:* the central explanation in new developmentalism for economic success is the adoption, or not, of a competitive RER, ignoring aspects associated with a country's economic, social, and political characteristics. Important themes for structuralist economists – such as technical progress, industrial policy, labor productivity, income distribution, investment in infrastructure and the development of a national system of innovation, are not addressed (Medeiros, 2020). In the same vein, new developmentalism assumes that national firms are already operating competitively in the international market, with the modern technology and institutions that are required (Medeiros, 2020). The development challenge is reduced to the adoption of a competitive RER (Medeiros, 2020).
- ii) *Underestimation of the contractionary effects of RER via reductions in real wages/consumption:* Medeiros (2020) argues that new developmentalism places considerable emphasis upon the importance of external markets for domestic demand, which is an incorrect assumption in most developed and developing countries, where the domestic market is the major source of



demand for industrial production. Redistributive policies, higher real wages and consumption credit would encourage manufacturing activities, rather than the lower real wages provoked by a competitive RER (Medeiros, 2020). Moreover, developing countries have two ways to improve export competitiveness: the low road and the high one. The former consists of cutting real wages by pursuing a competitive RER, whereas the latter involves increasing labor productivity. The high road is the main approach implemented by developed countries using multiple instruments (Medeiros, 2020).

Regarding the first pillar of the Medeiros (2020) argument, there is a vast and robust literature that associates a competitive RER with greater economic growth. On the one hand, this literature justifies and strengthens the Bresser-Pereira argument, according to which a competitive RER fosters economic growth by expanding capital accumulation. On the other hand, this does not mean that the Medeiros argument should be ignored. In fact, the Asian experience indicates that structural change/catch-up is a multifaceted phenomenon that necessitates the establishment of institutions devoted to this purpose, as well as the adoption of a set of policies that go deeper than merely adopting a competitive RER, as clearly demonstrated by Medeiros (2020). And it must be said: to the best of our knowledge, Bresser-Pereira did not deny the importance of industrial and other policies. On the contrary, a competitive RER needs to be adopted alongside an industrial policy (Bresser-Pereira, 2020, p. 175). Disregarding industrial policy measures to boost (mitigate) the positive (negative) effects of a competitive RER does not make sense.

Regarding the second Medeiros (2020) argument, it is likely that a competitive RER reduces real wages as inflation accelerates, and firms operating in domestic economies increase their markup rate (Blecker, 1989), which has two effects: (i) more unequal income distribution and (ii) a contractionary effect, at least in the short run. Both effects are expected. We should stress that a competitive RER boosts company profitability via the first channel, by establishing the conditions for new investments (Ros, 2015, Bresser-Pereira, 2016). However, in monetary production economies à la Keynes (1954), entrepreneurial decisions concerning investment do not follow the mechanic time logic of Robinson (1980), or the Davidson (2003) logic of an ergodic world. In a world marked by uncertainty about the future, private investment is not automatically obtained through a more competitive RER. In a non-ergodic world, there is no guarantee that a firm's expanded funds will turn into new investments. Therefore, it is quite plausible that, in moments of remarkable uncertainty, a competitive RER might have a negative effect on income distribution without encouraging new entrepreneurial investment. In these moments, the adoption of a counter-cyclical fiscal policy should be adopted in order to positively instigate the entrepreneurs' expectations.

Although the contractionary effects of a competitive RER are to be expected (especially in economies under a wage-led regime of demand), two aspects need to be considered. First, a competitive RER does not automatically expand exports per se or, specifically, high-tech exports, as Medeiros (2020) has pointed out. This

requires a broader set of economic policies to encourage the emergence of high-tech firms, educated workers, an integrated national innovation system, commercial/institutional arrangements to incorporate local production into global trade and so forth. It is therefore reasonable to assume that it will take a considerable amount of time for the positive effects a competitive RER has on output to take effect, since exports do not automatically respond to a competitive RER. Second, RER policy has a hysteresis effect upon the economy. That is, the current RER policy influences the economy's future response to RER. Since a competitive RER expands exports and investment in detriment to consumption, the first two variables are enhanced as a share of GDP. Thus, the economy's regime of demand tends to be profit-led, in the sense that a competitive RER tends to be positively associated with output, even in the short term, as Bahduri and Marglin (1990) state.<sup>4</sup> Apparently, this is what is happening in Asian economies decades after adopting a competitive RER. Curiously, in Latin American economies the opposite seems to be true, decades after adopting a non-competitive RER. The more time that elapses before the Dutch disease is neutralized, the more painful the adoption of an export-led strategy will be.

One feasible conclusion to this section is that, when contrasted, the ideas of Bresser-Pereira and Medeiros suggest that the most appropriate course would be to consider a competitive RER a necessary but insufficient condition to solve the issues associated with developing economies, as it is also suggested by Oreiro (2020) and by other countries' experience of catching up like the South Korean and Chinese cases (Bresser-Pereira et al., 2020). A competitive RER, with significant pros and cons, should be seen as one part of a development strategy, but it is not a once-and-for-all solution for structural change and economic growth.

In view of this debate, in the following section, our study helps to shed light, in empirical terms, on the new developmentalist argument, according to which the RER helps to explain the divergent growth-path between Asian and Latin American economies.

### 3. EMPIRICAL STRATEGY AND DATABASE

Our empirical strategy consists of estimating econometric regressions to explain the growth rate in wage share of GDP  $w_{ti}$ , the Gini income  $g_{iti}$ , investment  $i_{ti}$ , consumption  $c_{ti}$ , net exports  $n_{xti}$ , social capability  $s_{cti}$  and the TFP  $tf_{pti}$ , between 1990 and 2017, in 151 countries.<sup>5</sup> All the dependent variables come from the Penn

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<sup>4</sup> "In other words, it must always have in mind that the regime of demand is changeable, it is a state, depending on national and international macroeconomic conditions" (Azevedo et al., 2022, p. 44, our translate).

<sup>5</sup> To avoid possible pitfalls, certain aspects need to be considered: (1) the growth rate is represented by the variables as log-difference; the *gini* variable was employed at log level, (2) see Table 1 (Appendix )

World Table 9.1, except for the Gini income variable, which comes from Solt (2020). The estimated regression is:

$$y_{it} = \alpha + \beta_1 \text{Mis}_{t-1,i} + \beta_2 \text{controls} + f_t + f_i + u_{it} \quad (1)$$

where the variable  $y_{it}$  represents the dependent variables. The  $f_t$  and  $f_i$  are time fixed (5-year) and country fixed effects. The Mis variable represents the measure of RER misalignment, lagged to avoid the simultaneity problem.

The authors calculated the Mis variable by following the Rodrik (2008) procedure, which is the benchmark of the empirical literature.<sup>6</sup> To this end, the LRER real exchange rate variable comes from the World Bank:<sup>7</sup>

$$\text{LRER}_{it} = L(\text{PPP}_{it}/\text{XRAT}_{it}) \quad (2)$$

where  $i$  and  $t$  stand for country and time (5-year) index, respectively. The variables  $\text{PPP}_{it}$  and  $\text{XRAT}_{it}$  are the conversion factor and the bilateral nominal exchange rate (national currency units per U.S. dollar). When the LRER is greater than zero, the national currency is more appreciated than purchasing power parity. However, if the LRER is lower than zero, the national currency is more depreciated than purchasing power parity. The LRER equilibrium value takes the Balassa Samuelson effect into account by estimating an LRER regression on per capita GDP ( $\text{LPIBCAPITA}$ ):

$$\text{LRER}_{it} = \alpha + \beta \text{LPIBCAPITA}_{it} + f_t + u_{it} \quad (3)$$

The Hausman test indicated that the most appropriate estimating model for equation (3) is the Random Effect. Rodrik's (2008) estimates indicated a Balassa Samuelson effect of around 0.24, while our estimate provided a Balassa Samuelson effect of around 0.19.

Following the Rodrik (2008) procedure, in which the Mis variable is obtained by subtracting the predicted values of equation (3) from the actual value of the LRER, negative (positive) values of the Mis variable indicate that the RER is undervalued (overvalued) in relation to its equilibrium value. Therefore, a negative  $\beta_1$  signal in equation (1) indicates that RER devaluations (overvaluations) have an expansionary (contractionary) effect on the dependent variable. In contrast, a pos-

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for the list of countries; (3) in some regressions, the number of countries may change due to data availability; (4) the information about our database can be found in Table 2, in the Appendix.

<sup>6</sup> Rodrik (2008)'s procedure aims to expunge the influence of gains in labor productivity (greater real wages) in the RER long-run equilibrium, which is represented by the RER value according to the law of one price. We have adopted it due to its extensive use within empirical literature. However, it should be noted that the New Developmentalism doctrine has its own definition of exchange rate, which is the industrial equilibrium exchange rate that, in turn, is the one that enables efficient entrepreneurs (who produce goods in the state-of-the-art technology) to remain competitive abroad (Marconi, 2012). There is extensive literature on the calculation procedure of it. We recognize that not considering this variable is a limitation of our study from the New Developmentalism perspective. Future studies should consider industrial equilibrium exchange in its empirical estimates.

<sup>7</sup>  $L$  denotes that the variables are in logarithmic form.

itive  $\beta_1$  signal indicates that RER devaluations (overvaluations) have contractionary (expansionary) effects.

In terms of the control variables, in the regressions to explain the wage share of GDP and the Gini income, we opted to only control the inflation rate. Our argument is that the inflation rate is only associated with income distribution when it allows the national income to be redistributed from workers to entrepreneurs, and vice versa.<sup>8</sup> In addition to the inflation rate, the wage share of GDP (in log difference) was introduced to the regressions as a controlling variable to explain the remaining dependent variables. The argument is that the wage share of GDP is a proxy for company mark-up (Bahduri and Marglin, 1989).<sup>9</sup> Roughly speaking, the higher the growth rate in wage share of GDP, the fewer funds there are to finance company investment and promote the international competitiveness of national goods. All else being constant, the higher the labor costs, the lower the investment and net exports. This is due to consumption increasing, to the detriment of savings and the loss of international competitiveness. Since functional income distribution may be associated with labor-saving technological progress: the higher the wage share of GDP, the greater the entrepreneurial efforts to invest in new technologies. The wage share of GDP is therefore introduced to the regressions as a controlling variable in order to explain social capability and TFP.

The regressions are estimated using the Roodman (2009) econometric methodology in a dynamic panel model represented by a system of equations, in which the differences and the levels of the independent variables are used as instruments (Blundell and Bond, 1998). The parameters are estimated using the Generalized Method of Moments (GMM), which deals with the endogeneity issue. When both the null hypothesis of the Arellano and Bond test for second order autocorrelation in the error term, and the null hypothesis of the Sargan/Hansen test are not rejected, the internal instrument set is valid, eliminating the possibility of bias produced by the existence of endogeneity (Roodman, 2009).

## 4. EMPIRICAL RESULTS

### Baseline results

Estimates for the complete sample of countries are presented below; we can see that the regressions fitted well. Neither the Arellano and Bond test for second

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<sup>8</sup> The estimated parameter for the variable inflation was not presented in our tables due to the limitation of space. The results are available upon request via authors' e-mail. Overall, this variable has not shown statistical significance in our estimates.

<sup>9</sup> It is important to have in mind that our goal in this article is not estimating the type of demand- and/or capital-regime (wage- or profit-led) in line with the neo Kaleckian model of Bahduri and Marglin (1990). This point, although important, would require another study based on the use of time-series econometrics and database for individual countries.

order autocorrelation in the error term, nor the Sargan/Hansen test for the validity of instruments, rejected the null hypothesis.<sup>10</sup> Table 1 presents the estimates to explain income distribution (functional and personal).

Table 1: RER and Income distribution

Dependent variable	(1) <sup>a</sup>	(2) <sup>a</sup>	(3)	(4)	(5)	(6)	(7)	(8)
	Wage-share				Income's Gini			
Y <sub>t-1</sub>	0.32 (0.19)	0.02 (0.14)	0.15 (0.15)	0.04 (0.12)	0.98*** (0.03)	0.98*** (0.02)	0.99*** (0.03)	1.01*** (0.02)
Mis	0.09** (0.04)	0.04* (0.02)			0.03 (0.03)	0.05*** (0.01)		
LRER			-0.01 (0.06)	0.03 (0.03)			0.02* (0.01)	0.03*** (0.01)
AR (2)	0.12	0.39	0.22	0.14	0.66	0.13	0.11	0.17
Hansen/Sargan	0.16	0.23	0.38	0.29	0.45	0.15	0.52	0.18
Hansen-Diff	0.61	0.61	0.67	0.23	0.48	0.13	0.28	0.09
Groups	114	114	114	114	126	123	126	124
Instruments	16	31	11	15	18	22	21	24

Notes: (1) The dependent variable is Growth Rate of Wage-Share of GDP represented by wt; (2) estimates using two-step System GMM with Time Dummies; (3) \*\*\*, \*\* and \* indicate significance at 10%, 5% and 1%; (4) a denotes the use of Robust Standard Errors (between parentheses); (5) The estimated parameter for the variable inflation is not presented, as well as the constant – which is available upon request.

The contrasting results indicate that devaluations of the RER have variable effects on functional and personal income distribution: they increase inequality in terms of wage share of GDP, while reducing inequality in terms of the Gini income. Column (1) indicates that an RER devaluation of over 10% reduces wage share of GDP by 0.9% over a five-year period. Simultaneously, the column (2) result suggests that a 10% RER devaluation reduces the wage share of GDP by 0.4%. Further regressions, employing the LRER variable, do not provide evidence to suggest that the LRER variable is statistically significant as an explanation of functional income distribution. Column 6 suggests that the estimated Mis parameter is statistically significant, at least at 5%, to explain personal income distribution, with a value of around 0.05. An RER devaluation of more than 10% improves personal income distribution by 0.5%. Regressions using the LRER (columns 7 and 8) confirm this evidence.

On the one hand, these results are in line with Kaleckian literature as far as a reduced wage-share is expected as a result of a competitive RER (Blecker, 1989) –

<sup>10</sup> Since the Sargan test is sensitive to the presence of heteroskedasticity (the null hypothesis tends to be rejected), when it rejects the null hypothesis, the heteroskedasticity-robust variance-covariance matrix is used (Roodman, 2009). The Sargan test should be applied when the non-robust variance-covariance matrix is used, while the Hansen test should be applied when the heteroskedasticity-robust variance-covariance matrix is used (Roodman, 2009).

that is, a competitive RER expands the markup rate of domestic firms, which, in its turn, is negatively (positively) associated with the wage- (profit-) share of GDP; it is exactly this mechanism that induces an enhanced investment's profitability, which, then, fosters capital accumulation. On the other hand, Table 1's results, by indicating the possibility that pursuing a competitive RER improves the personal income distribution, are also attuned to literature. In this sense, Erten and Metzger (2019) provide empirical evidence that a competitive RER, by instigating the creation of manufacturing jobs (with greater real wage), leads to the absorption of female workers by these sectors, which reduces the disparities in the labor market. In terms of the personal income distribution, these results are also in line with Ros (2015)'s argument according to which a development strategy based on the adoption of a competitive RER reduces the real wage in the short run, inducing the development of manufacturing sectors because of the expanded profits and capital accumulation. In long run, as workers employed in non-industrial sectors (with lower real wages) are absorbed by manufacturing activities (with real wages), the personal income inequality becomes smaller.

Table 2 presents the estimates to explain national income allocation in terms of investment, consumption and net exports.

The regressions are robust and tell the same story: a competitive RER encourages investment/savings and reduces consumption. The results of column (1) and (2) indicate that a 10% RER devaluation increases investment by 1.7% and 1.6%, respectively. Columns (3) and (4) present the LRER estimates. They demonstrate that a 10% RER devaluation increases investment by 3.2% and 2.1%, respectively. The regressions in columns (5) and (6) suggest that an RER devaluation of more than 10% reduces consumption by 2%. Columns (7) and (8) indicate that a 10% RER devaluation lowers consumption by 0.5% and 1.4%, respectively. In other words, the new developmentalism arguments have been corroborated by our results, a competitive RER is associated with a long-run view of economic growth as it induces a faster pace of capital accumulation (the driver of long-run growth) at the detriment of consumption. In contrast, there is no robust evidence that our RER measures exert any influence over net exports.

Table 3 presents the regressions to measure the effect of RER on social capability and TFP. The estimates provide empirical evidence that pursuing a competitive RER, influences both variables positively. All estimated parameters are statistically significant at 1%.

Table 2: RER and Allocation of National Income

Dependent variable	(1)	(2) <sup>a</sup>	(3) <sup>a</sup>	(4) <sup>a</sup>	(5) <sup>a</sup>	(6) <sup>a</sup>	(7) <sup>a</sup>	(8) <sup>a</sup>	(9)	(10)	(11)	(12)
		Investment			Consumption			Net Exports				
Y <sub>t-1</sub>	0.15 (0.11)	0.24* (0.12)	0.17 (0.12)	0.20 (0.14)	0.49*** (0.17)	0.50*** (0.09)	0.38*** (0.07)	0.39*** (0.08)	-0.07** (0.03)	-0.05** (0.02)	-0.09** (0.04)	-0.04* (0.02)
Mis	-0.17* (0.10)	-0.16** (0.07)			0.22** (0.08)	0.21** (0.08)			-0.14** (0.05)	-0.04 (0.03)		
LRER			-0.32** (0.13)	-0.21** (0.09)			0.05** (0.02)	0.14* (0.07)			-0.0003 (0.03)	-0.0003 (0.02)
W <sub>t-1</sub>		0.08 (0.43)		0.05 (0.64)		-0.44 (0.41)		-0.40 (0.28)		-0.36*** (0.09)		0.15 (0.10)
AR (2)	0.13	0.14	0.15	0.17	0.89	0.78	0.93	0.66	0.75	0.97	0.80	0.99
Hansen	0.25	0.35	0.10	0.36	0.54	0.17	0.12	0.24	0.23	0.30	0.19	0.39
Hansen-Diff	0.76	0.58	0.32	0.25	0.97	0.33	0.35	0.40	0.28	0.48	0.78	0.30
Groups	140	114	140	114	140	114	140	114	140	114	140	114
Instr.	34	39	29	32	20	24	35	31	35	39	35	39

Notes: (1) The dependent variable is the Growth Rate of investment, consumption or net exports; (2) estimates robust two-step System GMM with Time Dummies; (3) \* \*\* and \*\*\* indicate significance at 10%, 5% and 1%; (4) a denotes the use of Robust Standard Errors (between parentheses); b denotes that the instruments are collapsed; The estimated parameter for the variable inflation is not presented, as well as the constant – which is available upon request.



Table 3: RER, Social Capability and TFP

Dependent variable	(1) <sup>a</sup>	(2) <sup>a</sup>	(3)	(4)	(5) <sup>a</sup>	(6) <sup>a</sup>	(7) <sup>a</sup>	(8) <sup>a</sup>
	Social Capability				TFP			
$Y_{t-1}$	0.14 (0.10)	0.11 (0.10)	0.07 (0.11)	0.08 (0.11)	0.44*** (0.10)	0.37*** (0.12)	0.34 (0.24)	0.23 (0.16)
Mis	-0.64*** (0.03)	-0.64*** (0.03)			-0.10* (0.05)	-0.13** (0.05)		
LRES			-0.54*** (0.03)	-0.54*** (0.03)			-0.14*** (0.03)	-0.14*** (0.04)
$w_{t-1}$		0.06 (0.30)		0.23 (0.28)		-0.01 (0.16)		-0.15 (0.13)
AR (2)	0.23	0.26	0.23	0.22	0.68	0.76	0.88	0.63
Hansen /Sargan	0.72	0.76	0.86	0.32	0.22	0.20	0.47	0.12
Hansen-Diff	0.87	0.87	0.38	0.70	0.58	0.59	0.44	0.38
Groups	106	106	106	106	106	106	17	30
Instr.	17	18	17	18	32	30	106	106

Notes: (1) The dependent variable is Growth Rate of Wage-Share of GDP represented by  $w_t$ ; (2) estimates using two-step System GMM with Time Dummies; (3) \*, \*\* and \*\*\* indicate significance at 10%, 5% and 1%; (4) <sup>a</sup> denotes the use of Robust Standard Errors (between parentheses); (5) The estimated parameter for the variable inflation is not presented, as well as the constant – which is available upon request.

The findings of Table 3 indicate that pursuing a competitive RER reduces the gap between the US economy's social capability and other economies. Estimates using the *Mis* variable suggest that a 10% RER devaluation reduces the gap between the US economy's social capability and other economies by 6% over a five-year period. The regressions employing the *LRES* variable confirm this. Furthermore, the estimates in Table 3 provide empirical evidence that pursuing a competitive RER positively influences TFP. The *Mis* parameter is statistically significant at 10% and around -0.10: a 10% RER devaluation roughly increases growth in productivity by 1% over a five-year period. The *LRES* parameter is statistically significant at 1% and equals -0.14: a 10% RER devaluation increases growth in productivity by roughly 1.4%. Put differently, these results indicate the existence of non-price effects of a competitive RER on the economy. Part of the growth effect is associated with the compensation for the low non-price competitiveness of low- and medium-income countries in relation to high-income countries, which induces economic growth via the traditional export-led channel (Gabriel et al., 2020). Our results indicate the existence of a permanent effect beyond the price channel; a competitive RER increases the part of labor productivity not explained by the labor and capital, reducing the TFP gap between countries and US economy.

## Empirical findings for Africa, Asia, and Latin America

Estimates for the restricted sample, which only contains countries from Africa, Asia and Latin America, are presented below. Table 4 displays the estimates when wage share and Gini income are employed as dependent variables.

Table 4: RER and Income distribution: Africa, Asia, and Latin America

Dependent variable	(1) <sup>a</sup>	(2) <sup>a</sup>	(3)	(4)	(5) <sup>a</sup>	(6)
	Wage-share			Income's Gini		
Y <sub>t-1</sub>	0.32 (0.19)	0.02 (0.14)	0.04 (0.10)	0.58*** (0.10)	0.80*** (0.05)	0.78*** (0.06)
Mis	0.09** (0.04)	0.04* (0.02)		0.007 (0.02)	0.04** (0.02)	
LRER			-0.02 (0.03)			0.04** (0.02)
AR (2)	0.12	0.39	0.20	0.10	0.08	0.09
Hansen/Sargan	0.16	0.23	0.79	0.15	0.45	0.31
Hansen-Diff	0.61	0.61	0.83	0.19	0.21	0.22
Groups	114	114	70	80	79	79
Instruments	16	31	15	23	39	39

Notes: (1) The dependent variable is Growth Rate of Wage-Share of GDP represented by wt; (2) estimates using two-step System GMM with Time Dummies; (3) \*, \*\* and \*\*\* indicate significance at 10%, 5% and 1%; (4) a denotes the use of Robust Standard Errors (between parentheses); (5) The estimated parameter for the variable inflation is not presented, as well as the constant – which is available upon request.

These regressions confirmed our previous findings, according to which the RER has a contrasting effect on functional and personal income distribution. Columns (1) and (2) indicate that an RER devaluation of more than 10% reduces the wage share of GDP by 0.9% and 0.4%, respectively. The LRER variable did not prove to be statistically significant. Table 4 contains mixed evidence about the effects of RER on personal income distribution in the above-mentioned countries. The *Mis* variable was only statistically significant in column (5), indicating that a 10% RER devaluation reduces the wage share of GDP by 0.4%. Similarly, the LRER parameter provided evidence that a 10% RER devaluation reduces personal income inequality by 0.4%.

Table 5 presents the estimated regressions to explain the national income allocation of investment and of consumption of net exports. These results confirmed the previous findings, i.e., pursuing a competitive RER is associated with greater capital accumulation and net exports, and reduced consumption in these countries.

Columns (1) and (2) indicate that a 10% more competitive RER increases investment by 1.1% and 2.2%, respectively. Column (3) presents the regression using the LRER, rather than the *Mis*, and its results indicate that a 10% more competitive RER boosts investment by 3.9%. In turn, the regressions presented in columns (4) and (5) suggest that a 10% RER devaluation reduces variable consumption by 3.9%

Table 5: P/R and Allocation of National Income: Africa, Asia, and Latin America

<i>Dependent variable</i>	(1)	(2)	(3) <sup>a</sup>	(4) <sup>a</sup>	(5) <sup>a</sup>	(6) <sup>a</sup>	(7) <sup>a</sup>	(8)	(9)
	<i>Investment</i>		<i>Consumption</i>			<i>Net Exports</i>			
Y <sub>t-1</sub>	0.09*** (0.03)	0.11*** (0.03)	0.14 (0.09)	0.28 (0.19)	0.35*** (0.05)	0.16* (0.09)	-0.09 (0.07)	-0.15*** (0.03)	-0.13*** (0.03)
Mis	-0.11* (0.06)	-0.22*** (0.07)	-0.39*** (0.09)	0.39*** (0.09)	0.45*** (0.09)		-0.36** (0.15)	-0.33*** (0.03)	
LRER			-0.39*** (0.09)			0.23** (0.09)			-0.23*** (0.03)
W <sub>t-1</sub>		-0.05 (0.14)	0.96** (0.45)		-0.33 (0.28)	0.03 (0.33)		-1.44*** (0.15)	-1.39*** (0.16)
AR (2)	0.35	0.54	0.93	0.69	0.39	0.27	0.94	0.92	0.98
Hansen	0.11	0.27	0.67	0.15	0.50	0.17	0.58	0.73	0.88
Hansen-Diff	0.56	0.41	0.64	0.37	0.45	0.43	0.96	0.48	0.24
Groups	95	70	70	95	70	70	95	70	70
Instr.	34	38	19	29	24	30	35	39	38

Notes: (1) The dependent variable is the Growth Rate of investment, consumption or net exports; (2) estimates robust two-step System GMM with Time Dummies; (3) \*\*, \* and \*\*\* indicate significance at 10%, 5% and 1%; (4) a denotes the use of Robust Standard Errors (between parentheses); b denotes that the instruments are collapsed; The estimated parameter for the variable inflation is not presented, as well as the constant – which is available upon request.

and 4.5% respectively, which is confirmed by the results in column (6), where the estimated LRER parameter is around 0.23.

Lastly, Table 6 reports the regressions to explain the social capability and TFP variables. RER misalignment proved to be positively associated with social capability. The parameters presented in columns (1), (2) and (3) are negative, at around -0.6: a 10% RER devaluation reduces the gap between the US economy's social capability and economies in Africa, Asia, and Latin America by 6% over a five-year period.

Table 6: RER, Social Capability and TFP: Africa, Asia, and Latin America

Dependent variable	(1)	(2)	(3) <sup>a</sup>	(4) <sup>a</sup>	(5) <sup>a</sup>	(6) <sup>a</sup>
	Social Capability			TFP		
$Y_{t-1}$	0.14** (0.06)	0.10 (0.06)	0.08 (0.13)	0.29 (0.20)	0.36 (0.22)	0.38* (0.20)
Mis	-0.69*** (0.07)	-0.66*** (0.08)		0.11 (0.07)	0.09 (0.07)	
LRER			-0.62*** (0.16)			0.07 (0.07)
$W_{t-1}$		-0.03 (0.38)	0.18 (0.38)		0.05 (0.14)	-0.04 (0.21)
AR (2)	0.13	0.13	0.12	0.72	0.89	0.97
Hansen				0.63	0.48	0.48
/Sargan	0.68	0.67	0.74			
Hansen-Diff	0.54	0.47	0.86	0.83	0.62	0.89
Groups	65	65	65	65	65	65
Instr.	17	18	18	30	34	29

Notes: (1) The dependent variable is Growth Rate of Wage-Share of GDP represented by wt; (2) estimates using two-step System GMM with Time Dummies; (3) \*, \*\* and \*\*\* indicate significance at 10%, 5% and 1%; (4) a denotes the use of Robust Standard Errors (between parentheses); (5) The estimated parameter for the variable inflation is not presented, as well as the constant – which is available upon request.

However, the Table 6 estimates do not provide empirical evidence that any measure of RER misalignment was statistically significant as an explanation of the TFP in the above-mentioned countries.

## 5. FINAL DISCUSSION

This study attempts to investigate the additional effects of a competitive RER that go beyond enhanced growth. In light of the new developmentalist doctrine and the contrasting experiences of Asian and Latin American countries, we argue that a competitive RER produces secondary effects on the economy, which benefits long-term growth. Our empirical findings indicate that a competitive RER provokes a redistribution of national income toward profits, investments, and net exports – as it is pointed out by the New developmentalism doctrine. Specifically, a competitive RER is associated with greater investment and net exports, to the detriment of consumption. The findings also indicate that a competitive

RER may have an additional impact on growth by reducing labor costs, given that national goods become cheaper, which stimulates net exports. Further, these results are seen to be valid and more powerful in African, Latin American, and Asian economies. In addition to indicating the robustness of our results, these findings demonstrate that pursuing a competitive RER helps to explain the distinct economic performance of these countries.

Our results demonstrate that social capability and TFP are associated with elements other than labor, capital, and education, since a competitive RER is positively associated with both variables. Adopting a competitive RER leads to permanent effects on the economy, especially in terms of TFP. However, our findings reveal that the RER does not exert an extraordinary influence on African, Latin American, and Asian economies, since the estimated parameter was only statistically significant in regressions that explain their social capabilities. This suggests that technological progress may be associated with other aspects, not considered by our estimates. Put differently, societies with better institutions, a developed national system for innovation, education, etc., are more inclined to absorb the benefits of a competitive RER, transforming it into development in terms of social capabilities and technological progress. Moreover, it is important to highlight the importance of future studies providing new evidence of the RER influence on alternative measures of productivity, instead of TFP.

Our findings have important implications in terms of policy prescriptions for economic development, since the effects of a competitive RER go beyond greater long-term growth. In this sense, an outward-oriented development strategy, based on a competitive RER, may contribute to catch-up in African and Latin American economies, as it has in Asian ones. However, it is worth noting that such a strategy imposes considerable costs in terms of worse functional income distribution and lower consumption in the present, with the promise of achieving a more developed society in the future. However, it is not clear whether the fruits of economic development will be shared by all (Guzman et al., 2018), or what the real effect is of the enhanced income inequality caused by a competitive RER, since it may slow down economic growth (Ribeiro et al., 2020). Also, it must be said that Asian economies adopted an export-led strategy based on lower labor costs and a competitive RER *pari passu* the adoption of a broad set of development-oriented policies. Finally, our results revealed an interesting aspect: a competitive RER is associated with less personal income inequality. In empirical terms, this outcome requires greater investigation. In theoretical terms, to the best of our knowledge, it is unclear why a competitive RER reduces personal income inequality – this is a task for future studies.

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## APPENDIX

Table 1: List of Countries

Country	Country	Country	Country	Country	Country	Country
Angola	Chile	Ghana	Korea	Norway	Slovak Republic	
Albania	China	Guinea-Bissau	Kuwait	Nepal	Slovenia	
United Arab Emirates	Cote d'Ivoire	Equatorial Guinea	Lao PDR	New Zealand	Sweden	
Armenia	Cameroon	Greece	Lebanon	Oman	Eswatini	
Antigua and Barbuda	Colombia	Grenada	Sri Lanka	Pakistan	Seychelles	
Australia	Comoros	Guatemala	Lesotho	Panama	Chad	
Austria	Cabo Verde	Guyana	Lithuania	Peru	Togo	
Burundi	Costa Rica	Hong Kong	Luxembourg	Philippines	Thailand	
Belgium	Cyprus	Honduras	Latvia	Papua New Guinea	Tajikistan	
Benin	Czech Republic	Croatia	Morocco	Poland	Turkmenistan	
Burkina Faso	Germany	Haiti	Moldova	Portugal	Tonga	
Bangladesh	Dominica	Hungary	Madagascar	Paraguay	Trinidad and Tobago	
Bulgaria	Denmark	Indonesia	Maldives	Qatar	Tunisia	
Bahrain	Dominican Republic	India	Mexico	Romania	Turkey	
Bosnia and Herzegovina	Algeria	Ireland	North Macedonia	Russia	Tanzania	
Belarus	Ecuador	Iceland	Mali	Rwanda	Uganda	
Belize	Egypt	Israel	Malta	Saudi Arabia	Ukraine	
Bolivia	Spain	Italy	Mongolia	Sudan	Uruguay	
Brazil	Estonia	Jamaica	Mauritania	Senegal	United States	
Barbados	Ethiopia	Japan	Mauritius	Singapore	Vietnam	
Brunei Darussalam	Finland	Kazakhstan	Malaysia	Solomon Island	Samoa	
Bhutan	Fiji	Kenya	Namibia	Sierra Leone	Yemen	
Central African Republic	France	Kyrgyz Republic	Niger	El Salvador	South Africa	
Canada	Gabon	Cambodia	Nigeria	Serbia		
Switzerland	United Kingdom	Kiribati	Netherlands	Sao Tome and Principe		

Table 2: Variables

Variable	Definition	Source	Obs.	Descriptive statistics
<i>L</i> <i>RER</i>	Bilateral real exchange rate (Price level ratio of PPP conversion factor $RER_{t,i} = PPP_{t,i}/XRAT_{t,i}$ )	World Bank	878	Average: -0.74 St. deviation: 0.5
<i>L</i> <i>P</i> <i>I</i> <i>B</i> <i>C</i> <i>A</i> <i>P</i> <i>I</i> <i>T</i> <i>A</i>	Real GDP per capita (PPP)	World Bank	877	Average: 9.09 St. deviation: 1.21
<i>w</i>	Wage share as % of GDP (employed in log-diff)	Penn World Table 9.1	570	Average: -0.67 St. deviation: 0.26
<i>gini</i>	Gini income: estimate of Gini index of inequality in equalized household disposable income (post-tax, post-transfer) at 1% of uncertainty estimate (in the Bayesian sense)	Solt (2020)	703	Average: -0.98 St. deviation: 0.23
<i>i</i>	Investment as % of GDP (employed in log-diff)	Penn World Table 9.1	710	Average: 0.04 St. deviation: 0.29
<i>c</i>	Consumption as % of GDP (employed in log-diff)	Penn World Table 9.1	710	Average: 0.001 St. deviation: 0.14
<i>rx</i>	Net exports (exports minus imports) as % of GDP (employed in log-diff)	Penn World Table 9.1	710	Average: -0.02 St. deviation: 0.29
<i>sc</i>	Social Capability: TFP level at current PPPs (USA=1) (employed in log-diff)	Penn World Table 9.1	530	Average: -0.01 St. deviation: 0.15
<i>tfp</i>	TFP at constant national prices (2011=1) (employed in log-diff)	Penn World Table 9.1	530	Average: 0.02 St. deviation: 0.10
<i>inflation</i>	Consumer price %	World Bank	842	Average: 30.4 St. deviation: 205
<i>Mis</i>	Measure of RER misalignment using <i>L</i> <i>P</i> <i>I</i> <i>B</i> <i>C</i> <i>A</i> <i>P</i> <i>I</i> <i>T</i> <i>A</i>	Authors	876	Average: -0.74 St. deviation: 0.26

