

Minsky meeting Prebisch: the challenges of Peru in the 21st Century

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Abstract

After decades of macroeconomic instability, in the last 20 years the Peruvian economy seems to have finally stabilised around relatively high growth rates with price stability. This good performance was achieved within a policy framework aligned with the New Macroeconomic Consensus. However, the downside of this process was a sustained current account deficit and a continuous increase in external indebtedness (both in terms of foreign direct investment and portfolio investments). Even when the terms of trade were favourable Peru did not manage to balance its external accounts. The chronic current account deficit and the sustained growth above the balance-of-payment equilibrium growth rate suggest, first, that Peru's good economic performance is not sustainable and, second, that there are deep structural elements underlying this lack of sustainability. We build upon Kregel's (2004) extension to the open economy of Minsky's financial instability hypothesis to define a set of indicators aimed at gauging Peru's external financial fragility. We find that in the period 2000-2019 there is a strong structural tendency for Peru to oscillate between a speculative and a Ponzi situation, where net exports and remittances are not enough to face the debt services, thereby leading to a continuous increase of external indebtedness. We conclude the paper by linking Peru's external financial fragility to the structure of its economy, which is a result of historical processes that can only be modified over a long time period if a set of active policies are deployed and sustained.

“it is generally believed that our continent receives real financial aid. The data show the opposite. We can affirm that Latin America is making a contribution to financing the development of the United States and of other industrialised countries. Private investment has meant and does mean for Latin America that the sums taken out of our continent are several times higher than those that are invested. ... In one word, we know that Latin America gives more than it receives.” (Ex-Chilean finance minister to President Nixon, 1969).

Keywords: Minsky, Prebisch, Flow of funds, Ponzi

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1. Introduction

Since the beginning of the XXI century until 2019, Peru experienced extraordinary growth rates when compared to the average of the other Latin American countries. Together with Colombia, Peru has been one of the few Latin American countries to have experienced uninterrupted GDP growth since 2000-until Covid-19- and even when it is compared to Colombia, Peru doubled the number of years of GDP growth higher than 5% with 10 periods against only 5 periods of Colombia ([INEI Peru, 2020](#), p36). In this way, since the beginning of the new century, together with a period of constant economic growth, Peru has been also characterised by a continuous increase in GDP per capita with values up to 5% ([INEI Peru, 2020](#), p46).

Alongside these persistently high GDP growth rates, Peru registered outstanding macroeconomic stability reflected in a low and stable inflation rate and also relatively stable exchange rate dynamics. As in many countries in Latin America where this long-desired stability was achieved after decades of high volatility, this success was attributed to the series of neoliberal policies and institutions that were established particularly since the 1990s, among which the liberalisation of financial markets, the promotion of free mobility of international financial capital, the liberalisation of external trade promoting growth based on exports more than on the support and expansion of internal markets, and the privatisation of public companies can be pointed out. As regards monetary policy, an inflation-targeting regime was established in 2002.

Those policies have been accompanied by an increased tendency of labour productivity and the consequent decrease of labour costs, thereby worsening income distribution with the wage share reducing from 36% in 1990 to levels constantly lower than 32%, with an historical minimum value of 25% in 1994. The combination of these liberalisation policies laid the foundations for a reprimarization path of the Peruvian economy, which kept on being heavily based on its static comparative advantages instead of attempting to develop a set of industries that can add value to primary products and at the same time provide the Peruvian working class with higher and more stable incomes that contribute to the strengthening of the internal market (Jiménez, 2019). While in 2000 the manufacturing sector contributed 15% of GDP and the share of non-traditional exports in total exports was above 65%, in 2019 these figures had worsened to 12% and 73%, respectively. Still, Peru's strong dependence on the primary sector is not new, since it dates back to its integration into the world economy - the relevant structural transformation that is worth mentioning is that while in the mid-20th century agriculture was the leading primary activity, in the 21st century mining has taken over (Kosacoff & Campanario, 2007).⁴

⁴ According to the International Monetary Fund, between 2002 and 2006 a general index of commodities that excludes oil increased by 60% in real terms. In 2005, due to the rise in the prices of commodities, the mining industry of Peru captured investments for 1,000 million dollars.

The prevailing dominance of primary low value-added activities oriented to the global markets exposes Peru, as Prebisch suggested in the early 1950s, to secular deterioration of terms-of-trade, consequently leading to a structural deficit position in the trade balance. As Prebisch himself and other later exponents of the Latin American structuralist school have pointed out⁵, persistent trade deficits limit the attainment of sustained growth as regular balance of payments crises occur when the country finds itself unable to keep on financing them. The limits to growth arising from this primary activities-based integration into the world economy were formalised by Thirlwall (1979) in what later on came to be known as the balance-of-payments constrained growth literature. More recently, Ocampo (2013) has coined the term “balance of payments dominance” to refer to “the heavy influence that the balance of payments exercises on the short-term macroeconomic dynamics in developing countries—i.e., the dependence of domestic business cycles on external shocks, positive and negative, that are transmitted through the balance of payments”.

However, it is well-known that in order to carry out the investments that change the productive structure of an economy that, in turn, would lead to a more favourable integration to world markets a sustained transfer of funds from developed to developing countries is needed. These funds can take the form of either foreign direct investment or any other type of financial lending that provides the foreign exchange needed to finance the investments (and the likely trade deficits derived from them) during the time it takes the process of structural change. Even if peripheral economies and Peru in particular have been recipients of financial flows in the 21st century, many works (among them Kregel (2004), UNCTAD (2020) and Abeles and Pérez Caldentey (2022)) underline how the reality regarding the direction of the flow of funding is often less straightforward to read and often characterised by an opposite trend. According to these authors, even when peripheral countries receive funds through the financial account of the balance of payments, the net inflow might be negative when outflows through the current account (the trade deficit plus factor income) are considered. That description has been particularly true for Latin American countries where the real flow of financial resources was detected already in the 1960s.

Considering the structural constraints of peripheral economies and building upon Domar and Minsky’s analysis of debt and financial sustainability, Kregel (2004) studies how the analysis of the flow of funds linked to the current and capital accounts can actually represent different macroeconomics financial positions of a country against the rest of the world in its pursuit of a development strategy. In particular, Kregel (2004) extends Minsky’s financial fragility analysis to the open economy to suggest how a development policy based on positive financial flows financing a constant trade deficit and might put a country into a dangerous external indebtedness situation leading- under certain conditions - to a Ponzi position, by definition unsustainable in the long term, implying that the whole development strategy could backfire.

⁵ For instance, Diamand (1972) and Rodríguez (1977). These first attempts would be later one formalized in Thirlwall (1979) and Blecker (2011).

The goal of this paper is to examine whether underneath Peru's seeming success so far in the 21st century at taming macroeconomic instability, a dangerous unsustainable external financial fragility process could come up. What motivates our inquiry is the fact that Prebisch's (and his followers') concerns about the macroeconomic implications of a primary-sector heavily-reliant economy do not seem to have been overcome in the case of Peru. To answer our question we propose a series of indicators that operationalize Kregel's extension of Minsky's analysis to the open economy.

The paper is organised as follows. After this introduction we present the main long-run trends of the Peruvian economy to show that neither in the 20th century nor in the first two decades of the 21st Peru has structurally changed its integration to the world economy. In the third section we review the main theoretical contribution of Prebisch (and his followers) and Minsky (with Kregel's extension to the open economy) that we use in our analysis. In the fourth section we build the indicators that we later on use to make our assessment of the sustainability of Peru's seemingly successful growth process in the last twenty years. Finally, we present the main conclusions of the paper.

2. Peru's macro situation in the 21st century

2.1. Preliminary: Macroeconomic situation of Peru since 1950.

To appreciate the structural changes (or their absence or incompleteness) that happened during the last decades it is essential to have a preliminary analysis over a longer period of time. Since the second half of the XX century, Peru traversed many difficulties including different military coups (1948, 1962, 1968, 1975 and 1992), an era dominated by terrorism during the 1980s and 1990s, a hyperinflation crisis in 1988 and a subsequent severe package of austerity policy measures through the "Fujishock program" under the ex-president Alberto Fujimori during the 1990s. Pease and Romero (2013) subdivide the last decades of Peruvian economic history into four main periods consisting of the Golden Age of Capitalism (1945-1971), the end of Bretton Woods (1971-1979), the birth of the Neoliberal State (1979-1990) and the Neoliberal Reform-Financial Instability (1990-2019).

From a macroeconomic point of view, it is possible to observe (table 1) that while the Peruvian GDP almost uninterruptedly increased from 1950 -until Covid-19-, the GDP per capita did not follow the same path. From a distributional point of view, the wage share increased during the 1950s achieving the highest value of 42% in 1958-1959 after which it started to persistently decrease reaching a 28% in 1979, soon after the austerity measures adopted in 1978 and the oil shock crises of 1979. Viceversa, the 1950-1980 period was characterised by an ever increasing profit share that reached its peak of 42% in 1979. However, the breakpoint in Peru's economic history was the neoliberal policy package of the 1990s Fujishock program. If the 1980s were characterised

by fluctuating values of the wage share between 33% and 41%, in the early 1990s the wage share dropped to 25% while the profit share reached 42%. Even if the wage share partially recovered after that trough, never again it restored its pre-Fujishock values in the 1990s, constantly lying below the 32% threshold with a profit share constantly above 36.6%.

Since the 1990s the relevance of exports increased steadily too. Until that date, exports had been below 20% of GDP. However, it is worth noting that during the 1970s and the 1980s the share of non-traditional exports increased remarkably, passing from 5.8% in 1970 to 30.1% in 1990. The turn of the century came with a larger role for them reaching values higher than 34% of GDP during the 2002-2006 commodity boom, but with an interruption (and even a small loss) in the contribution of the non-traditional sector. Imports followed a similar pattern increasing their proportion of GDP from 13% in the 1980s and 18% in 1990s, to 21% and 28% during the first and second decades of the 21st century, respectively (authors calculation based on INEI dataset).

Table 1: Long-term patterns of the Peruvian economy

Variables		1950	1960	1970	1980	1990	2006	2019
GDP (Constant Prices 2007, PEN Million)		40,920	69,946	116,849	167,596	151,492	294,598	546,605
GDP per capita (Constant Prices 2007, PEN)		5,361	7,043	8,857	9,674	6,961	10,546	17,012
Income Distribution (%)	Wage Share (%)	34.79	39.11	36.79	30.54	36.16	30.97	31.21%
	Profit Share (%)	28.60	28.87	32.21	40.28	37.26	37.95	37.93%
	Independent income Share (%)	32.00	24.87	22.44	19.40	20.90	21.83	22.03%
	Tax share (net of subsidies) (%)	4.60	7.15	8.57	9.78	5.68	9.25	8.83%
Aggregate Demand Composition (%)	Consumption / Y (%)	73.70	66.74	71.29	62.43	69.80	60.08	64.93
	Investment / Y (%)	12.62	14.36	12.29	20.23	14.68	18.59	23.17
	Governement Expenditure / Y (%)	8.30	10.83	12.22	14.43	10.73	10.88	12.41
	Imports / Y (%)	9.73	11.86	16.32	15.57	12.94	21.62	27.65
	Exports / Y (%)	15.11	19.92	20.52	18.48	17.74	32.07	27.13
Export Composition (%)	<i>Fisberies products (% of X)</i>	<i>2.90</i>	<i>9.50</i>	<i>33.00</i>	<i>4.90</i>	<i>10.50</i>	<i>5.60</i>	<i>4.00</i>
	<i>Agricultural products (% of X)</i>	<i>53.70</i>	<i>34.40</i>	<i>15.50</i>	<i>5.80</i>	<i>5.30</i>	<i>2.40</i>	<i>1.60</i>
	<i>Mining products (% of X)</i>	<i>20.60</i>	<i>42.80</i>	<i>45.00</i>	<i>46.90</i>	<i>45.10</i>	<i>61.80</i>	<i>59.10</i>
	<i>Oil and Natural Gas products (% of X)</i>	<i>12.70</i>	<i>4.00</i>	<i>0.70</i>	<i>19.60</i>	<i>7.90</i>	<i>7.60</i>	<i>6.20</i>
	<i>No traditional products (% of X)</i>	<i>10.10</i>	<i>9.30</i>	<i>5.80</i>	<i>21.40</i>	<i>30.10</i>	<i>22.20</i>	<i>28.80</i>
	<i>Other products (% of X)</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>1.40</i>	<i>1.10</i>	<i>0.40</i>	<i>0.30</i>

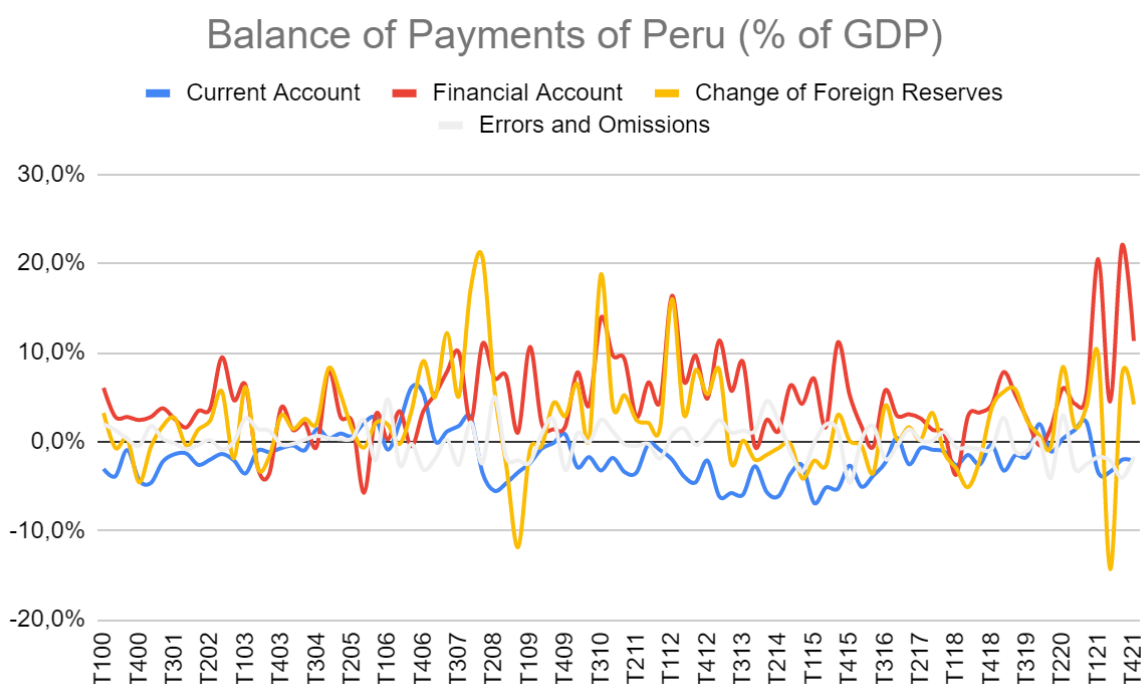
Source: author elaboration based on BCRP database and Castillo G. (2015, 2022)

In terms of the composition of the Peruvian exports and of their diversification, as Table 1 shows, mining products have steadily increased their relevance passing from 21% of total exports in 1950, to 45% in 1990 and up to 60% during the first two decades of the 21st century. The concentration of the export basket in a few primary products (mining products in this case, of which copper has been the dominant) reinforced Peru's condition of a peripheral economy, thereby being exposed to the concerns derived from the Prebisch-Singer thesis (see next section).

2.2. A closer look at the macroeconomic evolution of Peru in the 21st century

Given its peripheral nature and drawing on Ocampo's (2013) notion of "balance of payments dominance" it is useful to dive into the macroeconomic performance of Peru through its relationship with the rest of the world. As Figure 1 shows, and in line with its economic history, Peru ran an (almost) uninterrupted current account deficit, which was matched by a positive net capital inflow. The only period where Peru managed to avoid current account deficits was 2004-2007, the heyday of commodity prices. Still, the continuous financial account surpluses implied that almost all over the 21st century the Peruvian central bank managed to increase its stock of foreign reserves, both for self-insurance and to avoid excessive real exchange rate appreciation.

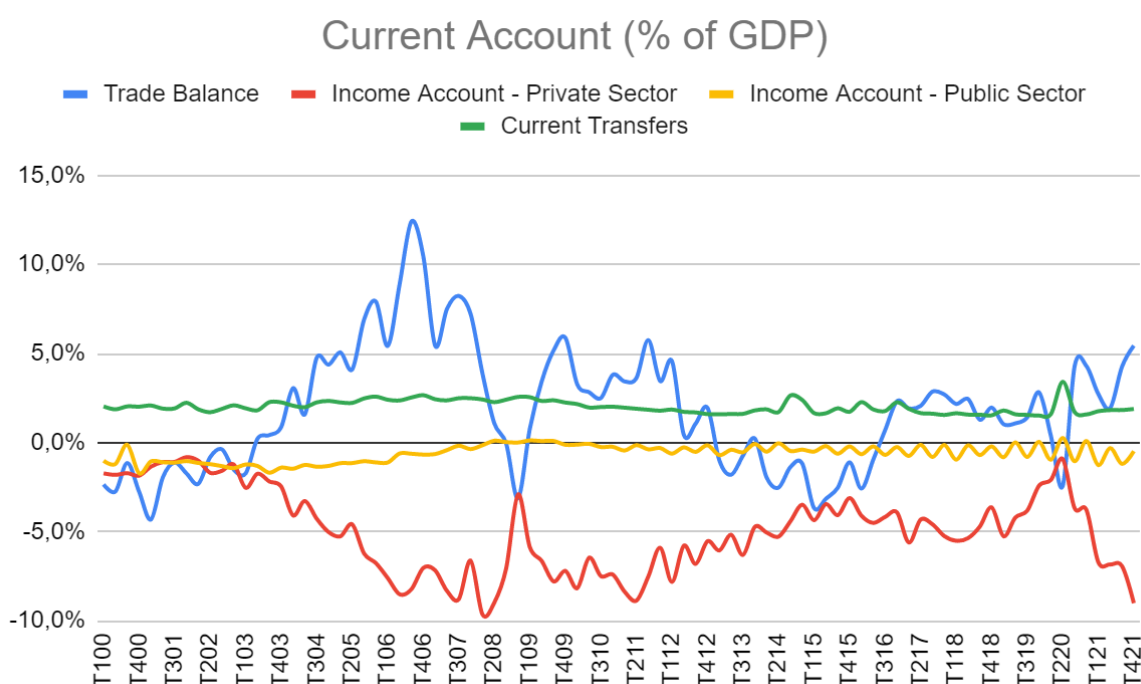
Figure 1: Balance of Payments of Peru 2000-2021



Source: author elaboration based on BCRP database

Having a closer look at the current account, Peru has registered a continuous positive current transfers balance and a positive trade balance mainly in the 2002-2006 commodity boom period, between 2009 and 2012 and after 2016. However, at the same time, Peru also registered a persistent negative income account balance in both the public and particularly in the private sector. Figure 2 shows those figures with respect to the GDP in percentage terms.

Figure 2: Current Account of Peru 2000-2021



Source: author elaboration based on BCRP database

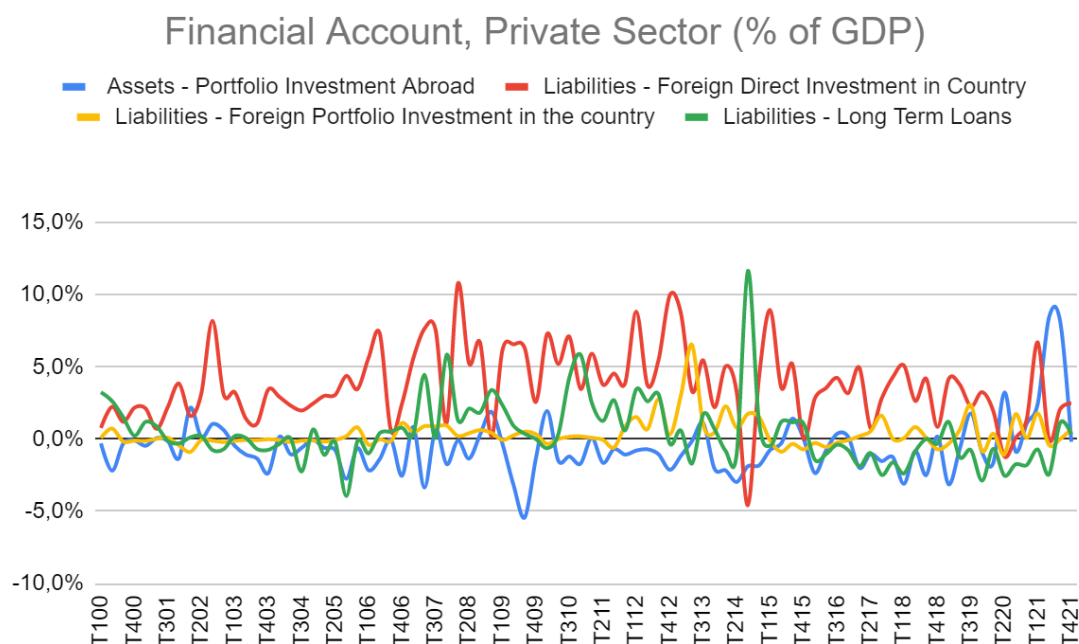
As already mentioned, since the 1990s, exports became a stronger component of the aggregate demand that relied less on internal components of demand. Among exports, mining products acquired more and more relevance arriving at about 60% of them in 2018-2020 with copper alone being 30% of the entire exports of Peru (INEI). Differently from the past, non-traditional products also played a stronger role as a component of exports (about 22%). However, agricultural and fishing products constitute a major component of non-traditional exports. In this way, Peru intensified its characterization as an extractivist country relying mainly on primary exports.

On the public sector financial account side, if the assets to GDP ratio has always been oscillating near zero, the liabilities have become increasingly significant especially since 2015 arriving at values higher than 10% with respect to GDP in 2021. However, the private sector financial account side constitutes the biggest portion of liabilities at the country level. In fact, while portfolio investments on the assets side have been negative but relatively close to zero during the period under consideration, foreign portfolio investment and particularly FDI - foreign direct investments and long-term loans played a major role, reaching up to 10% of GDP in some years.

In this way, even if Peru has been unsuccessful in generating enough resources through trade balance surpluses that compensate for its structural net outflow in the income account, it was through the financial account surpluses that the country managed to obtain the financing required

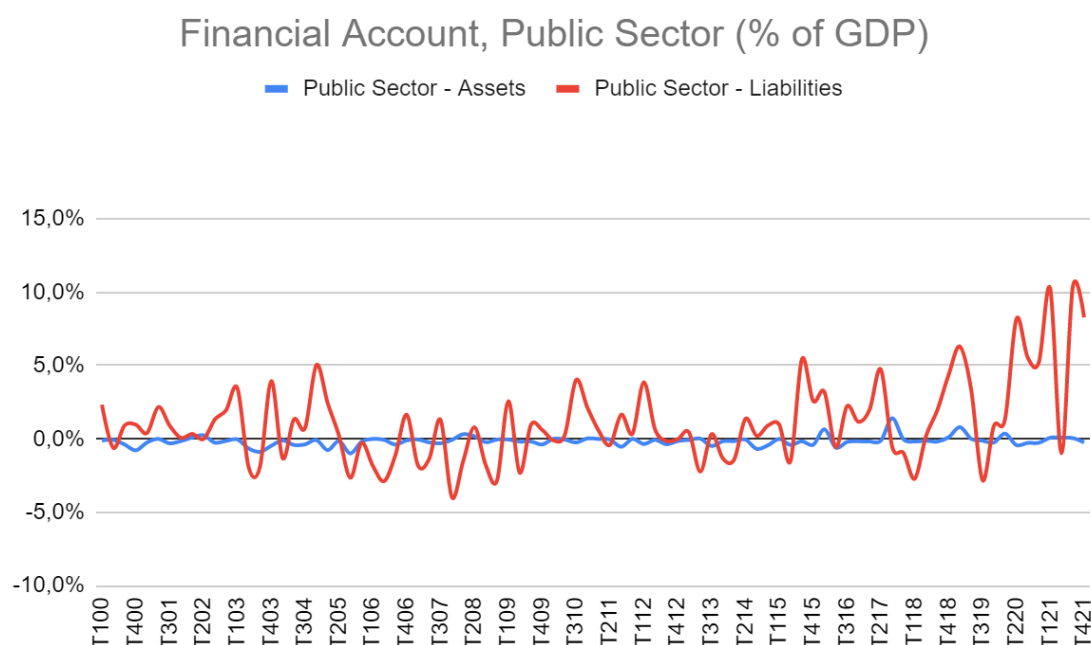
to sustain the high growth rates. The dark side of this story was the persistent increase in liabilities, composed not only of FDI but also long-term indebtedness.

Figure 3: Financial Account of the Private Sector 2000-2021



Source: author elaboration based on BCRP database

Figure 4: Financial Account of the Public Sector 2000-2021



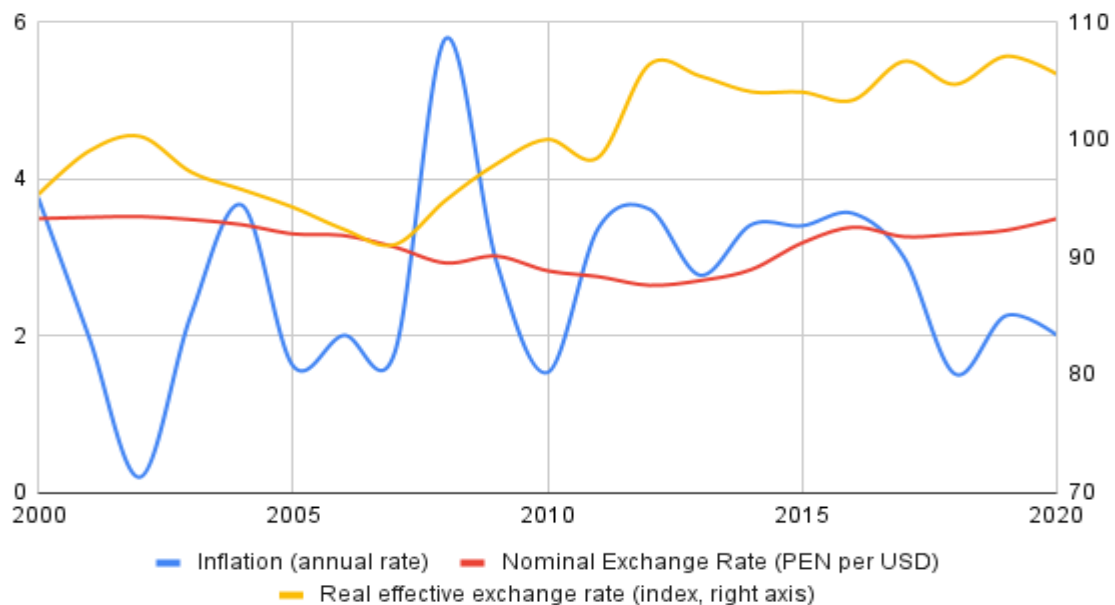
Source: author elaboration based on BCRP database

As a result of this historically high balance of payments stability, which was reflected both in the central bank's capacity to increase its stock of foreign reserves and in the low volatility of the exchange rate (see below), Peru managed to attain high growth rates. Together with Colombia, Peru has been one of the few Latin American countries to have experienced uninterrupted GDP growth from 2000 until the Covid-19 pandemic. Even when it is compared to Colombia, Peru doubled the number of years of GDP growth higher than 5% with 10 periods against only 5 periods of Colombia ([Peru, INEI Peru, 2020](#), p36). According to INEI (INEI, 2022) the GDP growth rate in the 2000-2010 interval was 5.6% while in the following decade was 4%. In this way, since the beginning of the 21st new century, with a period of constant economic growth, Peru has also been characterised by a continuous constant increase in GDP per capita with values up to 5% ([Peru, INEI Peru, 2020](#), p46). However, this increase in per capita income levels did not necessarily translate into higher equality, as the wage share constantly fluctuated around 30% since 2000, never increasing came back to the pre-Fujishock program values.

Together with other Latin American countries (notably Chile, Colombia, Mexico and Brazil) that embraced the so-called New Consensus approach to macroeconomic policy, Peru adopted an inflation-targeting monetary policy framework whereby deviations from the “long-run equilibrium” are corrected through changes in the short-run interest rate while fiscal policy is kept as passive as possible. The framework is usually combined with an open financial account and a flexible exchange rate that adjusts to keep the real exchange rate close to the value where the trade balance is in equilibrium.

Unlike other Latin American countries, Peru could claim to have maintained a relatively more stable exchange rate of the Peruvian Sol (PEN) against the USD and the other major international currencies during the two decades of the new millenium. However, if the PEN initially remained stable until 2003 at 3.5 PEN/USD, since 2004, alongside the beginning of the commodity supercycle, the PEN started an appreciation path that ended only in December 2012 (at the end of the commodity boom) when it reached 2.55 PEN/USD. Since then the Peruvian Sol reversed its previous trend depreciating until the beginning of January 2016 arriving at 3.5 PEN/USD. In the following years, the PEN slightly appreciated alongside the massive inflows of capital into developing countries that characterised the years of the quantitative easing policies in the core economies.

Figure 5: Inflation, nominal and real exchange rates



Source: self-elaborated based on Saint-Louis Federal Reserve

In line with the inflation target established in 2002 consisting of a 2.0 % rate, with a plus or minus 1 % fluctuation band, inflation was kept permanently at 1-digit levels and not far from the target as Figure 5 shows. Considering Peru's history of high inflation rates associated with exchange rate volatility, it seems that the nominal exchange rate stability that first the commodity boom and later the capital inflows enabled significantly contributed to inflation's taming. The combination of relatively stable nominal exchange rate and inflation allowed, in turn, to keep the real exchange rate at "competitive levels". And in the periods of excessive appreciation pressures derived from both current and financial account surpluses the central bank intervened by increasing its stock of foreign exchange reserves.

3. Theory

3.1. Prebisch and the reprimarization of the Peruvian Economy

In the mid-20th century, Latin American economies were already lagging behind those of Western countries. In their independent works Prebisch (1950) and Singer (1950) pointed out that specialisation in the production and exports of primary goods, together with a slow rate of technical progress that characterises the primary sector compared to the industry and an adverse trend in the terms of trade, was the main reason underlying the widening gaps in per capita income. To fully harness the benefits of technological change, Prebisch and Singer argued, Latin American

economies should diversify their production structures away from what static comparative advantages emanating from the Ricardian theory of international trade.

According to Prebisch, the declining terms-of-trade was related to the higher labour union bargaining power in developed countries which allowed for higher wages in the upswing and downward flexibility in the downturn. Since the wage is an essential component of the cost of manufactured goods, stronger unions led to higher prices of the goods produced in the developed countries or, as Prebisch called them, “the centre”. Technological progress, in turn, allowed capitalists to absorb wage increases in a way that profits were not significantly eroded. On the contrary, the lack of unions in the “periphery” implied that wages were lower and downward flexible, implying in turn lower prices of the goods produced there, i.e, primary goods. Singer added that the income elasticity of primary goods (say, for instance, food) was lower than manufactured goods, and that technological change tended to be raw-material saving. Hence, Prebisch and Singer concluded that the more the “periphery” specialised in the production of primary goods, the higher its exposure to the declining terms-of-trade would be.

The straightforward solution to Prebisch and Singer’s concern is the development of a domestic manufacturing sector. While development “miracles” in Asia are an example of successful attempts to create a competitive outward-oriented industry, the experience of Latin America, more oriented to import substitution, was less fruitful and created new macroeconomic problems. Based on his analysis of Argentina, Diamand (1972) coined the concept of “unbalanced productive structure” to define the existence of two or more sectors with markedly divergent productivities within the same economy. In the case of the Latin American countries that pursued an industrialization strategy, the primary sector was the high productivity one (in line with the Ricardian static comparative advantages) while the nascent industry exhibited low productivity. As a result of this and the prevalence of “black holes” in the productive structure (meaning the absence of domestic production of essential inputs), Diamand argued that when these unbalanced economies grew there was an inevitable increase in imports, which in turn required an increasing flow of exports to finance them. However, export growth was inelastic due to supply-side constraints (land availability, for instance) and volatile due to the fluctuation of commodity prices. Thus, economic growth tended to produce trade deficits that eventually led to exchange rate devaluations that, in turn, brought economic growth to stall.

The arguments put forward by Diamand were synthesised a few years later by Thirlwall (1979) in what came to be known as the balance-of-payments constrained growth models. In essence, Thirlwall showed that the long-run growth rate of an economy depends on three elements: the growth rate of trading partners, ii) the income elasticity of exports and, iii) the income elasticity of imports. The higher the first two, the higher the balance of payments equilibrium growth rate, i.e., the maximum growth rate sustainably attainable without hitting the constraint described by

Diamand. However, neither of these two variables was under the control of the economy in question and, following Prebisch and Singer's theses, the trend of the income elasticity of exports was declining, putting an upward limit on the growth rate of peripheral economies. As regards the income elasticity of imports, again, both Prebisch and Singer and Diamand's arguments showed that the value would tend to be high, thereby reducing the growth possibilities of countries specializing in the production of primary goods. Later on, Thirlwall's contributions were extended to incorporate capital flows (Thirlwall and Hussain, 1982; Moreno Brid, 1998; Barbosa-Filho, 2001; McCombie and Thirlwall, 2004).

The sustained Peruvian GDP growth levels described in the previous section seem to be at odds with the Prebisch-Singer thesis and the contributions to which it gave rise, as no constraint coming from the specialization in primary goods seems to have limited the expansion of GDP. However, when the evolution of exports and terms-of-trade is analyzed it seems clear that Peru benefited from extraordinarily high export growth and terms-of-trade. While the latter loosened the constraint identified by Prebisch and Singer, the former increased the balance-of-payments equilibrium growth rate identified by Thirlwall. The previous scenario is also well depicted by Jiménez (2019) in his long-run analysis of the Peruvian economy when he argues that "according to the logic of the primary-export model, economic growth is driven by growth in external demand and high prices of commodities (minerals)".

In presence of an increase in the external demand for commodities and therefore an increase in their prices, Peru has observed an increased level of exports and therefore of GDP. For example, the ECLAC report highlights how during the commodity boom during 2002-2006, 13.8% of the increase in export value was due to a quantity increase while 21.5% was due to a price increase.⁶ However, Jiménez (2019) argues that such a process of economic growth highly dependent on exports is not sustainable because of two major factors, namely the general economic stagnation at the international level and the Chinese growth slowdown⁷. That is particularly relevant given the intensification of trade between Peru and China. For example, since 1990, Peru has become the world's leading supplier of animal feed to China, representing 45% of the Chinese demand (Kosacoff and Campanario, 2007). According to Jiménez (2019), those two points will cause a reduction in the growth rates of minerals produced and exported by Peru and the prices of these commodities will not rise steadily. Craig Botham, cited by Kynge (2014) argues that Peru is one of the economies most vulnerable to such risk.⁸

⁶Kosacoff and Campanario, 2007. ECLAC. La revalorización de las materias primas y sus efectos en América Latina [La revalorización de las materias primas y sus efectos en América Latina](#)

⁷ ECLAC report underlines how trade between Latin America and China skyrocketed during the last years. In fact, while it was 200 millones USD in 1975, that level increased to 47 000 millones of USD in 2005.

⁸ "According to Craig Botham, cited by Kynge (2014), these economies are: Chile, Colombia, Russia, South Africa and Peru. The degree of vulnerability is measured taking into account the weight of non-food commodities in total exports and the weight of exports to China." (Free translation from Jiménez, 2019).

Such a process of growth led by exports is therefore vulnerable to the external engine of demand stimulus:

“The process described is interrupted when the external engine turns off: the terms of trade fall and world demand stagnates. In other words, there is no virtuous circle due to the dependence of the pattern of growth and accumulation on what happens in foreign markets. Therefore, this style of growth, because of the way it operates, does not generate development. It is not an endogenous growth style or one based on productivity.

...

The drop in external demand and commodity prices will further reduce mining exports and investments. Consequently, in the absence of this external impulse, the decrease in the GDP growth rate will be accentuated. If this absence is compensated with internal impulses of demand—without changes in the productive structure of the economy—, the deficit in the current account of the balance of payments will increase further and inflationary and devaluation pressures will be redoubled.”

(Jiménez, 2019)

3.2. Minsky at macroeconomics level in Latin America

The financial instability hypothesis proposed by Minsky (1986, 1992) has become, especially since the outbreak of the global financial crisis in 2008, a powerful analytical tool to describe unsustainable processes of financial fragility. Since then many works have been proposed at a microeconomic level explaining the companies' financial positions and the overall exposure of the financial system to a Minsky-type crisis. For Latin American countries Bibi et al. (2022), Avendaño and Vasquez (2011) and Cruz et al. (2005) are some of the relevant empirical attempts to operationalize Minsky's analysis.

The problems pointed out by the authors that explain the failed quest for sustained growth of Latin American countries on the recurrent balance of payments crises can also be understood using Minsky's framework. This requires changing the unit of analysis - instead of focusing on the individual firm the focus can be made on the country as a whole, or its institutional agents. Kregel (2004) was one of the major contributors to extending the Minsky framework at the country level where the dynamics of the balance of payments accounts are conceptually combined building up two major arguments. First, there has been a great divergence between academic theories and policy discussions regarding the direction that cross-border capital flows should take on one side, and what empirical evidence shows that has actually happened on the other. In particular, the former have often supported the need for a net transfer of resources from developed to developing

countries in order to provide the resources required for the accumulation of capital and development process.

Although theories and political discussions seem to converge on this aspect, Kregel (2004) underlines how the reality regarding the direction of the flow of funding is often less straightforward to read if not characterised even by an opposite trend.

The UNCTAD report (2020) underlines how the net resource transfer from developing to developed countries increased from less than \$200 billion in 2001 to sustained levels larger than \$500 billion after 2004 reaching \$931 billion in 2008 and \$977 billion in 2012 UNCTAD report (2020) suggests that “the persistence and size of net financial resource transfers from developing countries is closely related to the liberalisation and rapid growth of private capital flows since the mid-1990s, and the concomitant strong expansion of developing country gross external assets and liabilities.”

Focusing the attention particularly on Latin American countries, Kregel (2004) highlights how the debt service as a percentage of the export earnings tripled already between 1955 and 1966. More recently, Abeles and Pérez Caldentey (2022) show that between 2011 and 2019 the debt service as a percentage of exports increased from 34% to 51%.⁹

Finally, Kregel (2004) reports how already in 1969 many Latin American countries were aware of the real flow of financial resources and how an ex-Chilean finance minister seems to have told President Nixon¹⁰:

“it is generally believed that our continent receives real financial aid. The data show the opposite. We can affirm that Latin America is making a contribution to financing the development of the United States and of other industrialized countries. Private investment has meant and does mean for Latin America that the sums taken out of our continent are several times higher than those that are invested. ... In one word, we know that Latin America gives more than it receives.”

The net resource transfer from Latin America and the Caribbean to developed countries also increased since the beginning of the XXI century when the net resource transfer was \$2.8 billion reaching values higher than \$100 billion in 2005, 2006 and 2007¹¹. In the same vein, Pérez Caldentey and Vernengo (2010) highlight that during the “commodity boom” the Latin American region has not been a net receptor of financial flow at all. In fact, during this period Latin America “has in fact transferred resources to the rest of the world, and the transfer of resources is equivalent to 1.6 percent of regional GDP [and such a transfer was] twice as high as the transfer of resources

⁹ (Abeles y Esteban Perez, 2022) <https://www.eltrimestreeconomico.com.mx/index.php/te/article/view/1430>

¹⁰ Quoted by Frank AG in “The Underdevelopment Policy of the United States in Latin America”, NACLA Newsletter, December 1969, p. 1.4, p. 107.

¹¹ <https://www.un-ilibrary.org/content/books/9789210557429c006/read>

during the ‘lost decade’ period...”. Particularly in the case of Peru, Pérez Caldentey and Vernengo (2010) found that the negative net resource transfer as a percentage of GDP worsened from 1% in the decade 1980-1990 to 3.20% in 2002-2006.

The second aspect Kregel (2004) analysed refers to the dynamics among the balance of payment sections. In particular, using the work of Minsky and Domar, two main engines for development are studied, namely a development policy based on external resources and a development policy based on positive financial flows. According to the former,

“since a trade surplus will require a capital-account outflow that will eventually generate a reverse flow of interest payments and profit remittances, the policy can only succeed as long as increases in capital outflows balance the increasing inflows for capital services. His [Domar] formal condition for the success of such a policy is that the rate of increase of capital outflows must be at least equal to the rate of interest earned on the foreign lending.”

Kregel (2004)

On the opposite spectrum, in the case of a development policy based on positive financial flows, the situation would be exactly specular. In fact, the argument is that a constant trade deficit is possible only thanks to capital-account inflow. However, such a positive inflow of resources will ultimately generate a reverse flow of interest payments and profit remittances that will flow out of the country. In that situation, if the level of capital account inflow - and therefore somehow the country borrowing - is maintained, the increasing payment for interest and remittances will eventually erode the possibility of the country continuing to have a trade deficit, importing more resources than the generated exports. This is recognized as a potential threat especially for developing economies that might need to import resources in key sectors such as machinery in heavy industry that are essential to their development process. In that case, the development policy based on positive financial flows would result therefore being unsuccessful. The alternative strategy for developing economies not to shrink the amount of imports needed would be to increase the magnitude of the capital-account inflow further, increasing its indebtedness to the rest of the world. In that way, it is quite evident the parallelism of this condition at the macroeconomic level with what Minsky indicated as a “Ponzi” profile at a microeconomic level where a borrower institution might be naturally led to borrow greater amount of resources, increasing its financial fragility, to continue surviving in the market.

“...when the foreign borrowing is not used for expenditures that create net foreign exchange earnings (it makes little difference if this is domestic infrastructure investment, or purchase of basic or luxury consumption goods, or military equipment) it means that the country’s development planning is subject to maintaining the steady rate of increase in capital inflows and becomes hostage to international financial markets.”

Kregel (2004)

The same analysis is also shared by the UNCTAD report (2020) based on more updated data. At a macroeconomic level, this financial fragility is reinforced by the possibility of sudden external

events that might drastically reduce capital inflows from foreign countries obliging the country to financial crises. Kregel (2004) and the UNCTAD report (2020) highlight how often, with the goal of increasing credibility about a country's ability to pay back its loans and attract further external funding, two types of policies are implemented by developing economies. The firsts are contractionary policies to reduce income, reduce imports and in this way increase trade surplus. The second types of policy are directly related to fostering the accumulation of reserves exactly to increase international credibility in payment ability. However, both types of policies have detrimental effects on the development path of a developing economy since the former type reduces the growth of income per capita while the latter type - since reserves are expensive to detain¹² - reduces the resources available to be directly used in acquiring essential resources (Kregel, 2004). In these conditions, as suggested by Domar

“the simplest and most obvious remedy lies not in abstaining from foreign investment which the world needs badly, but in reducing the interest rate on public lending to a minimum consistent with the preservation of international dignity; surely we don't need the interest as income”

(Domar, op. cit., p. 133).

4. External Financial Fragility Indicators

Minsky's original financial profile analysis was developed to study individual units (mainly firms). Extrapolating the underlying concepts to an open economy context is not straightforward because aggregate measures might hide relevant behaviours and financial positions at the micro or mesoeconomic level. Still, in this section we attempt to build some indicators of the external financial fragility of Peru at the level of the main institutional sectors: the nonfinancial corporations, the private financial sector, the government and the central bank. Households are excluded from the analysis because it is assumed they do not take external debt.

To build indicators that show whether a sector tends to be in a hedge, speculative or Ponzi position, we need information on both stocks and flows. The most relevant stock variables are the total external debt¹³, which may or not include foreign direct investment. In the case of the central bank, among the liabilities we also include the stock of liquidity (converted to USD through the nominal exchange rate) to measure the capacity of the monetary authority to defend a certain exchange rate parity given its stock of foreign reserves and the outstanding stock of domestic money. The

¹² UNCTAD, Trade and Development Report, 1999, p. 109 and p. 124, note 15.

¹³ The information disaggregates between short-term and long-term debt. For the case of short-term debt, which on average is 12,5% of total external debt, the information is reported for the private financial sector, the central bank and “others”. Inside others there is the government and the private nonfinancial sector. In order to build the indicators, we assume that the proportion between government and private sector for long-term debt follows the same proportion as the short-term debt

underlying intuition for doing this is that a devaluation of the domestic currency can be interpreted as a sort of default on the debt issued in the domestic currency. In order to assess each sector's capacity to face debt commitments by liquidating assets we also use the information on external assets held by each sector. All the information regarding stock variables is publicly available at the Banco Central de la Reserva del Perú, BCRP. For completeness, in the case of non-financial corporations we build two sets of indicators, one including FDI and the flows thereof and the other one without them¹⁴.

Regarding the flows, two main variables are needed: the cash flow of each sector and the interest payments on external debt. The cash flow stemming from the balance of payments is given by net exports (P.6 minus P.7, using the standard national accounting nomenclatures), net interests (D.41 received minus paid) and remittances (D.7 paid by the rest of the world). It is assumed that net exports are entirely on the account of nonfinancial corporations, while remittances are paid to households. The central bank earns interest on its stock of foreign reserves, and so does the private sector (financial and nonfinancial corporations)¹⁵. It is assumed that the government receives no cash flow from the rest of the world. The debt service of each sector is approximated by the interest payments on the external debt (D.41 received by the rest of the world, which is allocated to each domestic sector using the share of each of them on the total external debt). For the indicators including FDI, we also consider the dividends (D.42) received by the rest of the world as an outflow for nonfinancial corporations.

Since the national accounts report the aggregate payment of dividends of each sector without disaggregating the counterparty sector, we compute the dividends paid by Peruvian-based nonfinancial corporations and financial corporations to the rest of the world as follows. We start from the amount of dividends received by the rest of the world (D.42) and knowing from the data that neither households nor the government are engaged in this transaction, we allocate the dividends received by the rest of the world as paid by nonfinancial corporations and financial corporations according to the size of their total payments of dividends in the corresponding period. For instance, in 2014.Q2 the rest of the world received 3,707 million soles in dividends, while nonfinancial corporations based in Peru paid 27,851 million and financial corporations paid 11 million to the rest of the world. This implies that nonfinancial corporations paid 99.96% of the dividends in that period. Therefore, we assume that they paid 3,705.52 to the rest of the world ($3,707 * 0.9996$) and that financial corporations paid 1.48 ($3,707 * 0.0004$).

Based on these variables the following external financial fragility (EFF) indicators can be built for each institutional agent.

¹⁴ We assume that foreign direct investment is entirely directed to the nonfinancial sector and takes the form of equities.

¹⁵ In order to disaggregate these interest payments we take interest payments (D.41) paid by the rest of the world and we allocate it to the central bank, the private nonfinancial sector and the private financial sector according to their shares in the total assets of the international investment position. This methodological decision implies the assumption of a homogenous interest rate on the assets held across sectors.

Nonfinancial private sector (corporations plus households) without FDI

$$\text{Flow} - \text{based EFF indicator (FEFF)} = \frac{\text{Net Exports} + \text{Interest received} + \text{Remittances}}{\text{Interest paid}}$$

$$\text{Flow} + \text{Stock} - \text{based EFF indicator (FSEFF)} = \frac{\text{Net Exports} + \text{Interest received} + \text{Remittances}}{\text{Interest paid} + \text{Short term External Debt}}$$

Nonfinancial private sector (corporations plus households) with FDI

$$\text{Flow} - \text{based EFF indicator with FDI (FEFF - FDI)} = \frac{\text{Net Exports} + \text{Interest received} + \text{Remittances}}{\text{Interest paid} + \text{Dividends paid}}$$

$$\text{Flow} + \text{Stock} - \text{based EFF soft indicator with FDI (FSEFFs - FDI)} = \frac{\text{Net Exports} + \text{Interest received} + \text{Remittances}}{\text{Interest paid} + \text{Dividends paid} + \text{Short term External Debt}}$$

$$\text{Flow} + \text{Stock} - \text{based EFF hard indicator with FDI (FSEFFh - FDI)} = \frac{\text{Net Exports} + \text{Interest received} + \text{Remittances} + \text{External Assets}}{\text{Interest paid} + \text{Dividends paid} + \text{Total External Debt} + \text{FDI}}$$

Financial corporations

$$\text{Flow} - \text{based EFF indicator (FEFF)} = \frac{\text{Interest received}}{\text{Interest paid}}$$

$$\text{Flow} + \text{Stock} - \text{based EFF indicator (FSEFF)} = \frac{\text{Interest received} + \text{External Assets}}{\text{Interest paid} + \text{External Debt}}$$

Government and Central Bank

$$\text{Flow} - \text{based EFF indicator (FEFF)} = \frac{\text{Interest received}}{\text{Interest paid}}$$

$$\text{Flow} + \text{Stock} - \text{based EFF indicator (FSEFF)} = \frac{\text{Interest received} \left[\text{External Assets} - \frac{\text{Liquidity}}{E} \right]}{\text{Interest paid} + \text{External Debt}}$$

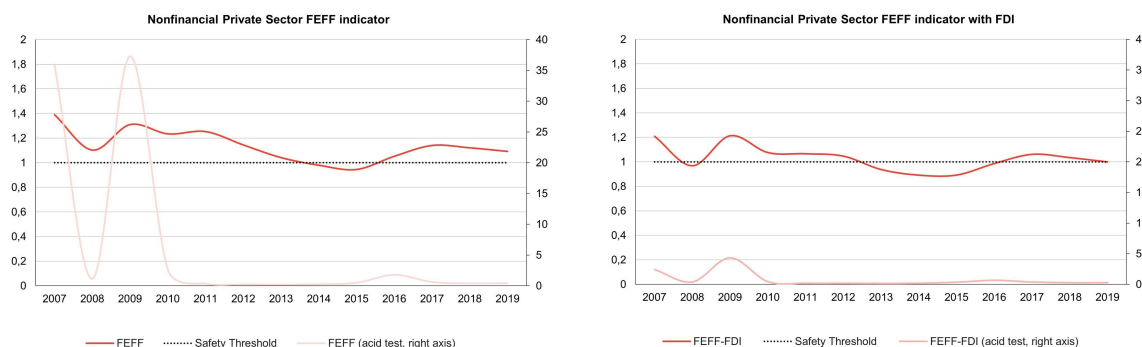
Given the importance of terms-of-trade in the determination of Peru's trade balance and hence, the FEFF and FSEFF indicators of the nonfinancial private sector, we chose to compute two versions of them, one with the actual series of the trade balance and one with the estimation of the trade balance when export and import prices are at their average historical levels (2000-2019 average). Thus, while the indicators computed at the actual values of the terms-of-trade show the economy's actual external financial position, the series calculated at historical prices (which we denote by "acid test") can be taken as a reference for the scenario that would prevail should commodity prices reverted to their average levels. The gap between the two series can then be interpreted as a sort of market risk to which the economy (and the nonfinancial private sector in particular) is exposed in case of a terms-of-trade shock. As long as the series is located above the safety threshold it can be concluded that the economy is in a hedge position while if the series is located below that situation can be interpreted as Ponzi position.

Results

The analysis of the flow-based indicators - both without FDI (Figure 6 left panel) - shows that the economy tends to be well above the safety threshold given by the situation when the indicator is equal to one, meaning complete matching between payments and earnings. Only in a few periods (2014 and 2015) the indicator falls below the threshold, implying a Ponzi position. Such a Ponzi scheme cannot be sustained over time, eventually being corrected through a recession that improves the trade balance or by an exogenous improvement in the terms-of-trade. In the case of Peru, the observed Ponzi position was corrected by a decrease in the growth rate in 2014-2015 (2.4% and 3.3%, respectively, when in 2013 it was 5.9%). Interestingly, when looking at the acid test version of the indicator, it is observed that Peru's exposure to a negative terms-of-trade shock that would put the private sector in a Ponzi position could have been foreseen by adjusting the trade balance by the cyclical component of the terms-of-trade. As the acid test version of the indicator shows given its value lower than 1 on the right scale, from 2011 onwards (with the exception of 2016) Peru's nonfinancial private sector was exposed to falling into a Ponzi position should have a negative terms-of-trades shock consisting of a reversal to the historical mean taken place. There is extensive literature addressing the factors underlying the historically high observed levels of commodity prices that allowed Peru to register a *FEFF* indicator above one during most of the period (Buyuksahin et al, 2016; Erten and Ocampo, 2012). In any case, accounting for uncertainty in the computation of financial fragility indicators is always recommendable, the gaps between the series computed at actual and historical or trend levels being a simple approach to it.

To compute the flow-based indicator including FDI (Figure 6 right panel) we use the same scale as before to compare the indicators in an easier way. When FDI-related payments such as dividends are included the indicators are negatively affected, though still above the safety threshold most of the time. Only in 2008, 2013, 2014 and 2015 the indicator falls below it, a situation predicted by the acid test version of the index. As commented before, the correction of the Ponzi position registered in the mid-2010s seems to have resulted from a deceleration of growth that, in turn, led to a reduction in imports (which went from 25% of GDP in 2013 to 22,8% in 2016). The negative impact of FDI-related flows on the external financial position of Peru seems to be in line with the original writings of Domar (1950), Kregel's (2004) extension of Minsky's analysis to the open economy and the more recent findings for Latin American countries both at the micro (Abeles et al, 2018) and macro levels (Botta et al, 2016).

Figure 6: Nonfinancial Private Sector External Financial Fragility indicators



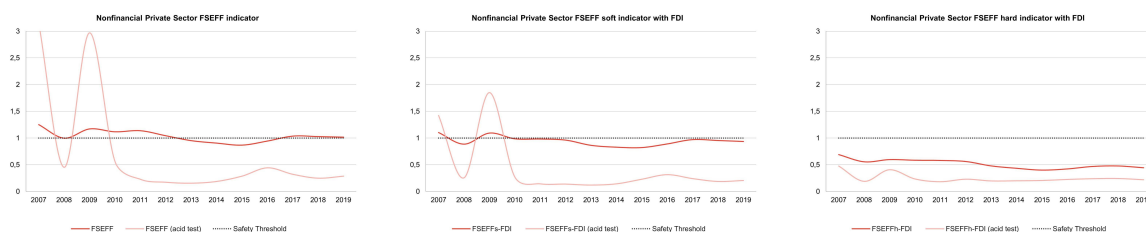
Source: author elaboration based on BCRP database

The external financial fragility indicators including stock variables yield similar conclusions, albeit with varying levels of implied vulnerability. Compared to the *FEFF* index, the *FSEFF* indicator without FDI (Figure 7, left panel) suggests that Peru's nonfinancial private sector was below the safety threshold for a longer period (2013-2016). The fact that in 2013 and 2016 $FEFF > 1 > FSEFF$ can be interpreted as a speculative position since, even if income flows were not able to cover the stock of external debt with the sum of the current account income plus the stock of external assets (implying the need to roll-over the debt), they did suffice to face the current account payments. Thus, when analysed jointly, the *FEFF* and *FSEFF* indicators computed at the actual terms-of-trade imply that Peru's nonfinancial private sector exhibited a hedge position all over the sample except for 2013 and 2016, when it registered a speculative position, and 2014-2015 when the position was Ponzi. The picture is, however, more dismal when the acid test is carried out. From 2010 onwards both *FEFF* and *FSEFF* are below the safety threshold implying that in the event of a negative terms-of-trade shock the economy might have immediately switched from a hedge to a Ponzi position, as it finally ended up happening in 2014-2015.

The situation looks worse when comparing the *FEFF*+*FDI* with the *FSEFF*+*FDI* indicators. First, while the *FEFF*+*FDI* indicator computed at the actual terms-of-trade lie below the safety threshold in 2008 and 2013-2016, the *FSEFF*+*FDI* seems to be below the safety threshold all over the sample except for 2007 and 2009. When these indicators are used, the economy seems to be in a speculative position ($FEFF+FDI > 1 > FSEFF+FDI$) in 2010-2012 and 2017-2019, implying that a Ponzi position was exhibited in the period 2013-2016. Second, when the acid test is done, it is found that from 2010 onwards the nonfinancial private sector would have exhibited a Ponzi position should a negative terms-of-trade shock occur, as both indicators would lie below the safety threshold. Finally and unsurprisingly, the analysis of the *FSEFF*+*FDI* indicator, which includes the stock of FDI liabilities and long-term external debt as an additional outflow that the economy might be subject to (but also the stock of foreign assets to account for the potential capacity to meet these

external commitments), lies below the safety threshold all over the sample both when actual and historical terms-of-trade are used. Although a sudden reversal of the stock of FDI is highly unlikely, this indicator can be used to gauge what the worst-case scenario would look like.

Figure 7: Nonfinancial Private Sector External Financial Fragility indicators



Source: author elaboration based on BCRP database

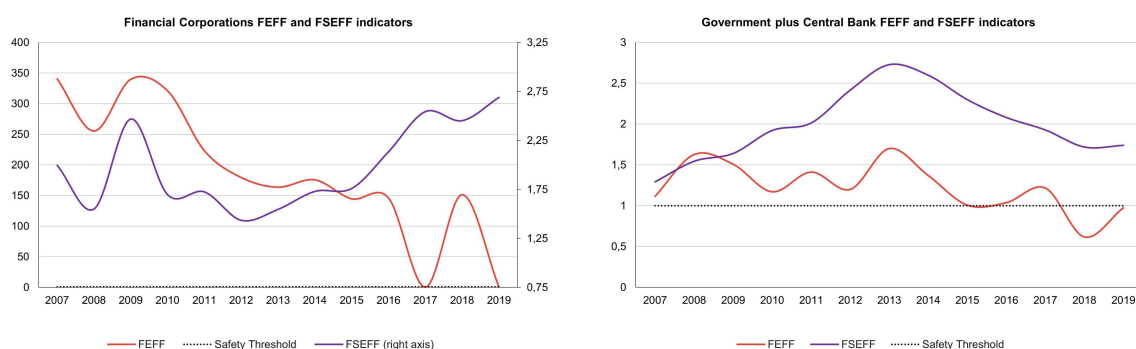
The results for the financial private sector and the public sector (which includes the general government and the central bank) show a much safer situation, as both the FEF and the FSEFF indicators are above unity almost all across the sample. In the case of the financial private sector, the FSEFF is always above unity and shows an upward trend since 2013, meaning that interest income plus the stock of foreign assets is sufficient to cover interest payments and external debt commitments. Note that, in this case, we are including not only short-term, as we did for the private nonfinancial sector but the total external debt commitments. If only short-term external debt is included, the financial position of the private financial sector would look even stronger. As for the FEF indicator, it is also above the safety threshold (and extremely above it) most of the time, except for 2017 and 2019 when it falls below due to unusually low levels of interest earnings. But since in these years the FSEFF is well above the threshold we conclude that the Peruvian financial sector is in a hedge position and, therefore, in a much safer state than the nonfinancial private sector¹⁶.

A very similar situation is observed in the public sector, as the graph in the right panel of Figure 8 shows. The FSEFF is above the safety threshold all across the sample, though steadily declining from the peak registered in 2013. As done for the private financial sector, the FSEFF indicator includes total external debt and not just short-term debt to assess the performance of the economy in the worst-case scenario. Even in this highly unlikely situation, the Peruvian public sector seems to

¹⁶ Some caveats are worth mentioning when interpreting the results. First, the entire stock of FDI is being allocated to the nonfinancial private sector, which could be worsening the results of it while improving the results of the financial private sector. Still, we do not think that this simplifying assumption significantly biases the results and the conclusions derived from them because: 1) in the case of the nonfinancial private sector, even when FDI is excluded from the analysis as is done in the cases of the FEF and FSEFF indicators, the sector found itself in a speculative and a Ponzi position in some periods; 2) in the case of the financial private sector, the underestimation of financial fragility produced by the omission of FDI is well compensated with the incorporation of total external debt instead of only short-term debt.

be in a strong position to cope with a situation of sudden capital flight. In a similar vein, the FEFF indicator for the public sector also exhibits a solid position, though weakening over time, to the extent that towards the end of the sample it falls below unity. The reason underlying this deterioration is the increase in interest payments, which might be signaling the beginning of an unsustainable situation that, if not corrected, could lead first to a speculative and later on to a Ponzi position. Still, at the time where the sample ended, the stock of foreign assets held by the central bank seemed to be high enough to cope with a stressful situation. Thus, it is concluded that the Peruvian public sector has been, as was the case of the financial private sector, in a hedge position, in line with Minsky's (and Kregel's extension to the open economy) definition.

Figure 8: Financial Private Sector and Public Sector External Financial Fragility indicators



Source: author elaboration based on BCRP database

A final point that is worth mentioning is given by the relationship between institutional agents' financial positions. Does the seeming hedge position exhibited by the public sector (which includes the central bank) imply that the economy is invulnerable to a crisis? What are the implications of one sector of the economy (in Peru's case, the nonfinancial private sector) being actually or hypothetically in a speculative or a Ponzi position? Institutional agents and more specifically their relationship with the public sector are not watertight compartments. On the contrary, aside from promoting financial stability through micro and macroprudential policies, the central bank needs to develop the tools to shield the economy from shocks and respond in case one sector of the economy is running short of liquidity, be it in domestic currency or in foreign exchange. The policy of reserve accumulation that became widespread in peripheral central banks after the Southeast Asian countries' crises of the late 1990s is a good example of this behaviour (Durdu et al, 2009; Calvo et al, 2012).

To analyze the consolidated external financial fragility of Peru and the central bank's firepower to deal with a situation of stress in the balance of payments we build two indicators. The first one, $R1$, compares Peru's foreign exchange income and the stock of foreign reserves held by the central bank with its foreign exchange flow commitments. The second one, $R2$, adds short-run stock variables to

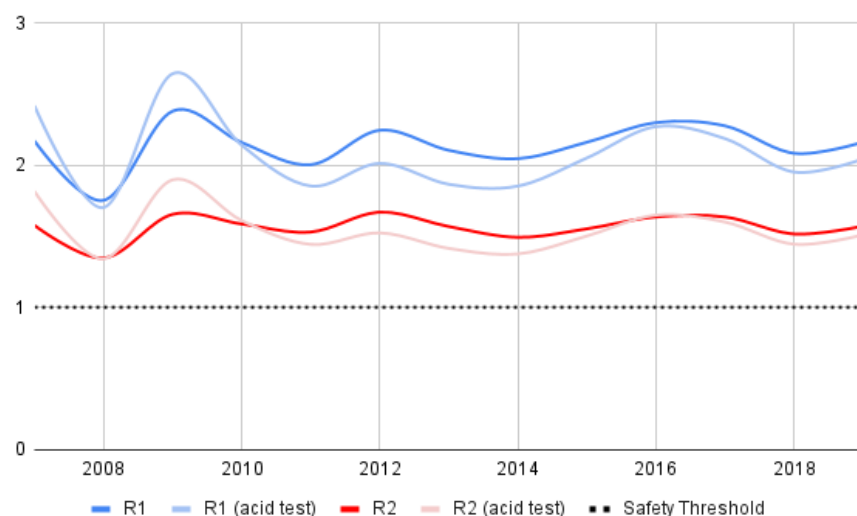
the commitments to account for the possibility that the short-term external debt is not rolled over and that there is a portfolio behaviour change in the domestic private sector switching from domestically held short-term assets to foreign exchange.

$$R1 = \frac{\text{Exports} + \text{Interest Earnings} + \text{Dividends Earnings} + \text{Remittances} + \text{Reserves}}{\text{Imports} + \text{Interest Payments} + \text{Dividends Payments}}$$

$$R2 = \frac{\text{Exports} + \text{Interest Earnings} + \text{Dividends Earnings} + \text{Remittances} + \text{Reserves}}{\text{Imports} + \text{Interest Payments} + \text{Dividends Payments} + \frac{\text{Liquidity}}{E} + \text{Total Short term External Debt}}$$

Figure 9 shows both indicators computed at actual terms-of-trade and at historical averages to gauge how hard the economy would be hit by a reversal of commodity prices to their historic average. In all cases, the consolidated position of the Peruvian economy seems to be above the safety threshold suggesting that, even if the nonfinancial private sector as a whole exhibits speculative and Ponzi positions in the period 2013-2016, the central bank's accumulated stock of reserves is sufficient to deal with the country's overall external commitments. Phrased differently, even if there could be an event where the nonfinancial private sector is running short of foreign exchange to pay for imports, interests, dividends or external debt's principal, it would still be possible for it to acquire the required funds from the central bank in exchange for domestic currency. In such a situation, the central bank would choose to what extent it would supply the required amount of foreign exchange so that the nominal exchange rate is not affected or if it rather let it depreciate. What the *R1* and *R2* indicators show is that the financial position of the central bank - given its stock of foreign reserves - is such that it has the chance to choose how to act in an event of stress in the balance of payments.

Figure 9: Financial Private Sector and Public Sector External Financial Fragility indicators



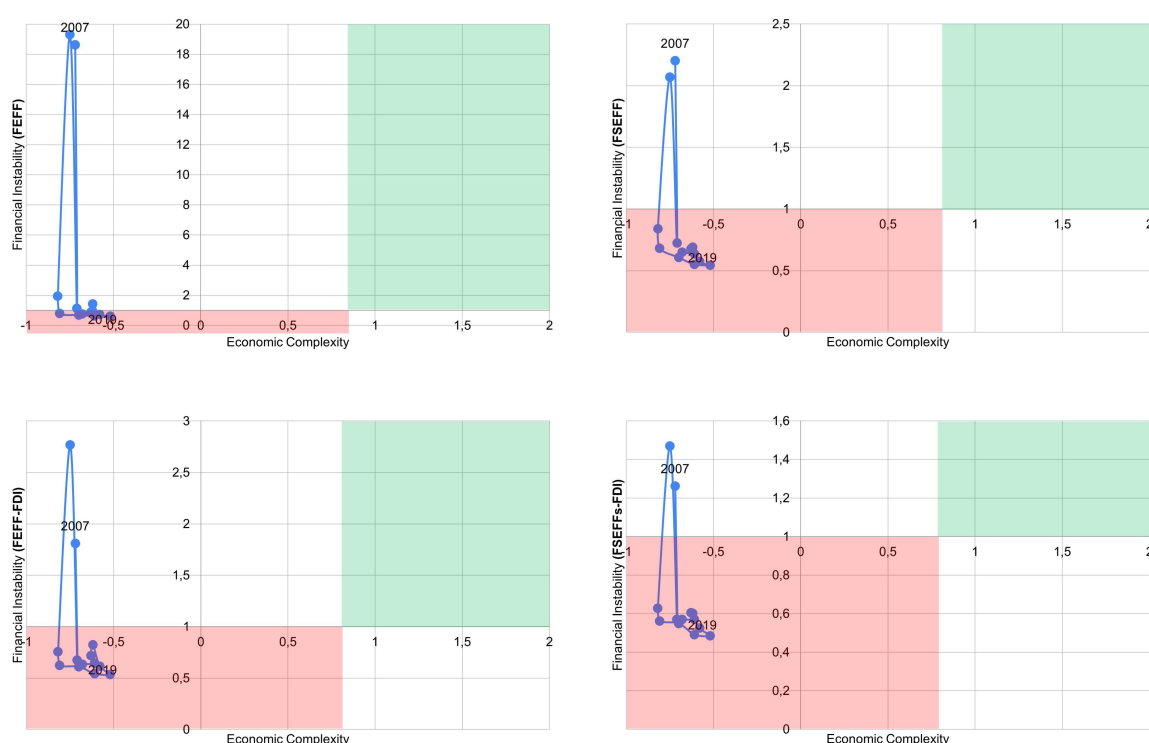
Source: author elaboration based on BCRP database

When Prebisch meets Minsky (in the Peruvian Andes)

As a peripheral economy it is not surprising that Peru requires both imported capital goods and financing to go through a development process that not only improves the standard of living of its population but also solves the structural problems that determine its peripheral condition. Thus, running trade deficits and financial account surpluses (meaning taking external debt) is not necessarily a bad signal as long as two conditions are met: i) there is a sustainable way of maintaining the required flow of foreign exchange during the time the development process takes place and, most importantly; ii) there is an ongoing process of structural transformation of the productive structure that, as Prebisch and his followers claimed, reduces the economy's dependence on commodity exports thereby making it less vulnerable to what Ocampo (2011) has dubbed "balance of payments dominance".

From the analysis presented thus far it would seem that the first condition, the one related to the sustainability of the time structure of foreign exchange-denominated stock and flow variables representing assets and liabilities, has been met in the period 2007-2019. To measure the performance of the economy regarding the second condition, we jointly analyse the trajectories of the external financial fragility of the nonfinancial private sector (the one where the investments that transform the productive structure should take place, and also the one which would obtain the proceeds of that transformation through an improved trade balance) and the economic complexity index. The interaction between these two series can be plotted in a single graph leading to four quadrants, the limits between them being given by the safety threshold in the case of the financial fragility indicators and the world median of the economic complexity index. The top-right quadrant, which we colour in green, is the best case scenario, as it comprises the states where the private sector exhibits a strong external financial position (the indicators are above the safety threshold) and the complexity of the productive structure is in the top 50% at a world level. Conversely, the bottom-left quadrant represents the worst-case scenario, as it combines external financial fragility and low economic complexity.

Figure 10: External Financial Fragility and Economic Complexity



Source: author elaboration based on BCRP database

Figure 10 shows the joint trajectories of external financial fragility and economic complexity of the nonfinancial private sector. For financial fragility we use four of the indicators presented before: FEFF, FSEFF, FEFF-FDI and FSEFFs-FDI¹⁷. Still, the results are the same whatever indicator of financial fragility is used. As observed in the graphs, Peru passes from being in a sound external financial position in the late 2000s to a more fragile one towards the end of the 2010s. This reduced external financial solidity came along with a slight improvement (X%) in its economic complexity end-to-end, though a reduction in complexity is registered from 201X to 2019. This disappointing performance in productive development is in line with the strong primarization of its export basket, which is not only high but also increased, passing from 72.5% in 2007 to 73.4% (according to WTO country profiles).

¹⁷ The external financial fragility indicators plotted in the vertical axes are computed as the averages between the ones computed at the actual terms-of-trade and the ones calculated at mean historical prices. Being the goal of these figures to provide an overview of Peru's structural trends we considered that computing the indicators using the actual terms-of-trade would produce a biased result. Still, if the indicators computed at actual values were used, the results would be quite similar (as shown in figures X and X), though slightly better in terms of financial fragility.

Conclusions

In this paper we have combined Prebisch's legacy (Singer and all the Latin American structuralist school, together with the balance of payments constrained growth literature) with Minsky's financial profiles in the context of the open economy as proposed by Kregel to analyze the evolution of the Peruvian economy in the 21st century.. Using empirical data we here argue that their ideas are indeed strictly connected. In fact, the Prebisch-Singer thesis argues that because of their primary products-based productive structures, their weak labour institutions, and their lagged technological capabilities,, the peripheral countries' terms of trade tended to decline as long as no structural change takes place. As it is known, such a process of structural change requires to be financed to an extent that domestic savings cannot reach. Kregel argues, however, that the increase in external indebtedness brought about by the current account deficits that the structural transformation would entail might lead them into a Ponzi position, implying that the current account inflows might be insufficient to cover the debt services resulting from the external financing. Our contention is that the productive structure of the peripheral countries, Peru in particular, greatly contributes to the structural dynamics of their current accounts - and hence to their indebtedness on the capital account too - in that way determining a financial fragility scenario at country level. In that way, the arguments of Prebisch and Minsky-Kregel are not detached from each other but complement themselves to provide a more complete picture of the challenges that peripheral economies face in their quest for development.

Focusing our attention on the Peruvian economy, we argue that despite the apparent good performance at the macroeconomic level in terms of relatively high growth rates and price stability during the last 20 years, Peru has been characterised by a sustained current account deficit and a continuous increase in external indebtedness (both in terms of foreign direct investment and portfolio investments). Constructing a series of indicators aimed at operationalizing Kregel's proposal we argue that the chronic current account deficit and the sustained growth above the balance-of-payments equilibrium growth rate suggest that Peru's good economic performance is fragile as its nonfinancial private sector tends to oscillate between speculative and Ponzi positions, with a high dependence on the terms-of-trade. However, it is worth noting that the policy of foreign reserves accumulation conducted by the central bank seems to have contributed to significantly reducing the risk of a currency crisis. Most importantly, from our analysis it is derived that the increased financial fragility of the Peruvian nonfinancial private sector was not accompanied by a diversification of the productive structure. In other words, the increase in financial fragility that the higher indebtedness implied does not seem to have been used to diversify the economy away from the primary sector. As long as this pattern persists the quest for economic development will still be unfinished business.

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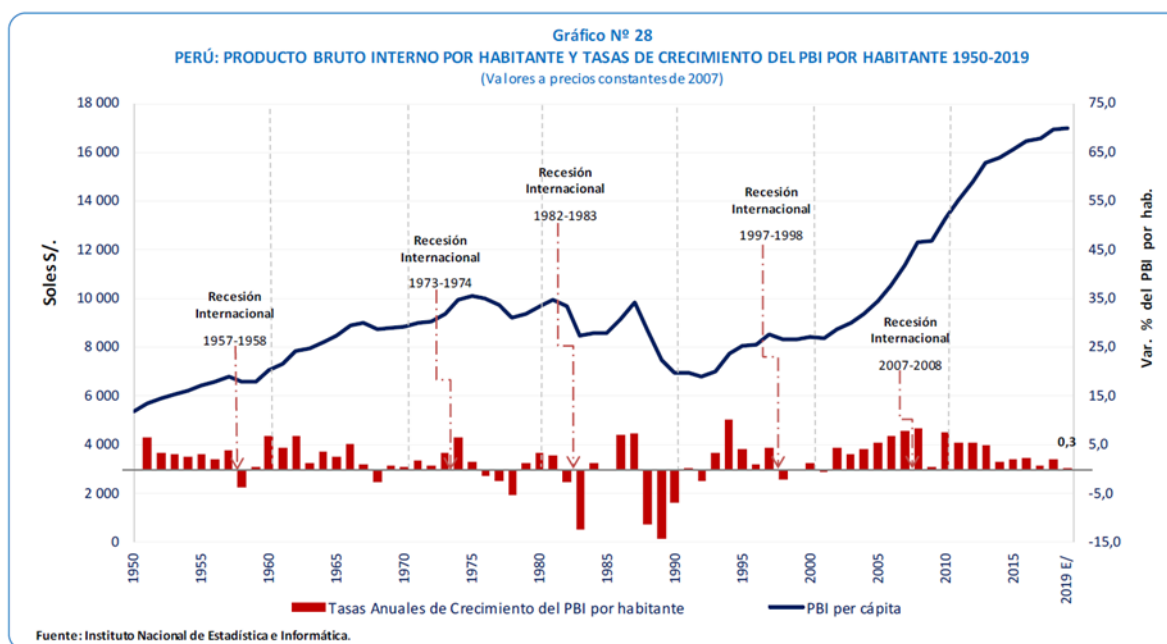
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Appendix

EVOLUCIÓN DE LA ECONOMÍA MUNDIAL: TASA DE CRECIMIENTO DEL PRODUCTO
BRUTO INTERNO, 2000-2019
Valores a precios constantes
(Porcentajes)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Producto mundial	4,8	2,5	3,0	4,3	5,4	4,9	5,5	5,6	3,0	-0,1	5,4	4,3	3,5	3,5	3,6	3,5	3,4	3,9	3,6	2,9
Economías avanzadas	4,1	1,6	1,7	2,1	3,3	2,8	3,1	2,7	0,2	-3,3	3,1	1,7	1,2	1,4	2,1	2,3	1,7	2,5	2,3	1,7
<i>Países seleccionados</i>																				
Estados Unidos	4,1	1,0	1,7	2,9	3,8	3,5	2,9	1,9	-0,1	-2,5	2,6	1,6	2,2	1,8	2,5	2,9	1,6	2,4	2,9	2,3
Canadá	5,2	1,8	3,0	1,8	3,1	3,2	2,6	2,1	1,0	-2,9	3,1	3,1	1,8	2,3	2,9	0,7	1,0	3,2	2,0	1,6
Japón	2,8	0,4	0,1	1,5	2,2	1,7	1,4	1,7	-1,1	-5,4	4,2	-0,1	1,5	2,0	0,4	1,2	0,5	2,2	0,3	0,7
Zona del euro	3,8	2,1	0,9	0,7	2,3	1,7	3,3	3,0	0,4	-4,5	2,1	1,6	-0,9	-0,3	1,4	2,1	1,9	2,5	1,9	1,2
Alemania	2,9	1,7	-0,2	-0,7	1,2	0,7	3,8	3,0	1,0	-5,7	4,2	3,9	0,4	0,4	2,2	1,7	2,2	2,5	1,5	0,6
España	5,1	3,9	2,7	3,0	3,1	3,7	4,1	3,6	0,9	-3,8	0,2	-0,8	-3,0	-1,4	1,4	3,8	3,0	2,9	2,4	2,0
Economías emergentes	5,8	3,6	4,6	6,9	7,9	7,2	8,0	8,4	5,7	2,8	7,4	6,4	5,4	5,1	4,7	4,3	4,6	4,8	4,5	3,7
<i>País seleccionado</i>																				
China	8,5	8,4	9,1	10,0	10,2	11,4	12,7	14,3	9,7	9,4	10,6	9,5	7,9	7,8	7,3	6,9	6,8	6,9	6,7	6,1
América Latina	3,8	0,7	0,5	1,8	6,0	4,2	5,3	5,6	4,0	-1,8	6,3	4,5	2,8	2,9	1,2	-0,2	-1,0	1,2	1,0	0,1
<i>Países seleccionados</i>																				
Brasil	4,4	1,4	3,1	1,1	5,8	3,2	4,0	6,1	5,1	-0,1	7,5	4,0	1,9	3,0	0,5	-3,6	-3,3	1,3	1,3	1,1
México	4,9	-0,4	0,0	1,4	3,9	2,3	4,5	2,3	1,1	-5,3	5,1	3,7	3,6	1,4	2,8	3,3	2,9	2,1	2,1	-0,1
Chile	5,4	3,3	3,1	4,1	7,2	5,8	6,3	4,9	3,5	-1,6	5,8	6,1	5,3	4,0	1,8	2,3	1,7	1,2	3,9	1,1
Colombia	2,9	1,7	2,5	3,9	5,3	4,7	6,7	6,7	3,3	1,1	4,5	6,9	3,9	5,1	4,5	3,0	2,1	1,4	2,5	3,3
Perú	2,7	0,6	5,5	4,2	5,0	6,3	7,5	8,5	9,1	1,1	8,3	6,3	6,1	5,9	2,4	3,3	4,0	2,5	4,0	2,2

Source: Peru, INEI Peru, 2020. [Panorama de la Economía Peruana 1950-2019\[1\]](#)



Source: Peru, INEI Peru, 2020. [Panorama de la Economía Peruana 1950-2019](#)