Current External Challenges to the Economic Expansion of Emerging Markets: A Balance-of-Payments Constrained Growth Perspective

Juan Carlos Moreno-Brid, Lorenzo Nalin and Edgar Pérez-Medina [*]

Working Paper No. 201

February 14th, 2023

ABSTRACT

We present a small analytical framework, built in the Balance of Payments Constrained Growth (BPCG) tradition, tailored to identify how specific financial and structural vulnerabilities of emerging economies (EMEs) restrict their expansion. This framework is applied to shed light on the impact of global shocks and of major macro policy changes in developed countries on the growth path of six economies. As we show, this impact is

conditioned by the vulnerabilities and dynamics of their insertion on international trade and capital markets and their exposure to policy changes in the developed centers. Our work shows that the BPCG-approach is a relevant, simple tool to identify EMEs´ challenges in the post-covid 19 era.

I. Background: Exogenous Shocks and Challenges for Developing Economies

This study began as a background paper for UNCTAD's Trade and Development Report 2022. Since then, the world has evolved, but this INET Working Paper has the same purpose as the original: To assess from the perspective of the Balance of Payments Constrained Growth (**BPCG**) model, the key current challenges to developing countries that spring from two broad types of factors they cannot control. These are, first, global shocks that affect the world economy at large and, second, major macro or trade policy changes in developed countries. The BPCG perspective helps to identify to what extent these challenges are rooted in or conditioned by the developing countries´ financial vulnerabilities and structural weaknesses linked to their roles in the international trade and capital markets.

Right now, the world´s economy and political order are in turmoil, marked by an unprecedentedly high level of uncertainty. The pandemic that erupted in 2020 is not over, as successive waves of contagion and death hit diverse countries. In addition, asymmetries in the policy spaces and stances of developed and developing economies – including those arising from the distinct phases in which they inhabit a 'post-pandemic' era – induce severe macro-financial global shocks with far from homogeneous effects on these two groups of nations.

This is particularly the case as the major economies begin reversing their policies of quantitative easing and start actively unwinding them. As painful as this is to the developed countries, the impact may be much more severe on developing BPC-economies with large debt burdens and restricted access to fresh external financial resources. Recall, too, that many of them have not reached anything resembling a 'post-pandemic' phase. The military invasion by Russia of Ukraine in February 2022, the still ongoing war, and the subsequent sanctions of the West on Russia further complicate the scenario. Besides creating new obstacles to global economic expansion and stabilization, the war is making painfully evident long standing critical problems and weaknesses in the world´s productive structures and financial and commercial architecture.[1] The rise in energy costs is also squeezing consumers´ real income and pushing unit costs up in the developed world, while the outbreak of new variants of the coronavirus has translated into strict lockdown in various cities of China including Shanghai and delivered additional blows to international trade. Adding to these complexities, are climate change and global warming´s threats to social and economic life as we have known it, which pose new and daunting challenges to policy makers in the developing world.

These combined global shocks have disrupted global supply chains, pushed inflation to levels unseen in decades, introduced acute volatility in world financial and foreign exchange markets, and increased borrowing costs for emerging nations. Simultaneously, household

---

[1] As Stiglitz (2022) argued: "Putin's war in Ukraine is aggravating an already-worrisome increase in food and energy prices, with potentially severe ramifications for many developing countries and emerging markets, especially those whose debts have soared during the pandemic…. We need to start rethinking globalization and its rules..."

incomes are being squeezed and the business climate is becoming bleaker and bleaker thus weakening investment all over.[2]

How will policymakers of the major economies react with inflation on the rise and the likelihood for an economic recovery faltering? What will be the monetary/fiscal and industrial and trade policy responses of the United States, the European Union, the UK, and China? What will be the repercussions on international financial and commercial markets of the persistent and the new global shocks combined with policy changes of developed economies?

These are crucial questions whose answer will shape the world´s economy for a long time. But despite the vast uncertainties, we think it is still possible to identify with rigor the mechanisms by which policy responses to changing conditions in the advanced economies affect developing countries, either directly or through the indirect effects of such policies.

The paper is organized in the following way. The next section presents a small macro model, built within the BPC tradition, that is tailored to identify how certain financial and structural vulnerabilities of emerging economies are affected by the challenges they currently face from global shocks and major policy changes in developed economies. In the third section, the analytical model then serves as the basis for a comparative study of six selected countries to illustrate how key financial fragilities and structural vulnerabilities of BPC-economies – associated either with their roles in global trade and capital markets or their exposures to sudden policy changes of developed economies – affect their growth path. The six selected economies are balance-of-payments constrained, but they differ in the ways they are affected by the financial vulnerabilities and structural weaknesses mentioned above. The final section puts forward conclusions and policy recommendations. An appendix presents a succinct review of selected theoretical contributions within the BPCG tradition on the influence of foreign capital flows on long-term rates of economic expansion. It also includes a set statistical tables and graphs.

II. Capital Flows and the Balance of Payments Constrained Growth Model

2.1 Introduction

The canonical balance-of-payments constrained growth model put forward by A.P. Thirlwall states that, in general, semi-industrialized economies face a binding external restriction on the long-term rate of expansion of their real gross domestic product (GDP). This restriction is rooted in the economy´s particular form of insertion in global real and financial markets. In its basic version, the BPCG model states that an economy´s foreign trade pattern as reflected in the dynamism of its exports relative to its imports sets a long-term upper bound to the average annual rate at which its real GDP can expand without sooner or later incurring a critical disequilibrium in its balance of payments. Of utmost social and economic importance is that this upper bound is lower than the rate of expansion of GDP required to,

---

[2] See Chowdhury and Sundaran (2022).

say, guarantee full employment of its labor force given its pattern of fixed capital accumulation.[3]

In its simplest version, the BPCG model assumed that long-term balance of payments equilibrium is defined as a zero commercial deficit. Given this assumption, the long-term rate of economic growth consistent with the balance of payment restriction is given by the sum of, on the one hand, the rate of expansion of the world economy multiplied by the ratio of income-elasticities of exports and imports and, on the other hand, a weighted sum of price elasticities of exports and imports. In this seminal model, capital flows are, for all practical purposes, absent in the determination of the BPC growth rate of expansion of economic activity as the key assumption is that the economy is unable to sustain a persistent deficit in its foreign trade (or, equivalently, a persistent surplus in its financial account).

2.2 A Revised BPCG Model for the Post-COVID Era.

The evolution of BPCG models resulted from the need to address specific aspects of the different external constraints of developing economies. The main objective of this paper is to distill the more general and pressing concerns of developing countries in the post-COVID global context. For that, we set out a streamlined model that focuses on the following general aspects:

i) Allow for net foreign capital inflows as a source of finance for a semi-industrialized economy´s long-term current account deficit up to a given proportion of GDP. As explained immediately below, any 'given' ratio may itself need to be reconsidered under changing circumstances (global financial stress, changes in behavior of international investors, etc.)

ii) Consider the possibility of exogenously determined changes in international capital markets that may suddenly and significantly reduce the proportion "k" initially considered as a reasonable long-term ratio of the current account deficit relative to GDP,

iii) Capture the impact of trade restrictions imposed by developed economies on the semi-industrialized nations due to, inter alia, environmental or labor considerations as well as policy decisions in favor of insourcing key processes of global value chains and;

iv) Consider the likely impact of Free Trade Agreements (FTAs) on the commercial dynamics of semi-industrialized economies faced by adverse external shocks in the global markets of goods and services.

Among the challenges that, in this context, policymakers in emerging markets must face, and to an important extent are already facing, we identify the following ones:

i) An expected reversal of QE with a persistent rise in interest rates by Central Banks in developed economies, exerting a contractionary impact on the cost of (domestic and external) finance in emerging markets and of their debt service,

ii) Premature return to fiscal austerity in selected countries and its adverse impact on foreign trade,

---

[3] For one of the seminal, and in our view clearest definitions of the balance of payments constrained rate of growth see A. Singh (1977).

iii) Volatility in international short-term capital flows, marked by a "flight to quality" and its likely negative impact on finance for development in emerging markets and on the stability of their exchange rates,

iv) Supply constraints on key global value chains that impinge and slow down international trade, and,

v) A progressive surge of trade restrictions linked to environmental or labor standards and even resourcing of production from emerging markets to industrialized nations.

a) An Algebraic Formulation of the BPCG Model for the Immediate Post-COVID Era[4]

Equation 1 puts forward a simple expression of the balance of payments constraint defined in terms of the maximum current account deficit measured as a given proportion of GDP that international capital markets perceive can be financed in the medium and long-run without raising any significant risk to the sustainability of the economy´s foreign debt trajectory. We define this proportion as *"k"* where the left-hand side of expression 1 is a very simplified version of the current account deficit of the balance of payments measured in a common currency, say US dollars.

$$\frac{(E)(M)}{Y} + \frac{(i)(E)(D^*)}{Y} - \frac{(E)(X)}{Y} \leq k \tag{1}$$

Thus the notation is the following: *"M"* stands for total imports of goods and services in $US dollars; *"Y"* for GDP measured in units of local currency, *"E"* the nominal exchange rate defined as number of units of local currency per US dollar, *"D*"* the total stock of outstanding external debt measured in US dollars, *"X"* for total exports of goods and services, also in $US dollars, *"k"* for the maximum current account deficit as a proportion of nominal GDP that for the period of analysis is considered "reasonable" by the international financial markets including credit rating agencies. In turn, the interest rate *"i"* paid on the nation´s outstanding stock of foreign debt is a function of the US-reference interest rate *"j*"* plus a risk premium *"w"*, specific to the country, which may as well reflect the assessment of international investors about how the economy stands with respect to the 'ratio' (k) of sustainability of the external deficit.

$$i = j^* + w \tag{2}$$

Introducing this expression in the previous one gives:

$$\frac{(E)(M)}{Y} + \frac{(j^*+w)\,(E)(D^*)}{Y} - \frac{(E)(X)}{Y} \leq k \tag{3}$$

---

[5] In this parsimonious, algebraic expression of the BPC-constraint, net income from abroad (secondary and primary income) is assumed to be composed of only net interest payments abroad. Under some circumstances it may be relevant to include further variables such as external debits and credits of the primary account (other than interest payments) and net transfers of the secondary account. Further elaborations on this basis may require using 'national income' instead of GDP. We judged it unnecessary to include such variations here, to keep the model simple and still retain its ability to capture the effects of policy changes.

The analytical version of the BPC-constraint put forward here focuses on the current account deficit, and thus assumes away the critical burden that external debt repayments may be for a country. It must meet such obligations to avoid a default. To allow for this concern, one could add an additional term in the left-hand side of expression 3 to capture the requirement that a proportion, say "f" of the outstanding stock of foreign debt $((E)(D^*))$ should a fortiori be repaid in the period of analysis. And consider that the bound set by "k" is then on the consolidated aggregate of the current account deficit plus debt repayment obligations $((f)(D^*))$.

With this twist, the BPC-constraint can be modified to look as follows[5]:

$$\frac{(E)(M)}{Y} + \frac{(j^*+w+f)\,(E)(D^*)}{Y} - \frac{(E)(X)}{Y} \leq k \qquad (4)$$

The magnitude of "k" for an individual country is neither a perennial constant either in time or across countries and is historically contingent on many factors. Among them one can surely include the dynamism (or lack of) of the world's productive activity and trade, the degree of uncertainty or confidence of financial markets, the appraisal by credit-rating agencies and international capital of the BPC-country's debt-repayment and absorption capacity considering its so called macroeconomic fundamentals, including extra-economic or political stability considerations. It can be swiftly and conspicuously altered by global shocks or by key changes in developed countries' economic policies that affect the world's liquidity, and even by changing perceptions of international investors about both 'risk' and 'sustainability'.

Decomposing nominal values in prices and real values:

$$Y = y * P_y$$
where "y" = GDP at constant prices; "P_y" is its deflator in local currency

$$X = (x)(E)(P_x)$$
where "x" = exports in real terms; "P_x" its deflator in US dollars

$$M = (m)(E)(P_m)$$
where "m" = imports in real terms; "P_m" its deflator in US dollars

$$\frac{(m)(E)(P_m)}{(y)(P_y)} + \frac{(j^*+w+f)\,(E)(D^*)}{(y)(P_y)} - \frac{(x)(E)(P_x)}{(y)(P_y)} \leq k \qquad (5)$$

To simplify expression 5, define the import's share of real GDP "$\left(\frac{m}{y}\right)$" as m_0 and the outstanding stock of external debt as a proportion of nominal GDP in local currency as "d":

---

[5] This point gains importance today. As Rhodes and Lipsky (2022), among others, have argued, the response to the Sars-Covid shock left many developing countries in vulnerable situations regarding their foreign debt repayment capacities, and the "… events in Ukraine have made the prospect of a new sovereign debt crisis both more imminent and more damaging". As stressed by Kozul and Gallagher (2021), among others, the mechanisms currently in place to deal with sovereign debt stresses are grossly inadequate and in urgent need of replacement.

$$d = \frac{(E^*)(D^*)}{(y)(P_y)} \tag{6}$$

And the ratio of the prices of imports $(E * Pm)$ relative to, the price deflator of GDP (Py) as Pmy; and the ratio of the prices of exports $(E * Px)$ relative to Py, as Pxy.

$$\frac{(E)(P_m)}{P_y} = P_{my} \tag{7}$$

$$\frac{(E)(P_x)}{P_y} = P_{xy} \tag{8}$$

Substituting 6, 7 and 8 in 5 gives a simpler expression of the BPC-constraint:

$$(m_0)(P_{my}) + (j^* + w + f)(d) - k \leq P_{xy}\left(\frac{x}{y}\right) \tag{9}$$

This version of the BPC-model states that, as long as inequality (9) is satisfied, the economy´s growth path will not be derailed by any balance-of-payments --for lack of a better word-- disequilibrium.

What happens if the inequality is not satisfied? A balance-of-payments crisis will ensue, marked by instability, a massive, sudden short-term capital outflow, a collapse of international reserves, a sharp rise in the country´s risk premium, and a contraction of economic activity. When will such crisis detonate? It is not easy to estimate with precision but, quoting Rick Blaine´s famous response to Ilsa Lund in the face of a, by now famous, life-threatening shock:

"Maybe not today, maybe not tomorrow, but soon…"[6]

To introduce dynamics in the model, consider two periods *"t₀"* and *"t₁"*, and define g_y, g_x, g_{pmy}, g_{pxy}, g_{pm}, g_{px} and g_{py} as the rates of growth between them, correspondingly of real GDP (y), of real exports (x), of the price deflator of imports relative to GDP (Pmy), and of the price deflator of exports relative to GDP "Pxy", and of the price deflators of imports, exports and GDP.

$$(m_0)(P_{my}) + (j^* + w + f)(d) - k \leq P_{xy}\left(\frac{x}{y}\right) \tag{10}$$

To better explore comparative statics in the model we now add the following assumptions, which can be made more realistic later.

i)   Real imports are constant as a share of GDP in both periods, i.e. "m₀" remains unaltered.

ii)   Exchange rate management policy is such that the currency will nominally depreciate between t₀ and t₁ in the exact percentage necessary to fully compensate any increase in domestic prices (as measured by the GDP deflator, *Py*). For example, if from t₀ to t₁ *Py* increases 2%, then the nominal exchange will depreciate exactly 2%; so that the ratio *E/Py* does not alter in the period. Further analysis can easily explore the effects of introducing nominal

[6] Curtiz, M. (1942) Casablanca

        exchange rate depreciations larger or smaller than domestic inflation in this model.

iii)   The coefficient "k" is constant.

iv)   The interest rate of reference in the world market "$j*$", the country´s risk premium "w", and the percentage "f" of external debt $D*$ that must be repaid all remain constant.

The assumption regarding nominal exchange rate policy implies that any variation in the prices of traded goods vis-a-vis the GDP deflator (in our notation Pmy and Pxy) will exactly match the variation in prices of imports (Pm) and of exports (Px) in US dollars, because the ratio E/Py remains always constant in t_o and in t_1. Such an exchange rate policy also implies that the foreign debt to GDP ratio *"d"* will vary between periods t_0 and t_1, if and only if, the stock of outstanding foreign debt valued in US dollars varies.

With these assumptions, we can express the BPC-constraint for the second period *"t_1",* in terms of its "status" in the first period *"t_0"*; that is in terms of: i) the key coefficients including the constant import ratio, ii) the initial values of exports (x_0) and of GDP (y_0), as well as of the initial prices (in dollars) of imports and exports (Pm_0 and Px_0), and iii) the rates of expansion of exports and of GDP in real terms as well as of the prices of exports and of imports.

For notation purposes, for any variable, for example "Y", its value in period t_1 will be expressed as Y_{t1} and given by:

$$Y_{t_1} = Y_{t_o}(1 + g_y) \qquad (11)$$

Based on this notation, the dynamic expression of 10 becomes the following:

$$(m_0)(P_{m_0})(1 + g_{Pm}) + (j^* + w + f)(d) - k \leq \frac{P_{x_0}(1 + g_{P_x})x_o(1 + g_x)}{y_o(1 + g_y)} \qquad (12)$$

Equation (12) is the crux of the analytical model in dynamic terms. It identifies key potential sources of turmoil in the growth path of emerging market economies in the current global context rooted in vulnerabilities that -for them- make the balance-of payments a binding constraint. In equation (12) it is evident that if any shock pushes up the value of the aggregate total of the left-hand side of the equation then the probability of hitting hard against the BP-constraint (i.e. of violating the binding inequality) increases unless such increase is compensated by a favorable movements in the right hand side (RHS) of the equation, such as : i) a more rapid rise in the prices of the developing country´s exports, or ii) by a higher rate of expansion of its exports in real terms. If neither of these changes take place, the only way in which the inequality can be satisfied is by a contraction in the rate of expansion of its real GDP; in arithmetical terms by a decrease in the denominator of the RHS of the equation. Another option, not here explored in the model, is to allow for a reduction in the share of imports relative to real GDP.

Expression (12) highlights the main channels through which BPC-economies may have their growth trajectories severely derailed by global shocks or by changes in key policies of developed nations. These are:

i)   A sudden and drastic slowdown in the rate of growth of exports (g_x). The extent to which a BPC-economy´s sales abroad reduce their momentum depends on the specific basket of exports of goods and services as well as on the geographical composition of their main markets of destination. These two factors condition, too, the extent to which exports may be constrained by the introduction of environmental restrictions on certain products and commodities or of protectionist measures to favor *resourcing* of selected intermediate inputs and final products due to industrial policies or geopolitical considerations.

ii)   Sudden and drastic changes in prices of the developing country´s exports or imports in international markets (*Px* and *Pm*). The current global context of high inflation has a very heterogeneous impact between and within developing countries, benefiting, or harming them depending on the effects in their terms-of-trade.

iii)   Raises in the benchmark interest rate (j^*) in the developed world with the implementation of contractionary monetary policies and the termination of QE.

iv)   Higher country risk premiums (*w*) in developing countries, due to specific national/regional characteristics or to global shocks that detonate a "flight to quality" in short-term capital flows.

v)   Excessive foreign debt repayment´s burden (*f*). A rise in the coefficient *"f"*, i.e., in the proportion of foreign debt that must be repaid in the period of analysis, may push a country to an insolvency crisis, in conditions where its access to international credit becomes tightly rationed.

vi)   A deterioration in the world financial markets´ perception of the developing economy´s macroeconomic strengths and external debt repayments may make the balance-of-payments constrain sudden and painfully binding (suddenly slashing *k*), tightly rationing its access to fresh financial resources. Recall that changes in "*k*" capture major modifications on the assessment of relevant actors in the world´s capital and financial circles regarding what is a "reasonable" magnitude of the country´s current account deficit cum external debt repayments as a proportion of nominal GDP. A major deterioration of "animal spirits" may even push "k" to be negative, in other words to, say, expect a net foreign capital outflow of the country to pay back a conspicuous part of its outstanding external debt.

vii)   The model can also capture the effect of nominal exchange rate depreciations over and above the increase in domestic prices. Indeed, in cases where this happens between period t_0 and t_1, as the initial expression of the BP-constraint shows, the total value of the current account deficit plus external debt repayments will increase as a share of nominal GDP measured in a common currency. If this increase is high enough the inequality in expression (1) could suddenly cease to be satisfied (i.e., its LHS > "k") and, ceteris paribus, trigger a balance-of-payments crisis.

Though not explicitly captured in the model, nominal (or real) exchange rate variations in response to global shocks or developed countries´ policy changes may affect the growth potential and stability of the BPC-economy even if the ratio of the current account deficit plus external debt repayments relative to current GDP remains constant. Indeed, exchange rate variations affect in very heterogeneous ways the balance sheets and flows of funds of

the household sector, the private business sector and the public sector, including state owned enterprises. Currency mismatches in the asset and debit sides of any of these sectors can make them very vulnerable to major changes in the exchange rate; even pushing previously successful firms to insolvency due to the revaluation of their liabilities denominated in foreign currency to values that put the total capital at acute risk of bankruptcy and default on their financial obligations. Similar adverse effects may occur through the sectors´ flow-of-funds, as payments in external currency may become very difficult to fund by income.

The expression (12), that summarizes the model framed in the context of the BPCG analytical perspective, is an inequality. Thus it is far from a specification of an equilibrium condition with unique solutions. In fact, for any given economy constrained by the balance-of-payments, there are many combinations of the evolution of its exports and imports, of its external debt payments, of its terms of trade, exchange rate, and rate of expansion of its productive activity that can meet the restriction set by the right-hand side of the inequality. In brief, it is much less an analytical base for econometric projections of the effects of adverse external shocks than an accounting framework to identify key vulnerabilities of developing economies and how they affect how the balance of payments imposes binding restrictions on countries' potential for long-term expansions.

III. Exogenous Shocks and Current Challenges of Developing Countries Constrained in Their Growth by The Balance of Payments: A Comparative Study of Selected Cases

All happy families are alike; each unhappy family is unhappy in its own way[7]

This section applies the analytical model presented above to identify the current challenges to developing countries´ growth path - rooted in their financial vulnerabilities and structural weaknesses linked to their role in international trade - due to global economic shocks and major policy changes in developed countries.

3.1 Selection of countries

We chose the following six countries: Chile, Colombia, Ghana, India, Mexico, and Turkey. All of them have the common trait of being balance-of-payments constrained in their growth. But they differ in their financial vulnerabilities as well as in their structural weaknesses linked to their role in world markets. Although they face common challenges in front of exogenous global shocks, the channels of transmission, as well as the scale and scope of the impacts, are not homogeneous. Nor is the policy space that each of them has today to respond to exogenous shocks.

In the following section, we explore the current, far from favorable, international context of commercial and financial markets, and identify some changes in key policies of developed countries that are already affecting the world and developing economies bound by the balance-of-payments.

---

[7] Tolstoi, L (1875-1877)

3.2 The complex context: global shocks and major changes in economic policies by developed nations

The global shock of the pandemic is far from over. Contagions and deaths by COVID-19, with new variants of the virus are still endangering the world´s population and economic activity. On top of this, Russia´s invasion of Ukraine triggered a brutal war that still continues today, with no end in sight in the near future. These had with enormously adverse economic repercussion on key markets and value chains. Further complicating the situation is the reversal of monetary expansion in developed countries. In December 2021, for the first time in years, the Bank of England raised its benchmark interest rate (from 0.1% to 0.25%). It has continued this policy shift aggressively, raising nominal interest rates above their pre-pandemic level. In the United States, the policy move away from "cheap money" took place with the termination of Quantitative Easing in the first quarter of 2022, when "on March 9th, the Federal Reserve conducted their final open market purchase effectively ending the ...QE program started in March 2020".[8] The Federal Reserve´s Federal Open Market Committee (FOMC) then stated:

"...the Committee expects to begin reducing its holdings of Treasury securities and agency debt and agency mortgage-backed securities at a coming meeting."[9]

In brief, the Fed´s stimulus program of long-running asset-purchases is over. The Committee stressed too that to avoid overheating, it would start raising the benchmark federal-funds rate in 2022.[10] This upward trend has, so far, continued in 2023.

The significance for the developing world of such an about-face in the US monetary policy cannot be overemphasized. First of all it impacts the US´s cost of finance and, therefore, its aggregate demand for -local or imported - goods and services. But, secondly, it affects the world financial markets, *a priori* attracting capital flows away from the developing world, pushing upwards their domestic costs of borrowing and creating pressures in favor of depreciation of their exchange rates. These movements, in addition, have created pressures to destabilize numerous firms and even governments in the developing world via their impacts on stock-flow dynamics and currency mismatches.

Another rather recent policy change in the advanced world has been the increasing imposition of trade protectionist measures on a wide range of commodities and manufactured goods on the grounds of enforcing climate change mitigation. These measures are no longer exceptional. Attention should be paid too to industrial policies adopted by several developed economies aimed at re-sourcing diverse proccesses/links of key global value chains, reflecting a shift in objectives in favor of resilience vis-à-vis just-in-time lean inventory management and cost-reduction considerations. Such policies impact developing countries with industrial sectors that are or can be important suppliers of intermediate inputs in Global Value Chains. The impact in each economy will depend on whether they are able to attract, in net terms, new foreign direct investment and the strength of the given industries´ internal backward linkages and their weight as a source of foreign exchange revenues. A move

---

[8] See Henning (2022)
[9] See Board of Governors of the Federal Reserve (2022)
[10] See N. Timiraos (2022).

towards a more contractionary stance in developed countries´ monetary policy, projected to continue during the rest of 2023, may harm EMEs exports.

3.3 Current challenges of balance-of-payments constrained developing nations in the face of global shocks and major changes in key policies of developed economies

a) The balance-of-payments constraint: stylized facts and vulnerabilities

Based on previous research, one can underline several stylized facts of balance-of-payments constrained economies. Perhaps the most important is that the periods of high and sustained expansion of developing countries domestic activity tend to be short-lived, and always accompanied by an increasingly significant current account deficit as a proportion of GDP.

Moreover, the few episodes of booming activity are usually related to major improvements in their terms of trade. When such terms deteriorate, the boom is busted. The "riches to rags" story is revealed as a balance-of-payments crisis combined with financial turmoil and an acute fiscal imbalance, The economy´s external position is suddenly marked by massive capital flight, loss of reserves, a ballooning current account deficit, and a contraction of activity. In some cases, the collapse also includes a foreign debt crisis and moratorium or default on its repayment obligations.

The long-run dynamics of these economies are limited by the binding role of the balance-of-payments. These nations are, so to speak, stuck in traps of slow long-term growth in order to keep their trajectories of foreign indebtedness on sustainable paths and avoid pushing up debt to GDP ratios to levels that are perceived as excessive by the international financial markets.

The Current Account and Economic Growth

Figure 3A illustrates for the six countries selected the annual evolution of the current account of the balance of payments, measured as a proportion of GDP, and the rate of economic expansion, measured by the percentage change of real GDP, from 2006 to 2021.

During these 16 years, in the six cases examined, the current account was mostly in deficit. There were very few exceptions for each country: 2020 in Mexico; 2006-07, 2009-10 and 2020 in Chile; 2019 in Turkey; 2020 in India, and none in Colombia and Ghana. The surplus figures for 2020 of Mexico, Chile, and India are explained by the massive contractions of activity brought about by the pandemic: -8.1% in Mexico, -5.8% in Chile, and -7.3% in India. In Colombia, in 2020, notwithstanding the 6.8% reduction of real GPD, its current account was in deficit. That year, in Ghana and Turkey, despite the pandemic, real GDP expanded, albeit at a much more moderate pace than in recent years.

Figure 3.3.1 Economic Growth and Current Account Balance:
Selected Countries 2006-21
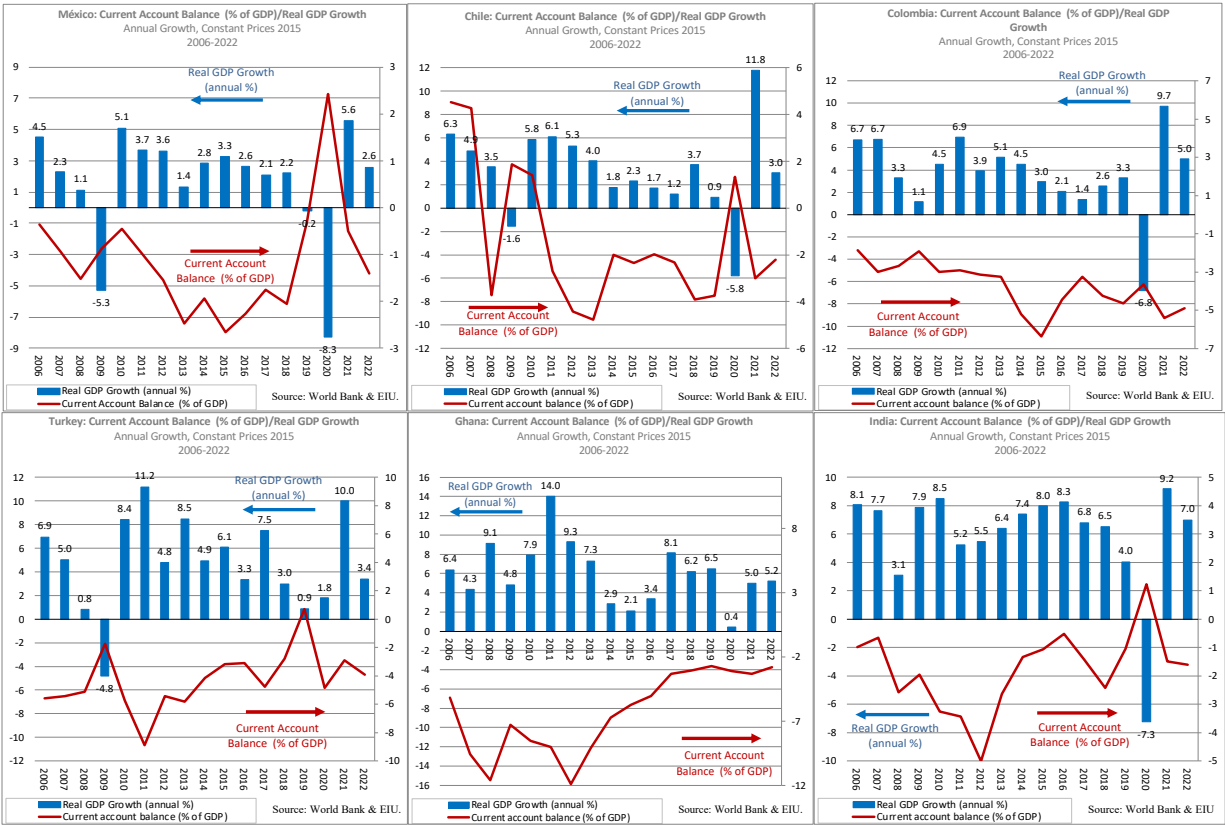
Note: Data for 2022 are estimates from the Economist Intelligence Unit dated February 2022.
Source: Authors´ calculations based on data from the World Bank Group (2022).

Turkey´s current account surplus of less than 1% of GDP in 2019 is associated with the persistent slowdown of its activity; a slowdown that began early in the decade and, with some fluctuations, reached its trough that year. Chile´s performance in 2006-07 and in 2010 introduces the only discrepant note in the pattern of these nations, where the current account is in surplus only in years of a contraction of GDP or of a significant loss of momentum in its pace of expansion. Its results for 2006-07 are related to the nation´s ability to profit from the commodity boom that, in Latin America, lasted from 2003 to 2008.

It is also worth noting the long term similarity of the three Latin American countries in the association between their current account and the pace of economic expansion. Such an association is not observed in the other three nations: Turkey, Ghana, and India. Indeed, in Mexico, Chile, and Colombia we detect three phases of business cycles: 2006-2009, 2010-2020, and 2021 onwards. In these countries, the first two phases are marked by a persistent slowdown in the economic expansion that culminates in an acute, short-lived, contraction of real GDP. In these contractions, the current account registered either a reduction of its surplus (Chile in the first years) or an increase of its deficit, except in years of recession.

The contractions of real GDP in the three Latin American nations were not due to internal imbalances. They were the direct consequence of massive external shocks whose adverse and abrupt impacts could not be canceled by macroeconomic stabilization policies. The recession of 2009 was brought about by the international financial crisis originating in the collapse of the subprime mortgage market in the United States and other developed nations. The recession in 2020 was the result of a massive, exogenous global shock: the Sars-Covid pandemic. The contraction of economic activity was sharp; followed very soon by a rapid, though not persistent, recovery.

The current account of the three nations deteriorated over the long term in the face of massive contraction of economic activity. This pattern is evident in the three nations, but not with identical magnitude or pace. In Mexico, the current account deficit is in general much smaller - between 1% and 3% of GDP - than in Chile and Colombia - between 2% and 6% of GDP. This difference may partially be explained by the fact that, in this period, the Mexican economy had, on average, a lower rate of expansion than the other two nations.

Now, in the three other BPC-nations examined here, the current account and growth paths differ from those of the Latin American cases just reviewed. Turkey - but not Ghana or India - shows a cyclical growth path similar to those of Mexico, Colombia, and Chile. It recorded a downswing from 2006 to 2009, with a swift recovery in 2010-11 that gradually lost momentum thereafter. Interestingly, its recent trough is dated 2019, while in the other economies it is in 2020, the year of the pandemic. In 2020 Turkey´s real GDP expanded by 1.8%, twice as much as in 2019. Since 2010-11, the nation seems stuck in a long-term slowdown.

Ghana and India´s growth trajectories in this period have some differences from those of the other national cases. First, neither shows the cyclical fluctuations of 2006-09 and 2010-2019, characteristic of the other four economies. Moreover, and quite strikingly, economic activity in both nations was not heavily affected by the international financial crisis of 2009. Indeed, that year, real GDP in Ghana - though four percentage points slower than in 2008 - still expanded 4.8% and soon rebounded at annual rates above 7%. In 2009, India´s real GDP grew 7.9%, more than double its growth in the previous twelve months. However, although both nations were virtually insulated from the impacts of the 2009 international financial crisis, they were not insulated from the effects of the next global crisis. The pandemic of 2020 hit them hard. Ghana´s economic activity, from expanding 6.5% in real terms in 2019, stagnated the following twelve months with an annual rise of barely 0.4%. India was hit much harder, from an increase of 4% in 2019, its real GDP contracted -7.3% in 2020.

There is one more major difference between the growth trajectories of Ghana and especially India and the other economies considered here. The former pair do not show unquestionable signs of a long-term slowdown in this period of analysis; a slowdown that is evident in the Latin American cases. Significant fluctuations notwithstanding, they expanded with no evident loss of medium-term momentum. The Ghanaian economy was very dynamic from 2006 to 2011-12, then slowed down in 2014-16, before regaining dynamism with annual rates of expansion between 6% and 8%, a pace similar to its earlier years. The Indian economy grew year after year at high rates, between 5% and 9%, during practically the whole period. It suffered a slowdown in 2008 and, later, in 2019 before its collapse in 2020; a collapse that was followed by a rapid rebound (9.2%) in 2021.

The current account´s performance of these three countries and its association with the rate of economic expansion also shows differences vis-a-vis the Latin American cases examined above. First, in all three economies, Ghana, India, and Turkey, between 2006 and 2011-12, their current account deficits increased as a proportion of GDP; a tendency that was subsequently rapidly reversed. In the first two nations, since 2017 the deficit remained close to 2% of GDP, even though GDP continued to expand at a robust pace. This is a striking difference from the Latin American cases, whose current account deficits tended to widen despite the slowdown in their rates of economic expansion.

The evolution of the current account in Ghana and Turkey is clearly associated with the changing pace of their activity. But, in the Indian case, the explanation must be found elsewhere. Indeed, in the last decade, it combined fast expansion with a three point reduction in its current account deficit. If this trend is sustained, it would imply that India is succeeding in transforming its productive structure to alleviate the balance of payments constraint on its growth. A close look at its exchange rate, industrial, and foreign trade policies is necessary to explore this important issue

More on long-term economic growth in BPC-economies

As Ajit Singh stated, a country is balance-of-payments constrained when the minimum long-term rate of growth of its GDP needed to absorb its increasing labor supply is associated with an unsustainable current account deficit.[11] In this light, the six economies considered here are under-performers as evidenced by their labor markets, which are plagued by informality, underemployment, and the precarious earnings of vast proportions of workers leading to unacceptable levels of poverty. Certainly, institutional factors such as subpar rules and regulations on labor rights and trade unions´ representation help to partially explain such poor performance. But a key reason behind it is their insufficiently dynamic rates of economic growth.[12] Another way in which the balance of payments constraint undermines the growth potential of these economies is due to the high dependence of their fixed capital formation on imported machinery and equipment. Due to such dependence, upswing phases in their business cycles are marked by acutely rising imports of capital goods, thus weakening the current account deficit with the risk of, so to speak, an 'overshooting' of the 'k' ratio identified in the analytical model. In such cases, changing perceptions of the adequacy of "k" may cut the boom short for fear of a balance-of-payments or an international debt crisis.

To explore some of these matters, the following figure depicts the evolution of real GDP of the six nations considered here, in logarithms and with trends estimated with a standard Hodrick-Prescott filter. It should be noted that the growth trends estimated by statistical filters do not serve to judge how close or far away these economies are from their full employment trajectories or their maximum potential rates of expansion.
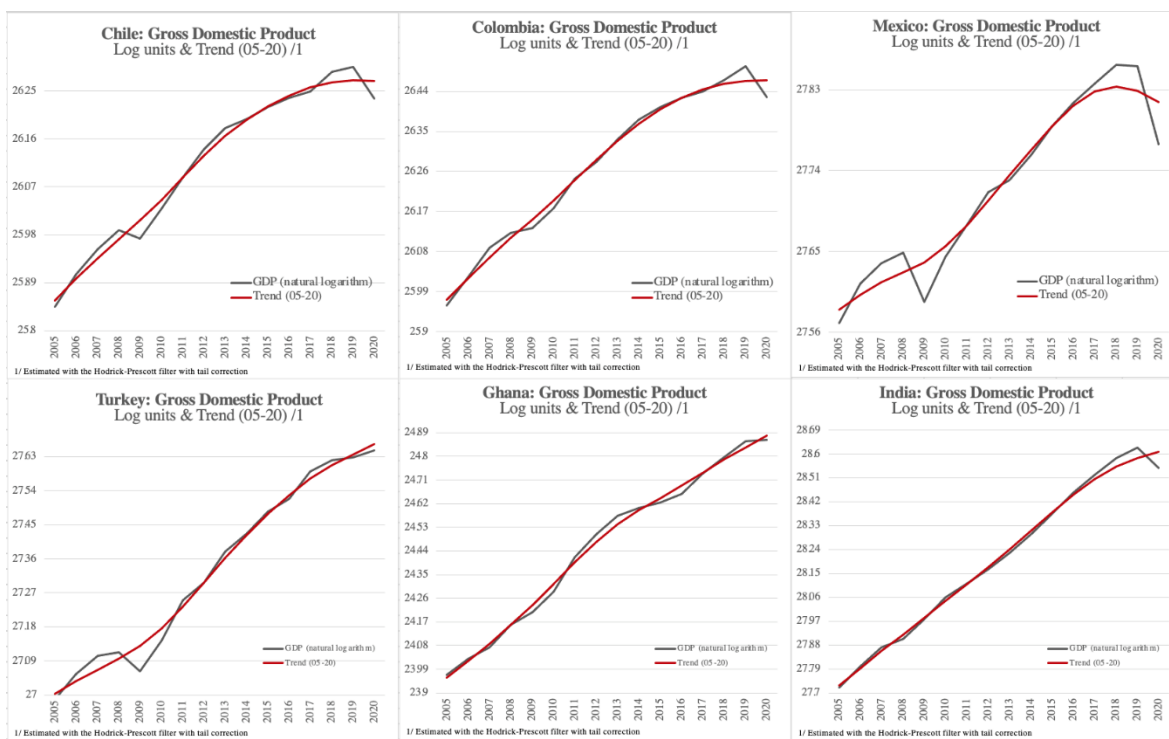
---

[11] See Singh (1977).

[12] Space limitations prevented us from carrying out a comparative analysis of the labor markets and the evolution of employment and wages in these six countries.

Figure 3.3.2. Real Gross Domestic Product: Selected Countries 2006-2020.
(Trend and Observed Value Data in Logs)

Note: Estimated with the Hodrick-Prescott filter.
Source: Author´s own calculations based on the World Bank Group (2022) data.

The figure reveals that the three Latin American economies selected expanded at a slower pace than their counterparts, registering a slowdown in the last four or five years and a contraction in 2020. The trajectories are different in the other three countries: more dynamic and with no loss of stimulus pre-pandemic. The contraction in 2020 was not as harsh as in the Latin American cases. Though not shown in the figure, all six economies had a strong recovery in 2021.

In our view, their different growth trajectories have implications for the challenges faced today. In 2023, Latin American economies arrive in a weaker position, with greater risks of being pushed into medium-term stagnation, especially if fixed capital formation falls considerably. A priori, the current global shocks may have more painful consequences in the region, sinking it deeper into the trap of slow growth in which it has been stuck for some time. Certainly, the current global shock in combination with the West´s shift to contractionary policies will affect Ghana, Turkey, and India, but perhaps not as much. Clearly, our comment needs more detailed analysis to assess, for each of these six nations, the weight of the exogenous shocks' impacts through the diverse channels of transmission.

This overview of the current account and economic growth trajectories of the six countries selected over 2005-2021, a period covering two global shocks followed by major changes in developed economies´ fiscal, monetary and trade policies, including tapering and QE, sheds

17

some light on the challenges of the developing world today, in the midst of new global shocks. The first lesson is that global shocks do not necessarily impact all developing countries in the same direction or magnitude. Their impact depends on: i) the origin, nature, intensity, and duration of the shock, ii) the channels of transmission to different trade and financial markets worldwide and the exposure of each particular economy to them, iii) the structural characteristics of the developing country´s insertion in global markets, including most specifically, in BPC-terminology, the income and price elasticities of its foreign trade, and iv) as pointed out in the analytical model, the country´s financial vulnerabilities.

These four factors define the dynamics and challenges of BPC-economies to secure the necessary external financing - via short-term capital flows, long-term credit, and even net flows of FDI - to keep growth on a sustainable path. As we examine in the next section several financial vulnerabilities of BPC-economies originate in the balance sheets of their domestic banks as well as private and state-owned firms. In particular, the currency composition of their assets and liabilities have a significant influence on the capital markets´ risk perceptions of the sustainability of the trajectory of foreign debt under global shocks.

A second conclusion is that global shocks and substantial changes in monetary, fiscal, and trade policies of the industrialized and financial centers of the world - the United States, the European Union, and the United Kingdom - have, with few exceptions, unavoidable impacts on balance-of-payments constrained economies. The latter are vulnerable to such exogenous phenomena independently of whether they have or do not have so-called sound macroeconomic foundations, as reflected in low inflation and budgetary management with minimum fiscal deficit. Their systemic vulnerability to such phenomena is rooted, as explained in the analytical model put forward in the previous chapter, in the way they are inserted in global trade and international financial markets. In these nations the balance of payments not only limits their long-run economic growth but makes their trajectories more unstable and less resilient to global shocks.

In BPC-economies, fiscal austerity and nominal stability do not insulate them from external shocks coming from global markets or shifting economic policies of the developed world. Such macro-performance may, to a certain extent, serve to widen their policy space, to enact countercyclical strategies to reduce shocks´ adverse impacts, including, in principle, providing better access to external financial support. Whether this *a priori* (pre-shock) potentially better access to additional financial support of a given economy becomes, *a posterior*i, an effective option is far from certain. Global shocks, by definition, affect numerous developing nations, making a vast majority of them suddenly in urgent need of massive emergency funding. In this scenario, economies with a track record of increasing foreign indebtedness, high fiscal deficit, and price instability, with ballooning trade deficits may have a much smaller policy space and more restricted access to extraordinary external financial support in an emergency. For emerging BPC-economies (with or without, so called, strong macro fundamentals) the economic landscape for 2023 looks very complicated.

The challenge for the developing world may become practically insurmountable in the following months if the adverse global shocks - war in Ukraine plus new waves of COVID-19 - gain momentum and are combined with a shift in developed economies towards monetary contraction and a premature return to fiscal austerity. The pressure on them may become intense as their net exports weaken, their foreign debt interest payments increase

with the overall rise in borrowing costs, FDI stagnates or contracts and short-term capital move away to safer assets. Geopolitical considerations in FDI and financial investment, which have gained so much relevance in the aftermath of Russia´s invasion, bring additional headwinds to many economies in the developing world.

This complex scenario finds some BPC-countries in dire straits, especially those that borrowed heavily in foreign currency to fund countercyclical policies to face the pandemic. For several of them it may be very difficult or outright impossible to comply with debt repayment obligations. In addition, current account trajectories combined with economic recoveries that appeared sound albeit moderate, can be abruptly derailed as the debt-repayment obligations surpass the inflow of fresh funds and put stress on Central Bank´s foreign reserves. This challenge may scale up so drastically that it puts the global financial and international trade architecture under extreme duress. A dramatic proof that an upheaval of the current system is long overdue.[13]

A third reflection is that the balance of payments constraint on developing economies may have, regional, or perhaps more accurately, historical, determinants, as well as national ones. These impose certain common limitations on Mexico, Colombia, and Chile in matters of economic growth and balance-of-payments. A superficial examination suggests that the challenge of the Latin American nations analyzed here to find financing for development in 2022 is more daunting than for Ghana or India. Their foreign exchange needs, as proxied by their current account deficit, is higher relative to their GDP, than those of the latter two countries. Moreover, Latin America, entered 2022 in the midst of a growth slowdown and in need of substantial foreign finance to merely maintain its moderate pace, let alone give it a more dynamic boost. India, on the other hand, began 2022 with a track record of strong economic expansion and a more moderate current account deficit.

A fourth comment is that, as we saw, the adverse global shocks of the past 16 years had a considerable effect on these BPC-economies, slowing their growth and sometimes even pushing them into deep but short-lived recessions. Their fast rebound was possible only because of the prompt, massive, and firm countercyclical monetary and fiscal responses of the developed world to the 2009 and 2020 crisis. The same factors that explain the fragility and the vulnerability of BPC-nations to adverse global shocks, also explain the positive response of their economies, including employment, and trade, to the changes in the West´s macroeconomic and other key policies.[14]

Current account composition: trade balance, primary and secondary income[15]

The BPC-growth analytical perspective originally focused on the trade balance rather than the current account. This approach was, unfortunately, wanting in the case of developing nations that are systemic recipients of transfers, in particular, of foreign remittances. Or for those with major net inflows or outflows due to payments to fixed capital (profits), to external

---

[13] Gallagher and Kozul Wright (2022) go further and convincingly argue for a need for new world economic order with deep reforms on the governance of global money, finance, and trade.

[14] The US´s macroeconomic policies in the early 1980s were instrumental in pushing Latin America into a deep recession, inaugurating what is now known as "the lost decade" in the region´s development.

[15] The model developed in this paper, for the sake of parsimony, considers only interest payments on debt. But a trivial expansion of it can complete the analytical landscape described in this section to include foreign remittances and profits transfers.

debt (interest payments) or labor (earnings abroad).[16] Figure 3.3.3 illustrates, for the six countries, the evolution of the current account and its three components: trade balances, primary income, and secondary income.

Figure 3.3.3 Current Account Composition: Selected Countries, 2005-2020
(Millions of US Dollars)
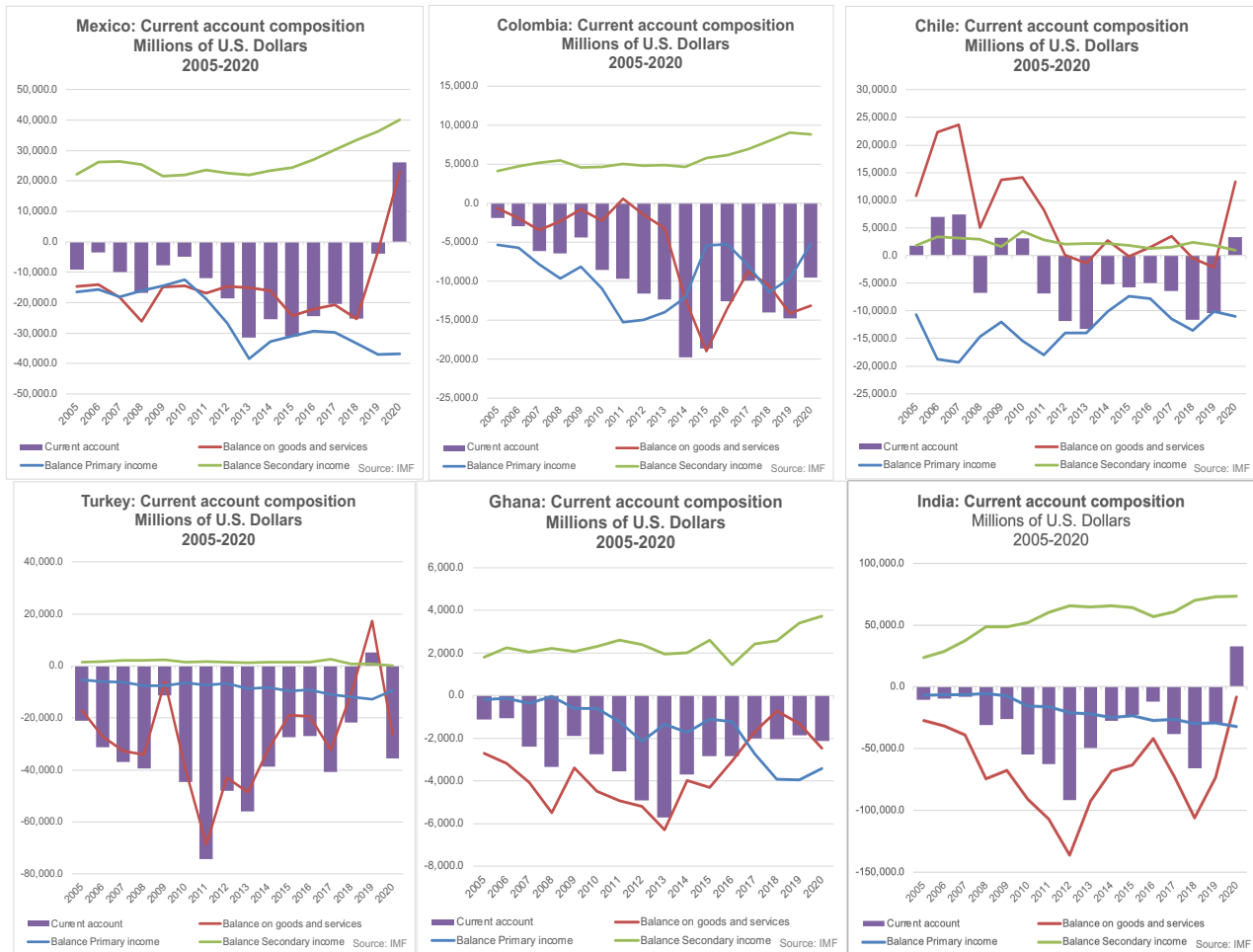
Source: Author´s own calculations based on data from the IMF Balance of Payments Statistics (2021).

In the six economies, the trade balance, i.e., net exports of goods and services, is the dominant force in the evolution of the current account. In all cases, the figures for primary income, mainly composed of family remittances, are systematically in surplus. In the case of Mexico, Colombia, Ghana, and India their magnitude shows they are clearly an important source of financing of the current account. In Chile and Turkey, their net contribution is negligible. On the other hand, the net balance of primary income, where interest payments and profit transfers are conspicuous, is always in deficit. In Turkey, India, and Ghana (up until 2017) its magnitude is not large relative to the current account deficit. This is not the case in Latin

---

[16] For the definitions of primary and secondary income in balance-of-payments see IMF (2009).

America. In Mexico, in Chile for the whole period, and in Colombia up until 2014, the deficit in primary income is systematically larger than the overall current account net result.

Another question that needs to be explored is why, except for a spike in Ghana in 2017-18, non-Latin American countries´ deficit in primary income shows a smooth, moderate increase through the period of study, but in Mexico, Chile, and Colombia the pattern is very different. Mexico´s deficit was relatively constant in 2005-11, then rapidly expanded the following two years and stabilized after that at around US $35 billion dollars. Colombia´s deficit also increased relatively quickly in 2005-11 and then declined until 2016, subsequently fluctuating around $7.5 US billion. Chile´s figures show a different pattern, with a persistent reduction until 2015 after which it stabilized at around US $12 billion dollars.

The evolution of the current account of these six nations at this level of disaggregation allows us to derive some tentative conclusions on potential vulnerabilities and strengths of BPC-economies in face of the current global shocks and likely policy changes in developed economies. The first one is that, in cases where outward migration has been a safety valve for the labor market, net flows of secondary income (mainly family remittances) may become a steady and important source of foreign exchange. It can be especially relevant as a countercyclical source of funds to partly alleviate the adverse impact of global shocks or unfavorable policy changes in the industrialized and financial centers. Their importance is heightened in critically adverse episodes to the extent that their volume, measured in hard currency, does not decrease substantially. This was the case in 2009 in all six nations and during the pandemic in 2020. In fact, the net surplus of secondary income increased in all of them in 2020. Further, their volume multiplies considerably when measured in domestic currency *pari passu* with exchange rate depreciations which are normally a part of macroeconomic stabilization packages. Given that the recipient families of remittances tend to be, if not extremely poor, far from well off, these flows have a progressive and socioeconomically relevant palliative impact in hard times.

On the other hand, net payments from abroad on primary income are always a drain on the foreign exchange resources of BPC-economies. As the experience of Mexico, Colombia, Chile and Ghana show, such net overall outflows can fluctuate sharply. In times of adverse global shocks, the deficit on this account may acutely increase as borrowing costs in the international capital markets rise and short-term capital, if not subject to effective controls, abruptly leaves to seek safer havens in developed economies. These phenomena limit the availability of foreign exchange for BPC-economies, sometimes derailing growth trajectories that seemed sustainable. Sudden, major exchange rate depreciations put additional stress on the public budget as well as on the balance sheets of private firms and SOE, thus weakening fixed capital formation and domestic economic activity.

The persistent deficit in the current account´s net balance of primary income reflects other financial vulnerabilities of these six BPC-economies. On the one hand, it is a consequence of the presence of major foreign and transnational conglomerates that invest in developing countries (inward FDI), way over and above the outward FDI carried out by companies from these nations. On the other hand, it reflects the weight of the balance-of-payments constraint on the need for external funds to cover the trade deficit contingent on economic growth. As the BPC-literature argues, relying on external financial resources is unavoidable in these nations. Their perennial challenge is to maintain economic growth while simultaneously

keeping external indebtedness on a sustainable trajectory. There is, unfortunately, no unique, indicator of such sustainability. Global shocks may abruptly collapse an economy´s export market, deteriorate its terms of trade, and virtually overnight dramatically derail a foreign debt trajectory that just a few weeks before seemed perfectly sound. This can also occur due to unforeseen major changes in developed countries policies that tighten global liquidity conditions, increase borrowing costs worldwide and alter the perception of a BPC-country´s risk profile in the eyes of credit-rating agencies. Table 3.3.1 presents three distinct, not unrelated, indicators of the foreign debt track record for five countries in our sample.[17]

Table 3.3.1 Debt Service, Selected Indicators: Selected Countries 2006-2022

Table 1: Debt Ratios						
i) Debt service to exports (%)						
	2010	2016	2017	2018	2019	2020
México	10	19	15	12	12	16
Colombia	20	33	41	40	32	50
Ghana	3	9	10	12	8	12
India	7	17	10	11	9	15
Turkey	37	37	38	35	34	41
ii) External debt stocks to exports (%)						
	2010	2016	2017	2018	2019	2020
México	76	104	99	92	93	105
Colombia	133	253	230	218	233	357
Ghana	88	119	108	101	102	137
India	81	102	101	93	99	111
Turkey	185	200	201	183	175	207
iii) External debt stocks to GNI (%)						
	2010	2016	2017	2018	2019	2020
México	24	40	39	38	38	45
Colombia	23	43	41	41	44	58
Ghana	26	39	39	36	41	44
India	18	20	20	19	20	22
Turkey	39	48	54	58	59	61
						Source: World Bank Group

Source: Author´s own calculations based on the World Bank Group (2022) data.

First, note that the three indicators, debt service to exports, external debt to exports, and external debt stock to gross national income, deteriorated in 2020 in the face of the pandemic. Partly this was due to the reduction of the denominators, partly due to the depreciation of the exchange rate. And in some of these nations there was an increase in the stock of foreign debt to fund governments countercyclical reactions to the pandemic.

Second, the deterioration in 2020 in the first indicator, debt service to exports, in Mexico, Ghana and India, brought it to levels seen three or four years before. In Colombia and Turkey, such figures had not been seen in more than a decade. The same occurs in the case of the third indicator, debt to GNI, in the five countries; the ratios registered for 2020 are unedited in the whole decade.

---

[17] The source did not register data for 2021, and no information for Chile.

Third, note the difference in debt indicators in time and between countries. Debt ratios that at a certain point in time are considered satisfactory for one country by the international and national financial communities, may be totally out of bounds for another country. These differences, within the restricted sample we have, do not seem to have a strong regional determinant. For example, Colombia's first and second indicators of foreign debt are three times higher than Mexico's. Regardless, the information suggests that developing world´s financial vulnerabilities have increased in recent years, and, with them, the risks and challenges posed to them by current global shocks.

Exports and imports of goods and services

Having explored, from an aggregate perspective, the evolution of these countries' current accounts, we move to analyze their external trade. Figure 3.3.3 shows the changing shares of export and imports relative to GDP, based on data at constant prices, for 2005-2020.[18] The evolution of these coefficients reveals certain vulnerabilities of the selected BPC-economies rooted in their insertion in global markets of goods and services. Indeed, for the vast part of the period in these six countries the share of exports in GDP was lower than of imports. Thus, but for a few years, the trade balance was in deficit in real terms. In the case of Mexico, one of the semi-industrialized economies most open to international commerce, both imports and exports increased practically every year as a proportion of GDP.

---

[18] These trade ratios are highlighted in equation 11 of the analytical model built in the previous chapter. Similar ratios, calculated with data at current prices, are presented in the Appendix

Figure 3.3.4 Exports and Imports of Goods and Services, as a Proportion of GDP: Selected Countries 2006-2022.
(Percentages Based on Data at Constant Prices)
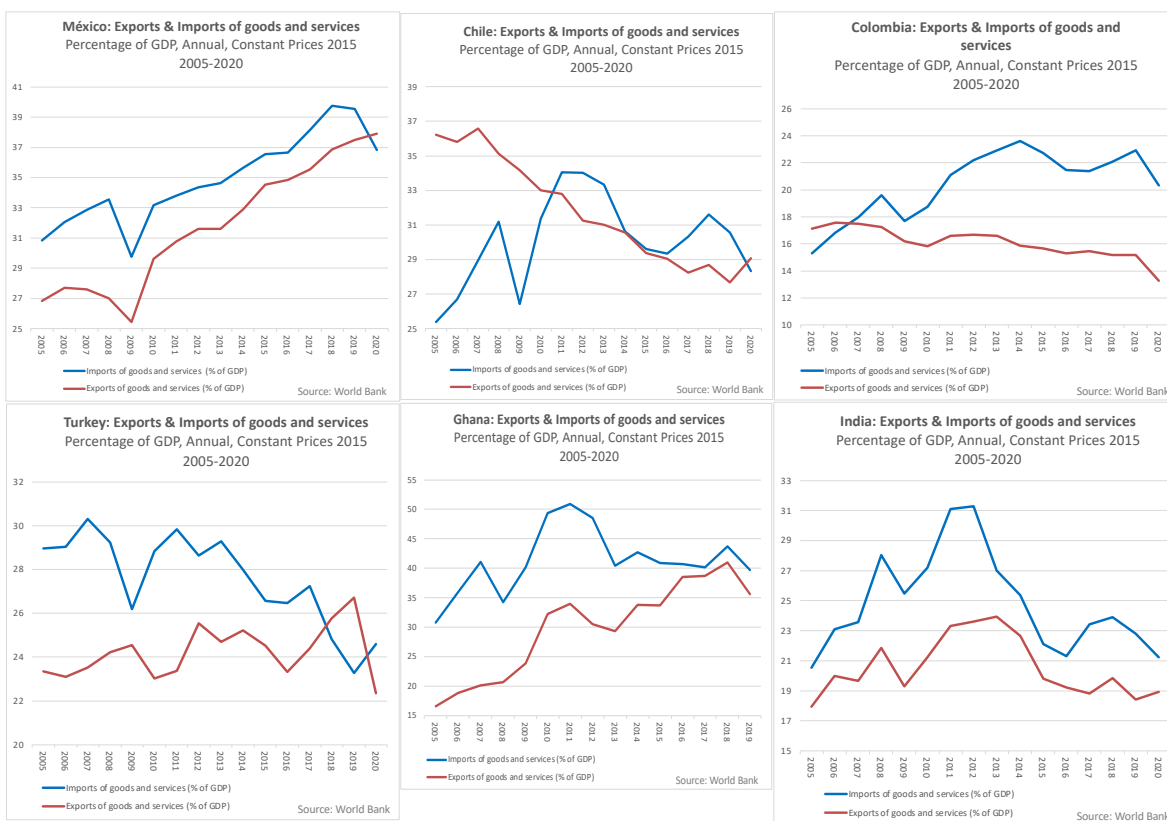
Source: Author´s own calculations based on the World Bank Group (2022) data.

Both exports and imports suffered a major decline in 2009. In 2020 the share of imports fell while that of exports kept rising to register a surplus for the one and only time in these 16 years. In this process, the share of imports climbed steadily from 32% of GDP in 2005 to its peak of 39% in 2018, and then fell to 37% of GDP in 2020. Its exports´ share increased from 27% of GDP in 2005 to 38% in 2020.

In Colombia and Chile, the share of exports in GDP declined systematically; in the former case from 36% to 29%. In the latter from 27% to 23%. The impact of the 2009 and 2020 global shocks was reflected in a reduction in the share of imports in GDP, in both countries. The response of exports in these two episodes does not show a systematic pattern. In Chile, in 2009, their share of GDP continued the declining trend recorded since 2007. In 2020 it increased one percentage point, slightly over imports, thus registering a surplus in real terms for the first time in a decade.

The trade pattern of the other three economies in the sample also show a decline of the share of imports in GDP in 2009, in 2019 in Turkey and Ghana, and in 2020 in India. The trajectories are far from homogeneous. In Turkey they follow a declining trend, with some fluctuations. In Ghana the share of imports climbed nearly 20 points between 2005 and 2011

to reach 50% of GDP, but subsequently fell and stabilized around 40% from 2013 onwards. Its export share steadily increased, but never topped the share of imports. In India, both shares increased from 2005 to 2009-10, and then declined to reach practically the same levels registered at the beginning of the period.

To complement the previous analysis of foreign trade, Table 3.3.2 reports, for each country, the average annual rates of growth of GDP, exports, and imports in real terms for 2006-2019.

Table 3.3.2 GDP, Exports, and Imports: Selected Countries: 2006-2019
(Average Annual Rates of Growth, %)

Table 2: Average Annual Growth Rate of each variable for 2006-2019		
Country	Variable	Average Annual Growth Rate of each variable for 2006-2019
Mexico	Real GDP Growth (annual %)	2.06
	Real Exports of goods and services (Annual Growth %)	4.53
	Real Imports of goods and services (Annual Growth %)	3.89
Chile	Real GDP Growth (annual %)	3.27
	Real Exports of goods and services (Annual Growth %)	1.30
	Real Imports of goods and services (Annual Growth %)	4.65
Colombia	Real GDP Growth (annual %)	3.92
	Real Exports of goods and services (Annual Growth %)	3.02
	Real Imports of goods and services (Annual Growth %)	6.97
Ghana	Real GDP Growth (annual %)	6.56
	Real Exports of goods and services (Annual Growth %)	14.23
	Real Imports of goods and services (Annual Growth %)	9.49
Turkey	Real GDP Growth (annual %)	4.68
	Real Exports of goods and services (Annual Growth %)	5.69
	Real Imports of goods and services (Annual Growth %)	3.07
India	Real GDP Growth (annual %)	6.65
	Real Exports of goods and services (Annual Growth %)	6.86
	Real Imports of goods and services (Annual Growth %)	7.45

Source: Author´s own calculations based on the World Bank Group (2022) data.

The data confirms that in the three Latin American countries economic growth was, on average, slower. The Mexican economy, the most laggard one, expanded at an average annual rate of 2.05%, Chile at 3.3%, and Colombia at 3.9%. By contrast the rate for Turkey was 4.7%, for Ghana 6.6%, and India 6.7%. One may conclude that though all these economies are balance of payments constrained, their trade structures and specific financial vulnerabilities are not necessarily identical and have thus translated into distinct growth trajectories. The heterogeneity is also evidenced in the differences in average rates of expansion of exports and imports.

Among the Latin American cases examined, only Mexico's exports expanded faster than its GDP, twice as fast. Its imports also grew rapidly but less than its exports. In Chile and in Colombia, imports expanded faster than exports. In Ghana, Turkey and India, exports seem

to lead their economic growth, expanding at higher rates than their GDP. In Ghana and Turkey, but not in India, the growth of exports was more intense than of imports.

The heterogeneity of these six countries´ trade and growth paths is a useful reminder to avoid simplistic or mechanistic interpretations of the BPC-model. Care should be taken in drawing any generalizations on the short-term relationship between trade and economic growth. In particular, it would be erroneous to conclude from that data that there is no close relation between short-term changes in the dynamism of exports and of real GDP. In BPC economies, changes in the former tend to be strongly correlated with changes in the latter. The figure shows the evolution of the annual variation in exports and GDP, for each of the six economies here selected.

Figure 3.3.5 Real GDP and Exports: Selected Countries, 2006-22
(Annual Rates of Growth, %)
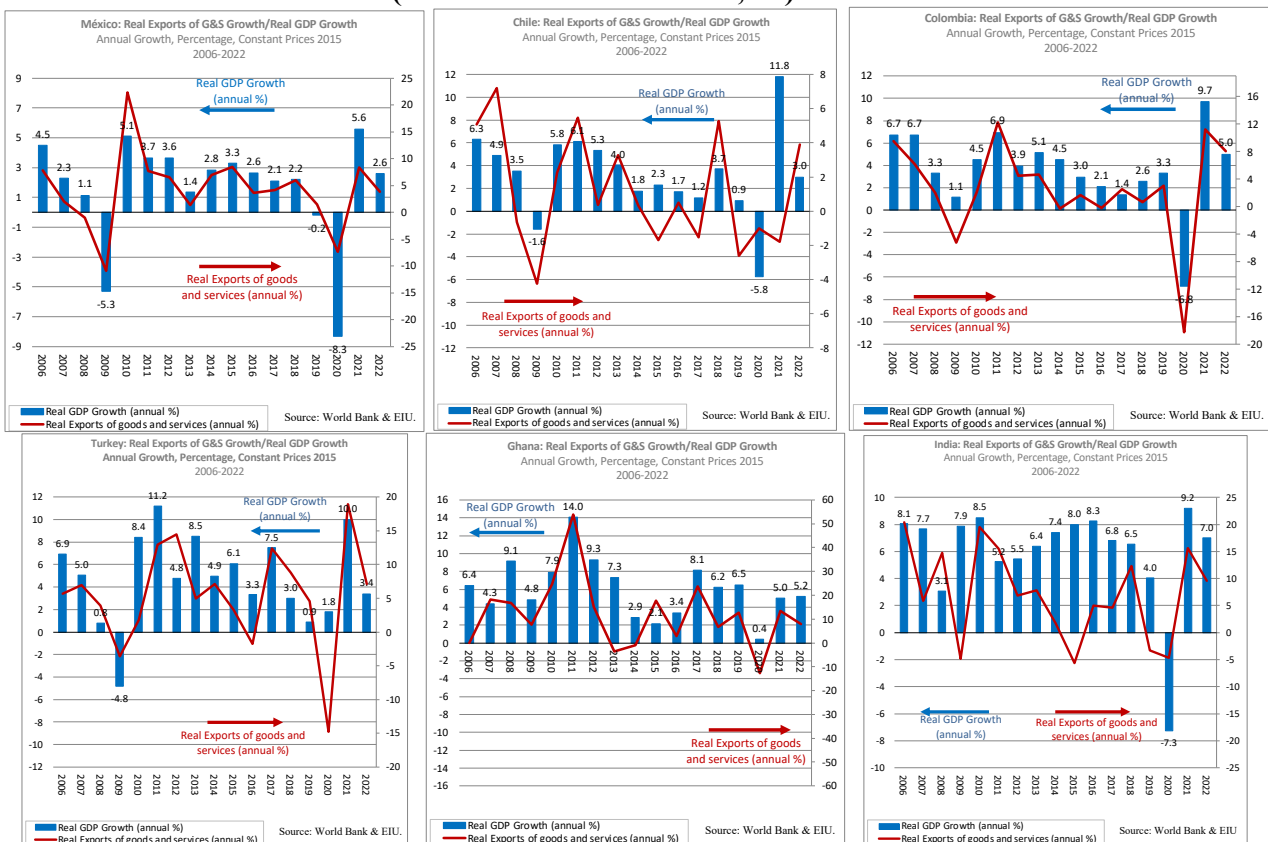
Source: Author´s own calculations based on the World Bank Group (2022) data. Data from 2022 are estimated by EIU.

The data, albeit without a formal statistical analysis, convincingly illustrates a strong coincidence between the direction (not the magnitude) of the annual changes of exports and of real GDP. The only conspicuous exception was India during 2012-18. Thus, it seems safe to conclude that in the current context a key challenge these nations must face is the slowdown in their exports. This slowdown will likely be only partly compensated by a slowdown of imports.

Main exports and imports: values, and countries of destiny and of origin

To have a better idea of the magnitude of the adverse impact of the current global trade shock on these economies it is important to understand the composition of their exports and imports by type of product and country of destination or origin. The Appendix provides data for 2019 for the ten to 15 most important products traded by each country.

The comparative picture that appears is heterogeneous, evidence of the diversity in the trade and in production structures of these six economies. Mexico specialized in the exports of manufactures mainly to the United States. Its most important imports originate mainly in the US but also in China and are also mainly manufactures and refined petroleum. Chile exports primarily minerals (copper) and natural-resources intensive products like fish, fruits, and wine. Its main client is China, followed by the US, Japan, South Korea, and Brazil. Crude and refined petroleum gas, cars, and trucks make up the lion´s share of its imports; its countries of origin are mainly China and the United States. Colombian exports are mainly crude and refined petroleum, coke and coal briquettes, coffee, flowers, and some other farm products. Its main client is the US, followed at a distance by China, Panama, and several European countries. Its import basket, coming mostly from China and the US, is composed of refined petroleum and manufactures.

Ghana exports cocoa beans, butter and paste, gold, and other farm products, selling them to a wide variety of nations, with Switzerland, China and India being its main clients. Its import basket consists mainly of manufactured goods bought from China and Nigeria, as well as from the US, the UK, and several countries in Europe. India has a much more diversified export mix, selling minerals, oil manufactures, and some farm products, mainly to the US, the United Arab Emirates, China, and other Asian countries. It imports mainly crude and refined petroleum, gas, coal briquettes, and some manufactured goods. Turkey is an exporter of manufactures to several countries in Europe, Asia and the US. It imports petroleum products and manufactures from Germany and China, and to a lesser extent from Russia, the US, the UK, South Korea, and various European nations.

The global shock´s impact on these six nations with respect to foreign trade will depend crucially on the evolution of their individual terms-of-trade, but also on the changes in their trade volumes in real terms. Trade protectionist schemes imposed by the West on environmental grounds, and industrial policy changes to re-source key products due to geopolitical considerations or to prioritize resilience over just-in time cost-benefit will present a further challenge.

The rise in world population and the improvement in living conditions in developing regions such as China, India, and Africa created a higher demand for agri-food commodities. Commodity producer countries have exploited their natural resources to respond to the growing demand for food, creating severe global warning and carbon neutrality concerns. As a result, new regulations to make trade more environmentally sustainable have recently been adopted. The objective of the new green legal framework is to create a set of standards, certifications, and requirements that would prevent the trade from being disruptive to the environment. The production of agricultural commodities is among the main drivers of

deforestation which is a major factor in climate change.[19] Thus, environmentally friendly regulations will increasingly affect the international trade of agri-food commodities.[20]

In 2021, the European Commission (EC) published the Zero Deforestation regulation, which is currently under discussion in the European Parliament. According to the proposal, commodities will not be allowed to be imported to or exported from, or made available in the EU market if (a) they are not produced in accordance with the relevant legislation of the country of production; or (b) they are not "deforestation-free", i.e., if they were produced on land subject to deforestation or forest degradation.[21] In this new regulation, the EU defines actions to curb the EU-driven deforestation caused by agricultural expansion. It covers six types of agricultural commodities - beef, soy, palm oil, timber, cocoa, and coffee - and will prohibit the importation and placing into the EU market of products that are not deforestation-free, based on a bench marking system and compulsory due diligence obligations.[22] A similar policy, the Forest Act, is currently being discussed in the US Congress as well.[23]

The growing trend toward sustainable trade regulation in markets such as Europe and the US further constrain the balance of payments of emerging markets economies (EMEs) as trade flows of agricultural products face potential cost increases (caused by due diligence process and certifications) or supply disruptions. Several of the countries in our sample are critical global players in the production of commodities and are set to comply with deforestation regulations. For instance, Ghana relies heavily on the export of cocoa. According to the Observatory of Economic Complexity (OEC 2021), in 2020, Ghana exported $1.28 billion in cocoa beans, making it the world's second-largest exporter of cocoa beans. Almost half of this export is absorbed into the European Union market (particularly by the Netherlands, France, and Switzerland), while 10% goes to the US.

In Colombia, cocoa production has increased by almost 66 percent between 2011 and 2021, reaching over 70 thousand metric tons (Statista, 2021). Colombia is also among the top global producer and exporters of palm oil, another commodity threatened by deforestation-free regulations. According to COMTRADE, in 2021, Colombia was the leading country in palm oil production in Latin America, with an estimated output of 1.7 million metric tons; globally it is third after Indonesia and Malaysia. The forest industry in Chile is another example of commodity exports that may be restricted unless compliance with the new green framework is reached. The forestry sector is the third largest exporting industry in Chile (after mining,

[19] Benhin, J. K. (2006). Agriculture and deforestation in the tropics: a critical theoretical and empirical review. AMBIO: A Journal of the Human Environment, 35(1), 9-16.
[20] Carter, S., Herold, M., Avitabile, V., de Bruin, S., De Sy, V., Kooistra, L., & Rufino, M. C. (2017). Agriculture-driven deforestation in the tropics from 1990–2015: emissions, trends, and uncertainties. Environmental Research Letters, 13(1), 014002.
[21] According to FAO, "Deforestation" means the conversion of forest to agricultural use, whether human-induced or not. "Forest degradation" means harvesting operations that are not sustainable and cause a reduction or loss of the biological or economic productivity and complexity of forest ecosystems, resulting in the long-term reduction of the overall supply of benefits from forest, which includes wood, biodiversity and other products or services (https://www.fao.org/forestry/18222-045c26b711a976bb9d0d17386ee8f0e37.pdf)
[22] Hargita, Y., Giessen, L., & Günter, S. (2020). Similarities and differences between international REDD+ and transnational deforestation-free supply chain initiatives—a review. Sustainability, 12(3), 896.
[23] FOREST Act of 2021.
 https://www.congress.gov/bill/117th-congress/senate-bill/2950/text?r=2&s=2

fishing, and aquaculture) and represents around 9.1% of total exports. The main destination is China (32%), followed by the US (16.2%), Japan (7.6 %), and South Korea (6.6 %).

Hence commodity exporters need to implement forward looking policies that will allow them to comply with forthcoming regulation and alleviate the environmental external constraint sooner than their competitors. Countries that export deforestation-free products will gain market share compared to those competitors unable to implement adequately sustainable value chains.

There are broad types of constraints imposed by the new environmental regulation:
1. Shock in Prices: the environmental framework could increase production costs, particularly for those countries where value chains are composed by small and medium enterprises (SMEs) that lack access to technology and financing to implement traceability systems required by new regulations. The costs of R&D and implementation may squeeze profits and make commercialization more expansive.
2. Shock in demand: Countries that import commodities may be encouraged to reduce the number of suppliers in their value chain to limit the potential risk of buying products from deforested areas. Countries that comply with environmental regulation late risk being replaced by other countries and could experience a fall in demand.

3.4 Financial vulnerabilities: an analysis from the capital account perspective

Practitioners have traditionally identified two types of drivers for capital flows (BIS, 2021) to emerging economies. First, so called *"pull factors"*, domestic characteristics such as GDP growth rate (observed and expected), inflation, debt ratios, risk premiums, unemployment, financial deepness, and government stability. Second, external forces or "*push factors"*, such as international liquidity and monetary policy (observed and expected), investors' propensity to risk, terms of trade, and commodity prices.

In the aftermath of the Great Financial Crisis (GFC), expansionary monetary policy adopted in developed countries, such as Quantitative Easing (QE)[24] marked an important structural break in global finance; it generated an unprecedented global liquidity that was allocated towards emerging market securities in search of higher yields (Turner and Tunc, 2016).[25] This led to two main consequences for capital flows: i) global financial conditions became a crucial driver for capital flows to EMEs, even more than in advanced economies (AEs) (Akyuz, 2017); ii) the types of cross border flows have changed in the last decade as extraordinary liquidity coupled with increasing financial sophistication (BIS, 2021). As a result, recent episodes of capital flight, such as the taper tantrum episode of May 2013, are crucial to understanding the modern behavior of the variable k in equation (13). That month, during a testimony to the financial committee, Ben Bernanke, at the time governor of the Federal Reserve, announced that the FED was ready to taper - i.e., to reduce - the monthly

---

[24] Quantitative easing (QE) is a form of unconventional monetary policy in which a central bank purchases longer-term securities from the open market in order to increase the money supply and encourage lending and investment (Investopedia, 2022)

[25] Fratzscher, Lo Duca, and Straub (2013), using a sample of 65 countries, analyze the global spillovers of the Federal Reserve's unconventional monetary policy measures, concluding that Fed policies functioned in a procyclical manner for capital flows to EMEs and a counter-cyclical way for the US, triggering portfolio rebalancing across countries out of EMEs into US equity and bond funds.

purchase of Treasuries and mortgage-backed securities that it had engaged in for more than three years as part of the QE policy. The announcement surprised markets, setting off an international chain reaction. With lower bond purchasing from the FED investors expected a raise in US interest rates and, in the weeks following the announcement, portfolio managers rushed to buy US Treasuries at the expanse of emerging market assets. The higher yields offered by US fixed income markets made EMEs' assets less attractive, and peripheral countries suffered unprecedented level of capital outflows. This sequence of events, known as a *taper tantrum*, underlines how modern financial complexity could determine sharp adjustments in the financial account, leading to severe impacts for EMEs. Countries such as Brazil, Turkey, India, Indonesia, and South Africa – at the time renamed the "fragile five", suffered from massive outflows, currency depreciation, inflation, and credit rating downgrades.

Recent surveys of the drivers of capital flows (tables 3.4.1 and 3.4.2) confirm the growing importance of financial global push factors in determining "k". Koepke, (2018) and the results of the Bank Regulation and Supervision Survey (2021)[26], both show that in the aftermath of the global financial crisis of 2008–2009 the relevance of financial push factors such as global risk aversion and international liquidity increased substantially.[27] For instance, Alba et al (2021) explore the relationship between debt flows to emerging economies and global risk aversion for Mexico, Brazil, South Africa, India, Turkey, and Chile, and find that for the period 2009-2020 global risk aversion tends to be more important in explaining capital flows, while idiosyncratic factors play a relatively less important role. In periods of low volatility, however, idiosyncratic factors, such as spreads between domestic and foreign interest rates, influence the dynamics of these flows. The contribution of global risk aversion to the evolution of debt flows increased during March 2020, when the COVID-19 outbreak caused financial markets to collapse and portfolios to be rebalanced.[28]

---

[26] Survey carried out by the World Bank by interviewing financial institutions for 160 jurisdictions.

[27] More than 85% respondents indicated that decisions over monetary policy in advanced economies are the main cause of cross-border movement of capital, followed by global risk aversion, pointed to by roughly 75% of respondents. Other push factors such as exchange rates, commodity prices and carry trades, are believed to play a lesser role compared to international liquidity and risk aversion.

[28] Beirne et al (2020) evaluate which pull and push factors have contributed to financial market and capital flow dynamics during the COVID-19 pandemic, focusing on 14 emerging market economies and using data from January 2010 to April 2020 and a structural VAR framework controlling for a host of domestic and global macroeconomic and financial factors. Among relevant domestic factors, they find (in order of relevance): inflation, macro surprise index, industrial production, stock prices, exchange rate, QE, government bond yields, and policy rate. Among external factors (in order of relevance): advance countries quantitative easing and Vix.

Table 3.4.1 Drivers of Capital Flows to Emerging Economies (2021)

Type	Driver	Portfolio Equity	Portfolio Debt	Banking Flows
Push	Global risk aversion	–	–	–
	Mature economy interest rates	–	–	-
	Mature economy output growth	+	+	?
Pull	Domestic output growth	+	+	**+**
	Asset return indicators	+	+	**+**
	Country risk indicators	-	-	–

+	Strong evidence for positive relationship
+	Some evidence for positive relationship
?	Mixed evidence, no clear relationship
-	Some evidence for negative relationship
–	Strong evidence for negative relationship

Source: Koepke (2018).

Table 3.4.2 Core Drivers of Capital Flows, Bank Regulation and Supervision Survey (2021)

Core drivers of capital flows as indicated in the survey[1,2]   Graph 2.1
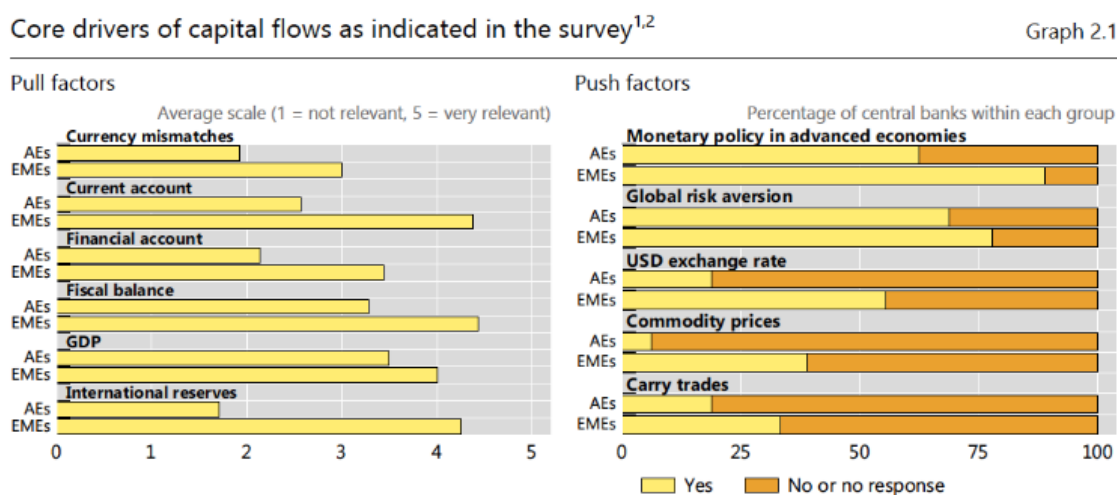
Source: Bank Regulation and Supervision Survey (2021), World Bank, reported in Changing Patterns of Capital Flows, BIS (2021).

Cerutti, Claessens, and Puy (2017) study the reasons why some EMEs are more sensitive to global push factors than others, using quarterly balance of payments (BOP) data for 2001–2013. They find that gross inflows to EMEs largely co-move across countries because of global (push) factors. Although bank-related and portfolio bond and equity inflows co-move substantially across EMEs, foreign direct investment (FDI) and Other Investment (OI) to non-banks do not. Empirical estimates find that US monetary policy, global liquidity, and

risk aversion, explain these common dynamics, but their relative importance varies greatly by type of flow. In general, countries with lower reserves, higher trade openness, and more flexible foreign exchange regimes tend to be more sensitive to global push factors. Financial market characteristics such as liquidity in the recipient country and composition of the foreign investor bases, rather than macroeconomic or institutional fundamentals, robustly explain the sensitivities

The close relationship between capital flows and international financial drivers was recently emphasized by the Bank of International Settlement (BIS, 2021)[29], that recognized higher capital flow volatility as a key post-GFC trend and identified some new characteristics that distinguish capital flows nowadays, such as:

   i)   A shift from bank to non-bank funding.
   ii) Rising importance of public sector borrowers and investors.
   iii) An increase in the complexity of flows due to multinational companies
   iv) Increased regional integration among EMEs (generally for debt security holdings).

Paradoxically, the taper tantrum episode underlined that EMEs with weaker fundamentals and less financial development were less exposed to the inflows and the consequent volatility triggered by quantitative easing and the taper tantrum. Financial development and integration with global financial markets expanded the destabilizing effect of cross-border flows and led to the emergence of external financial vulnerabilities. For instance, larger markets experienced more pressures despite their "macroeconomic fundamentals", as investors were able to rebalance their portfolios in such countries, given their relatively large and liquid financial markets (Aizenman et al, 2014; Eichengreen and Gupta, 2014).

Most of the EME's external vulnerabilities reflect the high degree of financialization of economies. UNCTAD's Trade and Development Report (TDR) 2022 analyzes the role of financialization for EMEs during the taper tantrum, using fixed effect and cross-sectional estimations. Results corroborate the effect of real and financial variables on currency depreciation during the four months after the announcement of the tapering in 2013, suggesting two crucial takeaways. First, it shows a lack of significance in current account imbalances, a variable often used to explain currency misalignment from long run trends (Bresser et al, 2021). Second, capital market size and liquidity (proxied by the value of traded stocks to GDP) are important predictors of the magnitude of exchange rate depreciation. For instance, a 10% increase in the value of stock traded as percentage of GDP leads to an increase in expected depreciation of around 2 to 3 percent.

Cantu and Chui (2021) study the financial stability implication of *financial market development* (FMD) in emerging markets and find that FMD is associated with three cross-border vulnerabilities, namely: i) high foreign participation in local currency government bond markets; ii) non-financial corporate bond markets surge in foreign currency debt; and iii) the rise in derivatives turnover and offshore trading in currency markets.

Concerning (i), Carstens and Shin (2021) argue that emerging markets still suffer from *original sin*, due to the presence of foreign investors in local currency bond markets. When emerging-market bonds fall in value, the effect is amplified by the associated currency

---

[29] See BIS (2021)

depreciation, which can trigger global investors' risk limits, leading them to sell their assets. That in turn puts further downward pressure on the borrower's local currency. If the currency and bond prices both fall far enough, they can set off even more selling by investors.[30]

Point (ii) leads to the well-known problem of currency mismatches in the private sector, which may negatively affect investment through higher risk premium and collateral requirements for borrowing (Krugman, 1999; Chang and Velasco, 1999). Point (iii) can cause currency volatility (Nalin and Yajima, 2020).

The interaction between financial flows, more flexible exchange rate regimes, and the external indebtedness of governments and of the non-financial corporate sector may give origin to the *financial external constraint,* which bites economic growth through several transmission mechanisms (Nalin, Pérez Caldentey, Rojas Rodriguez, (2021): (i) the higher sensitivity of bond prices to changes in interest rates; (ii) the positive and statistically significant correlation between nominal exchange rate variations and sovereign risk perceptions; iii) the positive and statistically significant correlation between sovereign and corporate risk perceptions; (iv) the positive correlation between risk and debt; and (v) the non-linear relationship between leverage and investment (Perez et al., 2019).

When analyzing data for the six selected countries of the present studies, we can recognize several features discussed in the above literature, such as:

i)   The evolution of the financial account, i.e., the variable that measures the use foreign credit to finance the current account, displays a cyclical behavior, in which turning points are often provoked by external exogenous shocks such as the taper tantrum (2013), the fall in terms of trade (2012-2014), and more recently the COVID-19 shock (2020).
ii) For all six countries, in the aftermath of the GFC, the reliance on short term portfolio flows increased, increasing their vulnerability to external financial shock.
iii) Among short term capital flows, those denominated in foreign currency grew at a faster pace, in both private and public sector, exposing sectorial balance sheets to currency fluctuations.
iv) Global risk is crucial in explaining currency fluctuations, as shown by the high correlation between changes in the Emerging Market Bond Index (EMBI) and exchange rate yearly variation.

Figure 3.4.1 shows a deficit in the current account for all selected countries that suggests the flow of imported goods and services is greater than the flow of exports. To finance it, countries rely on foreign capital. In the balance of payment, the external financing is reflected in the positive value of the financial account. [31]

A positive figure in the financial account indicates countries have more debits flows than credits flows. For all countries, there is an almost-symmetric relationship between the

---

[30] For the case of 10 Asian countries, Beirne et al (2021) find that while greater development of local currency bond markets (LCBMs) in terms of capitalization helps to mitigate against the capital flow volatility, the increase of foreign investor participation has the opposite effect, particularly for less developed LCBM.
[31] The value of the financial account is reported net of the capital account The capital account shows capital transfers receivable and payable between residents and non-residents, and the acquisition and disposal of nonproducer, nonfinancial items (https://www.imf.org/external/pubs/ft/bop/2014/pdf/BPM6_15F.pdf)

financial account balance and current account deficit; the higher the latter, the greater the volume of inflows of foreign capital required to finance it.

Figure 3.4.1. Balance of Payment Analytic and its Components: Selected Countries, 2006-2020
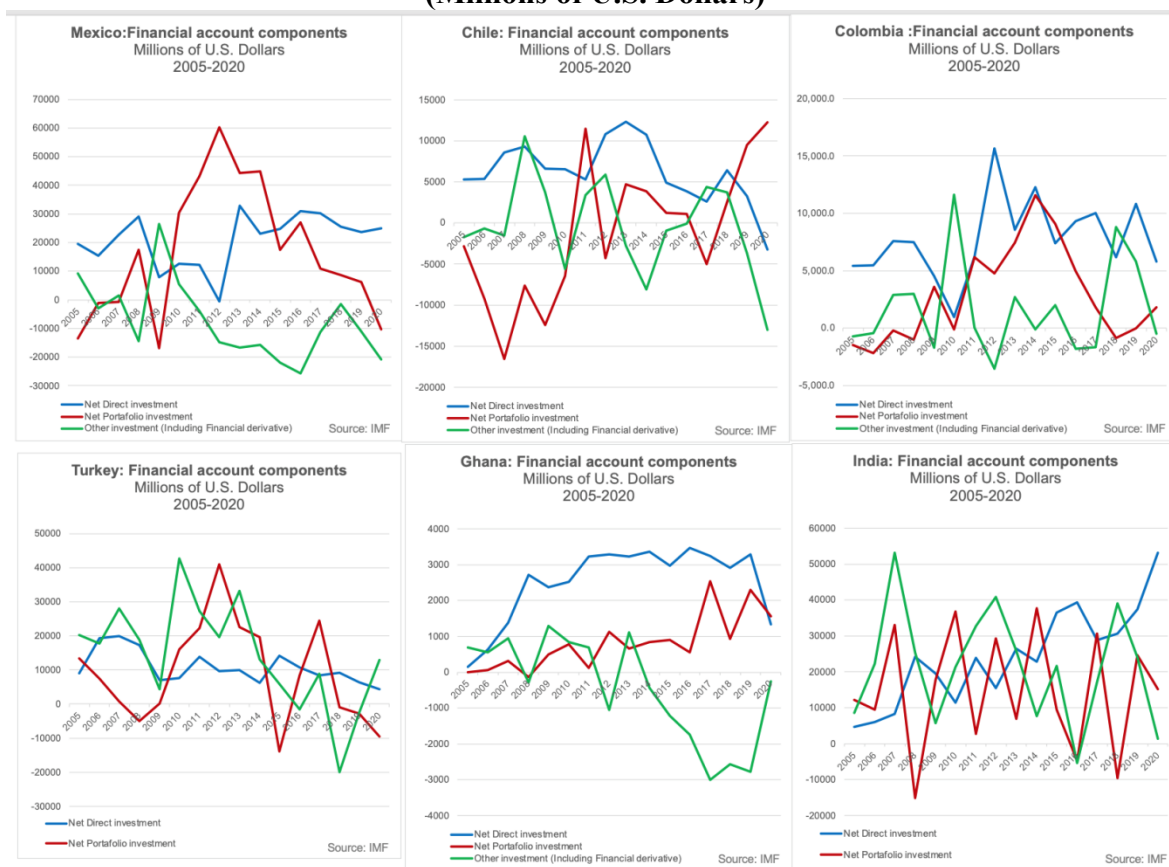**(Millions of U.S. Dollars)**
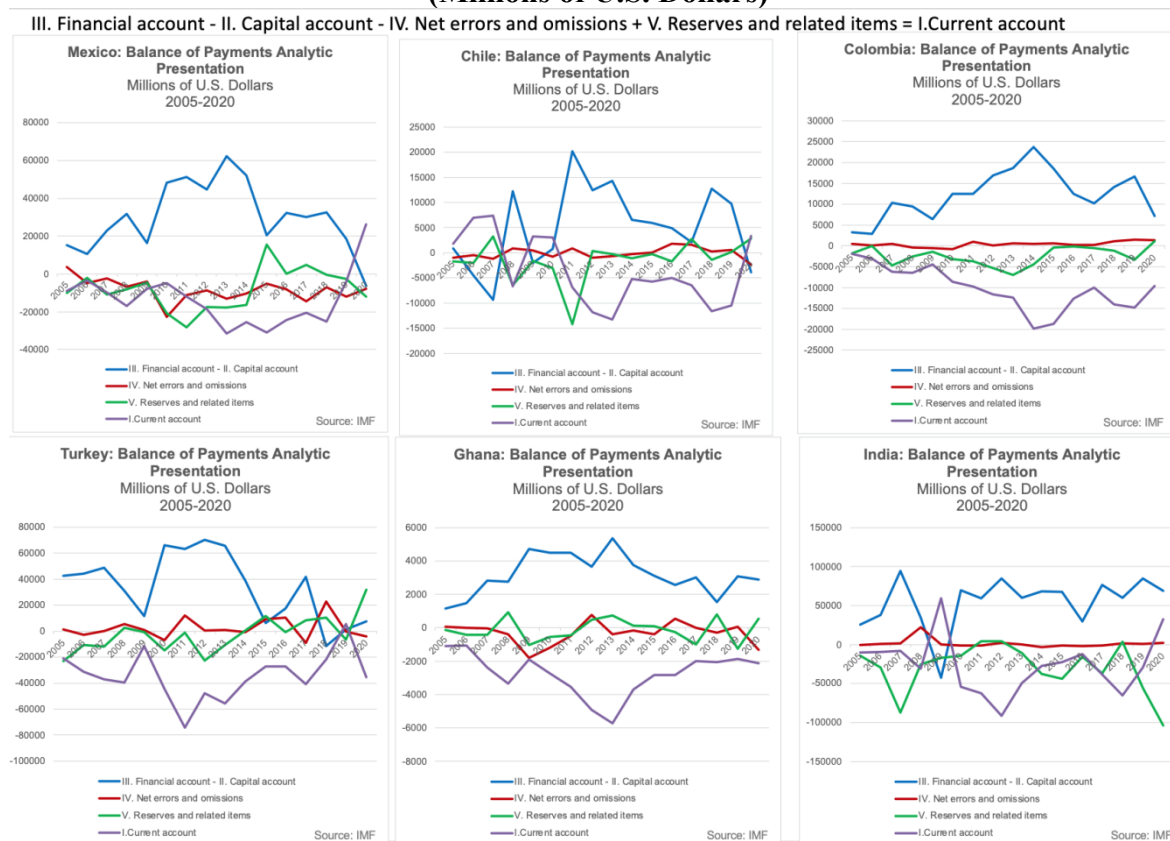
Source: Author´s own calculations based on data from the IMF, Balance of Payments Statistics (2022).

The evolution of the financial account shows two common patterns for all countries but India. The data shows a surge from the beginning of 2005 until 2013 that reflected international investors' willingness to lend money to EMEs to finance their current account deficit. A common factor behind the initial surge of cross-border lending (2005-2013) was the improvement of the terms of trade that followed the rise in oil and metal prices. Countries strictly connected with these commodities (Mexico, Chile, Colombia, and Ghana) report a rapid acceleration in the financial account surplus. The improvement in the terms of trade boosted growth prospects for these economies and made them more attractive for international investors. As a result, their current account deficits were fully financed and grew over time. In 2013, right before the taper tantrum, countries such as Chile, Colombia, Ghana, Mexico, and Turkey, were running the largest current account deficits relative to the period under consideration. In Colombia, India, and Turkey, the greatest current account deficit coincides with the highest level of financial deepness.[32]

---

[32] Refer to the Financial Depth Indicator calculated by the IMF reported in the Annex

Yet, from 2013, the surge was followed by a period of slow decay in the financial account, because of the taper tantrum, lower international risk appetite, and the fall in commodity prices that led to terms of trade deterioration. This translated in some cases (Mexico, Chile, and Turkey) into negative financial accounts, where the country has more claims than it does liabilities, either because of an increase in claims by the economy abroad or a reduction in liabilities from foreign economies.

Figure 3.4.2 Financial Accounts Components: Selected Countries, 2006-2020
(Millions of U.S. Dollars)

Source: Author´s own calculations based on data from the IMF, Balance of Payments Statistics (2022).

In the short run, countries may finance their deficit with portfolio flows. However, volatility in this type of foreign investment is a common feature across the six countries under analysis. Figure 3.4.2 shows that in the Latin American countries and Turkey, volatility manifested in boom-and-boost cycles, that is, periods of sustained inflows are followed by abrupt fall due to portfolio reallocation. On the other hand, portfolio flows volatility in India manifests with dampening cycles, with continuous oscillating portfolio rebalancing; India accounts for the highest number of negative portfolios flows (2009, 2015, and 2017).[33]

---

[33] A small financial market such as Ghana reports a growing trend in portfolio flows, yet in absolute terms the volume is on average six times lower than in the remaining countries, and for this reason it could not provide a proper example to understand the logic of financial portfolio in developing countries.

India and Turkey are examples of the vulnerability of emerging markets to volatile portfolio flows. Both countries were running large current account deficits in 2013 – the highest in our sample - which were being funded with short term flows unleashed into the global system by quantitative easing.

As soon as the tantrum hit the emerging world, exchange rates dropped sharply with flexible currencies. The Indian rupee fell by more than 15 per cent from peak to trough in the space of just three months, causing enormous losses in growth and welfare. The Turkish lira depreciated 20 percent over the same period. But, in contrast to the other countries in our sample, which also suffered from massive outflows and sharp currency depreciation, Turkey and India were already struggling to control domestic inflation, a situation the devaluations made worse by threatening to import inflation from abroad. India responded by raising interest rates, a policy that was successful in containing inflation at the expanse of worsening the internal conditions for growth.

To avoid the negative impacts on economic growth of tightening monetary conditions, however, Turkey opted for unorthodox monetary policies and lowered the benchmark interest rate despite higher inflation. As a result, inflation kept rising, international capital vanished as real interest rates became negative, and the country suffered further massive capital outflows that led the financial account's balance to be in a negative territory from 2014 until the COVID-19 crisis in 2020. The Turkish lire continued depreciating massively relative to its value a decade ago. Inevitably, social unrest erupted and the political climate deteriorated, to the point that there was a threat of a coup.

A crucial factor to pay attention to when evaluating the role of capital flows and the financial external restriction of the balance of payment is the cyclical behaviors of the nominal effective exchange rate and its close correlation with risk sentiment. For the countries analyzed in the present study, the correlation between these variables ranges from 0.4 to 0.6, indicating that when risk perception deteriorates, a sharp correction in the exchange rate follows.

Figure 3.4.2
Nominal Exchange Rate and Emerging Market Bond Index (EMBI): Selected Countries, 2006-2020, (Yearly % variation)
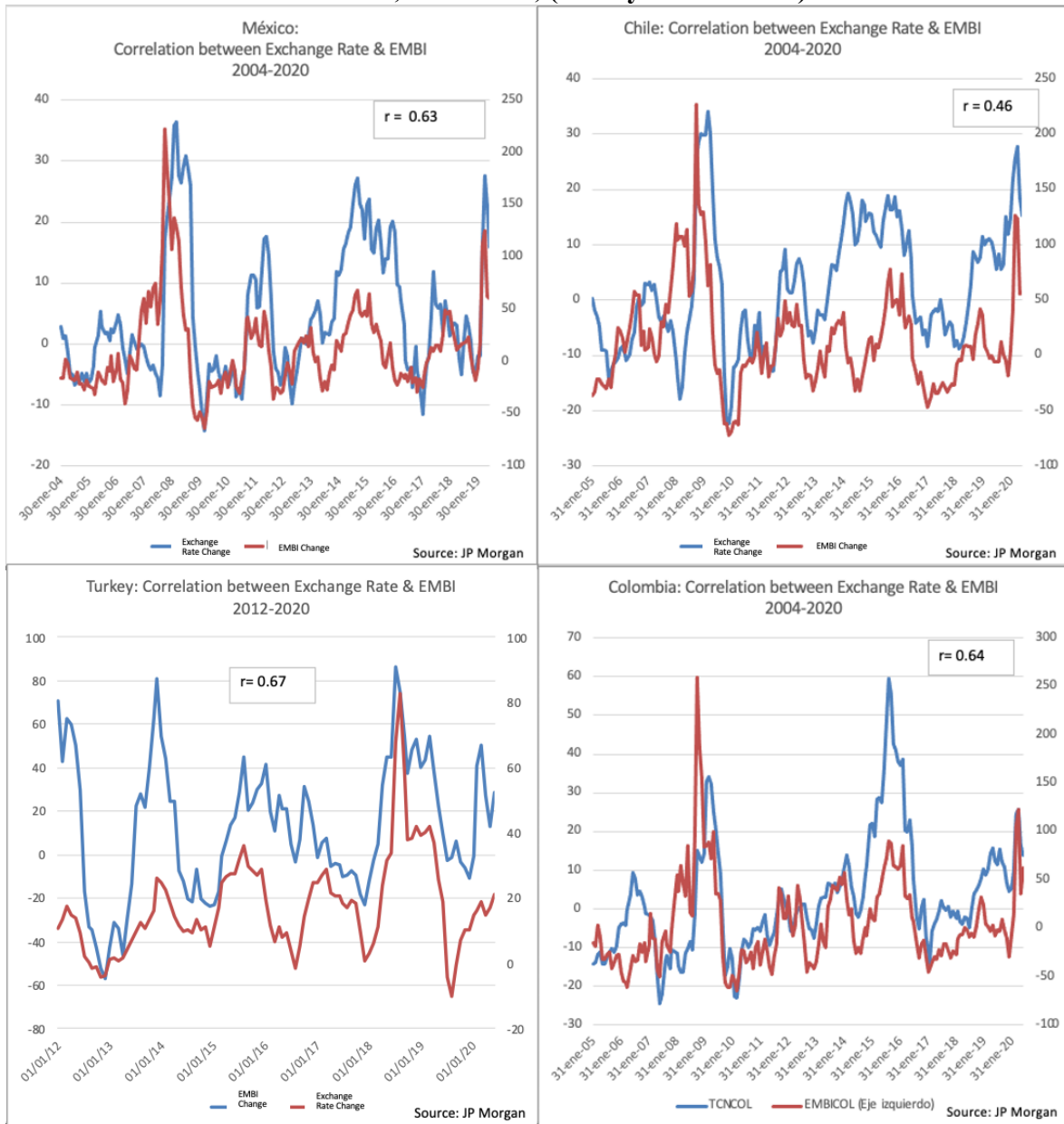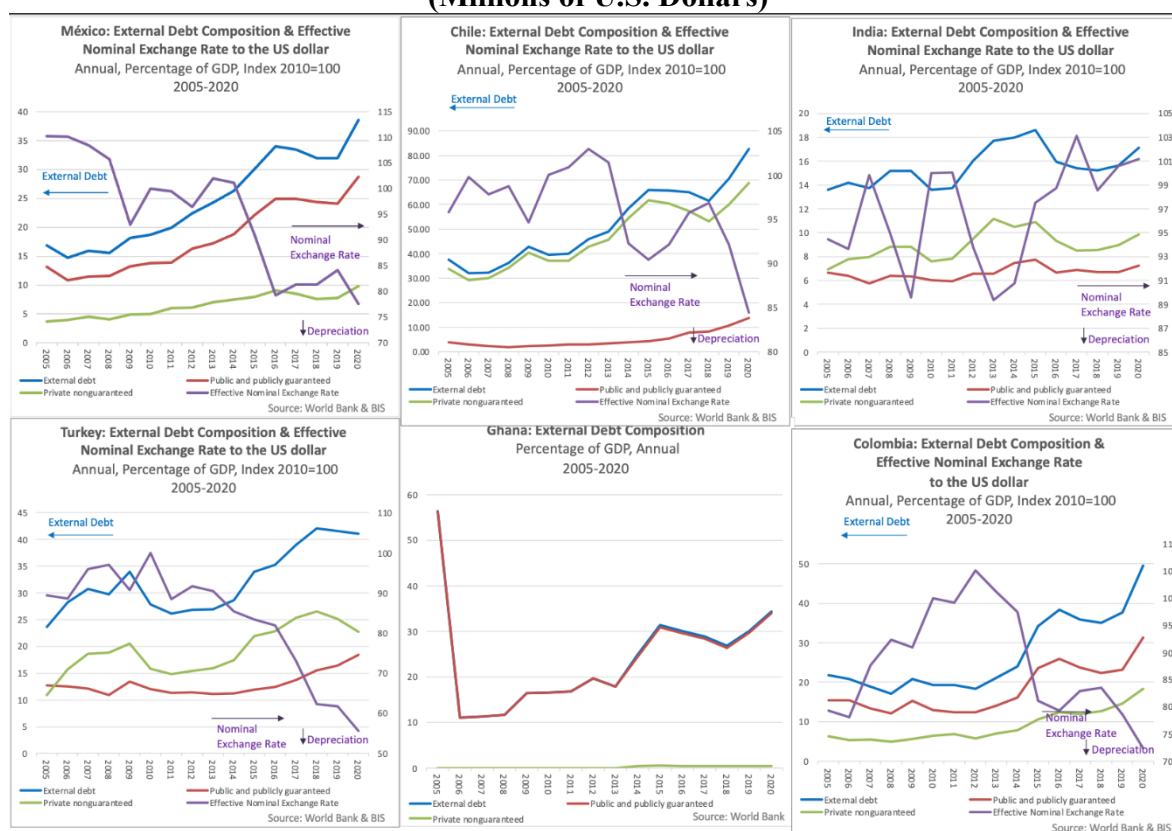

Source: Author´s own calculations based on the World Bank Group (2022) data.

The exchange rate and risk premiums are relevant for foreign debt accumulation. For the countries in the present study, the combination of higher commodity prices, better growth prospects, and international investors' appetite for risk eventually increased the financial flows towards the periphery. Higher level of inflows over the period 2005-2013 allowed some countries to benefit from an appreciating real exchange rate (Chile, Colombia, Turkey), while others benefited from exchange rate stability (Mexico, India). For all countries, the EMBI index, here used as a proxy for government risk premiums, reached its lowest level over the period 2011-2013 (see Annex). The resulting decline in sovereing risk pushed down

37

future borrowing costs. The appreciation of the exchange rate improved balance sheet conditions by reducing government´s and firms' external liabilities and further reducing servicing costs, creating an incentive to increase foreign liabilities.

External debt (figure 3.4.3) shows an increasing trend in Colombia, Mexico, Chile, Turkey, and India. Over the period 2005 to 2020, it roughly doubled in all of them. Chile stands out as the country with the highest leverage ratio (85% of GDP) while India reports the lowest (approx. 16%). In Mexico Colombia and Turkey, external debt ranges between 35 and 50 points of GDP.[34] Yet, recurring reliance on foreign finance implies EMEs become more vulnerable to external financial shocks, such as changes in international risk appetite, capital flows, and international investors' willingness to lend money. The effect of these variables is often transmitted to the domestic economy via the nominal (and real) exchange rate, it being a sort of barometer of the international risk perception of the domestic economy.

Figure 3.4.3 Debt Ratios and Nominal Effective Exchange Rate: Selected Countries, 2006-2020
(Millions of U.S. Dollars)

Source: Authors´ own calculations based on data from the IMF, Balance of Payments Statistics (2022).

---

[34] Notice, however, that the composition of debt is not homogenous among selected countries. For Chile, Turkey, and India, private debt is higher than public debt. On the contrary, in Mexico, Colombia and Ghana the public sector is the main issuer of foreign debt.

Colombia, Mexico, Chile, and Turkey report a close connection between nominal effective exchange rate (NEER) and external debt. Indeed, when NEER depreciates, external liabilities revalued in nominal terms and leverage ratio to GDP rises. As a result, the balance sheet of issuer sectors of foreign liabilities worsens, losing its net worth value – a phenomena known as the balance sheet effect (Krugman, 1999).

The balance sheet effect is observed when there is a fall of NEER associated with the deterioration of their terms-of-trade. In that case, commodity export countries suffered a sharp devaluation of the NEER as soon as the price of commodities they exported dropped. The negative pressure on the NEER was exacerbated by the taper tantrum, which caused portfolio flows out of the region, further depreciating NEER. For instance, Colombian and Mexican NEER sharply fell (depreciated) in the second half of 2014 and extended its loss throughout 2015 in response to the collapse of the international price of WTI crude oil, which plummeted from 103 to 30 USD per barrel from July 2014 to February 2015. In response to nominal deprecation, foreign debt increased by almost 20% of GDP in both countries over the period 2014 to 2019.

IV. Conclusions

At the end of 2021 and the beginning of 2022, the sharp and persistent rise in inflation, driven by, on the one hand, cuts in key supply chains, rising transport, energy, and other costs and, on the other hand, by excessive pent-up demand as the lock-downs were lifted and changed the composition of consumer demand, led to a shift towards contractionary monetary policy in the developed world. This shift, formally terminating QE, raised benchmark interest rates and tightened international liquidity. Two more shifts on policy matters in developed countries are on track in 2023 to have relevant impacts on emerging nations´ growth in the short and medium terms. The first is the imposition of sanctions on trade on a variety of commodities and manufactured goods that are seen to have an adverse impact on climate change via increased greenhouse gas effects. The second is the move towards re-sourcing back to the developed world of a number of links of GVCs, as the concerns on resilience outweigh cost benefit considerations based on just in time practices with the dispersion of production processes over many countries.

Amid these policy changes, new variants of the Sars-Covid virus appeared, detonating new waves of contagion and death and forcing some governments to introduce again partial confinements and restrictive measures on mobility, transportation, and certain services. On top of that, Russia´s military invasion of Ukraine created havoc in key global markets and financial circuits. Further, the unprecedented sanctions by the West on Russia introduced new elements that impinge heavily on several economic and financial decissions and markets. This adverse environment for developing countries makes it critical to identify EMEs´ key financial and otherwise structural vulnerabilities to such exogenous phenomena.

In this paper we have put forward an analytical model, built within the theoretical model of the BPCG-tradition, to explore the above-mentioned issues. The model presented captures key vulnerabilities and structural weaknesses of developing countries trade and production structures that combine to make their growth trajectories acutely bounded by the balance-of-payments performance. Based on this theoretical framework we carried out a preliminary
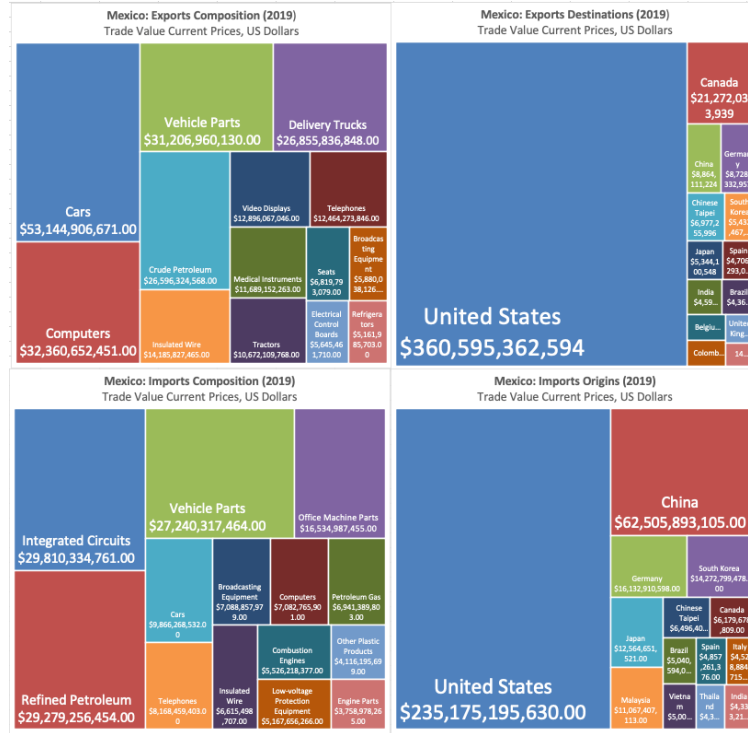
comparative study of six developing nations to identify their challenges in the current, far from favorable, global context. The study has revealed many similarities and critical differences in these countries' initial conditions and the challenges that they already face that are likely to become more daunting in the global context. We believe that our work contributes to the discussions on economic policy matters in the face of global shocks as well as to the debate on the need for a new world financial architecture, a new Bretton Woods, designed to enable full employment, environmental sustainability, and a substantial reduction in the gaps between the have and the have-nots in the international economy.
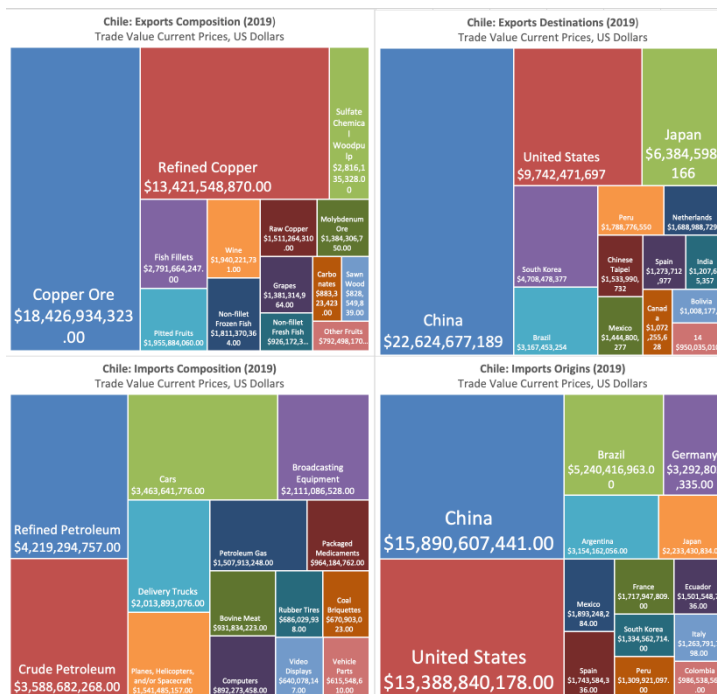
Annex I. Figures

Figure A.1 Composition of Exports and Imports by Type of Product and Country of Destination or Origin: Selected Economies, 2019
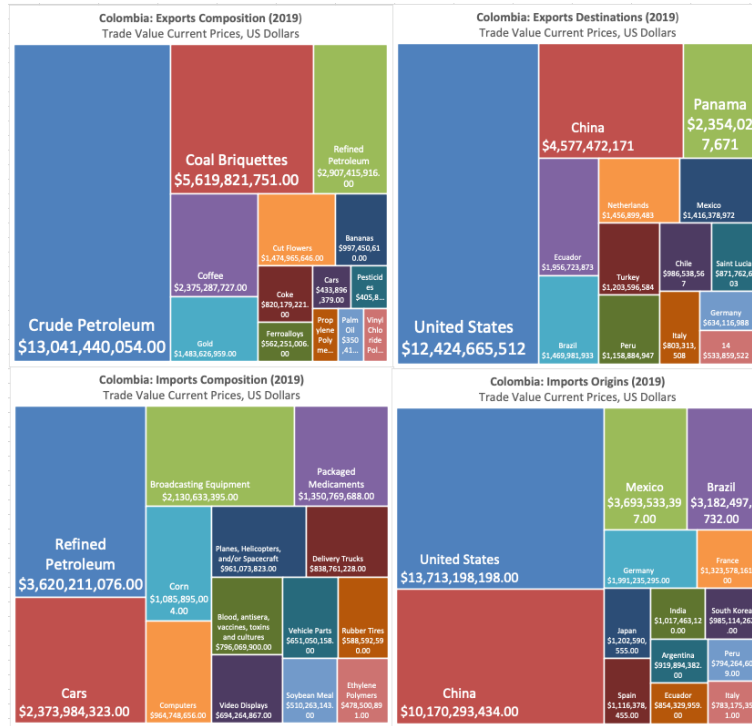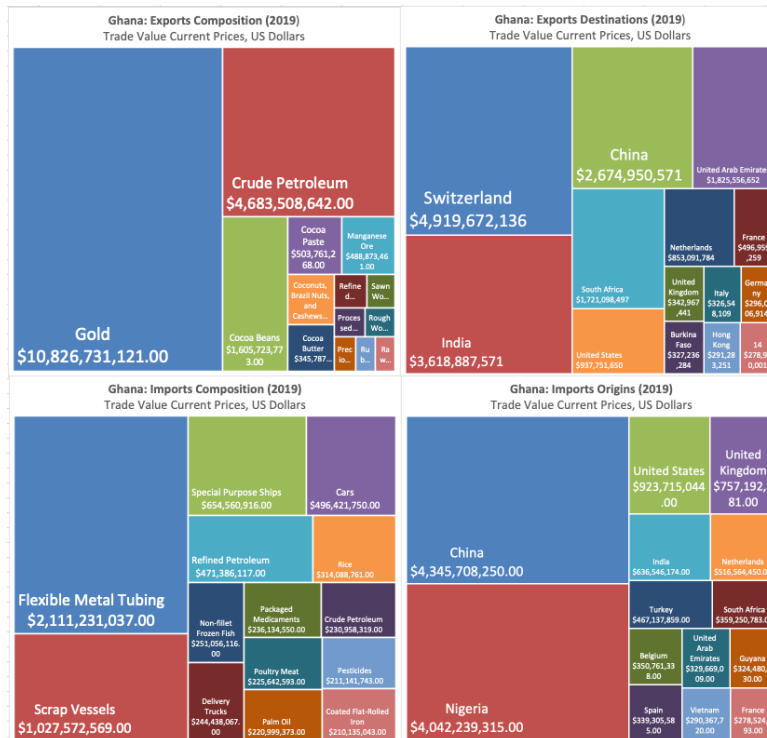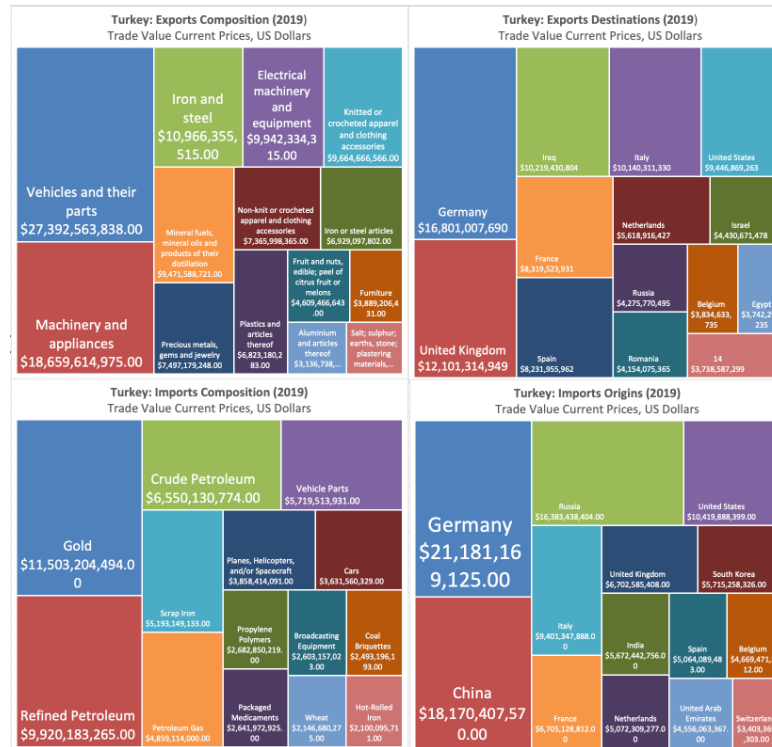
A. Mexico

B. Chile

C. Colombia

Colombia: Exports Composition (2019)
Trade Value Current Prices, US Dollars

Colombia: Exports Destinations (2019)
Trade Value Current Prices, US Dollars

Colombia: Imports Composition (2019)
Trade Value Current Prices, US Dollars

Colombia: Imports Origins (2019)
Trade Value Current Prices, US Dollars

D. Ghana

Ghana: Exports Composition (2019)
Trade Value Current Prices, US Dollars

Ghana: Exports Destinations (2019)
Trade Value Current Prices, US Dollars

Ghana: Imports Composition (2019)
Trade Value Current Prices, US Dollars

Ghana: Imports Origins (2019)
Trade Value Current Prices, US Dollars
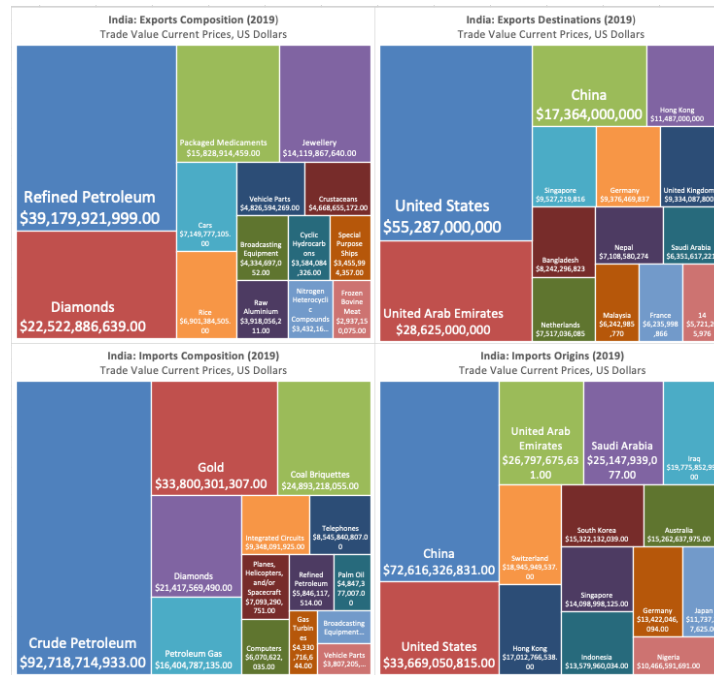
E. Turkey

F. India

Source: Authors´ own calculations based on data from the IMF, Balance of Payments Statistics (2022).

Figure A.2 Exports and Imports of Goods and Services, as a Proportion of GDP: Selected Countries 2006-22. (Percentages Based on Data at Current Prices)

Source: Authors´ own calculations based on data from the WBG (2022).

Figure A.3 Monetary Policy Rate, Real Interest Rate, and Inflation: Selected Economies 2006-2022
(Percentages, Monthly)
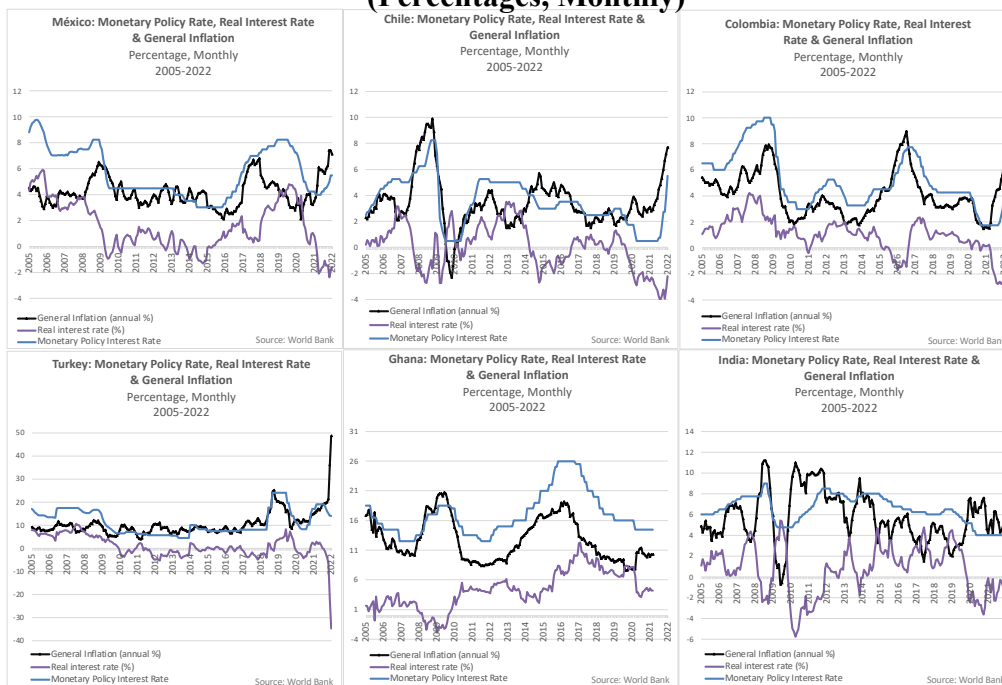
Source: Authors´ own calculations based on data from the BIS (2022).

Figure A.4 Deviation of Headline Inflation from its Target at the Beginning of 2022: Selected Countries (Percentages)

Deviation of headline inflation from ts Target at the Beginning of 2022

%
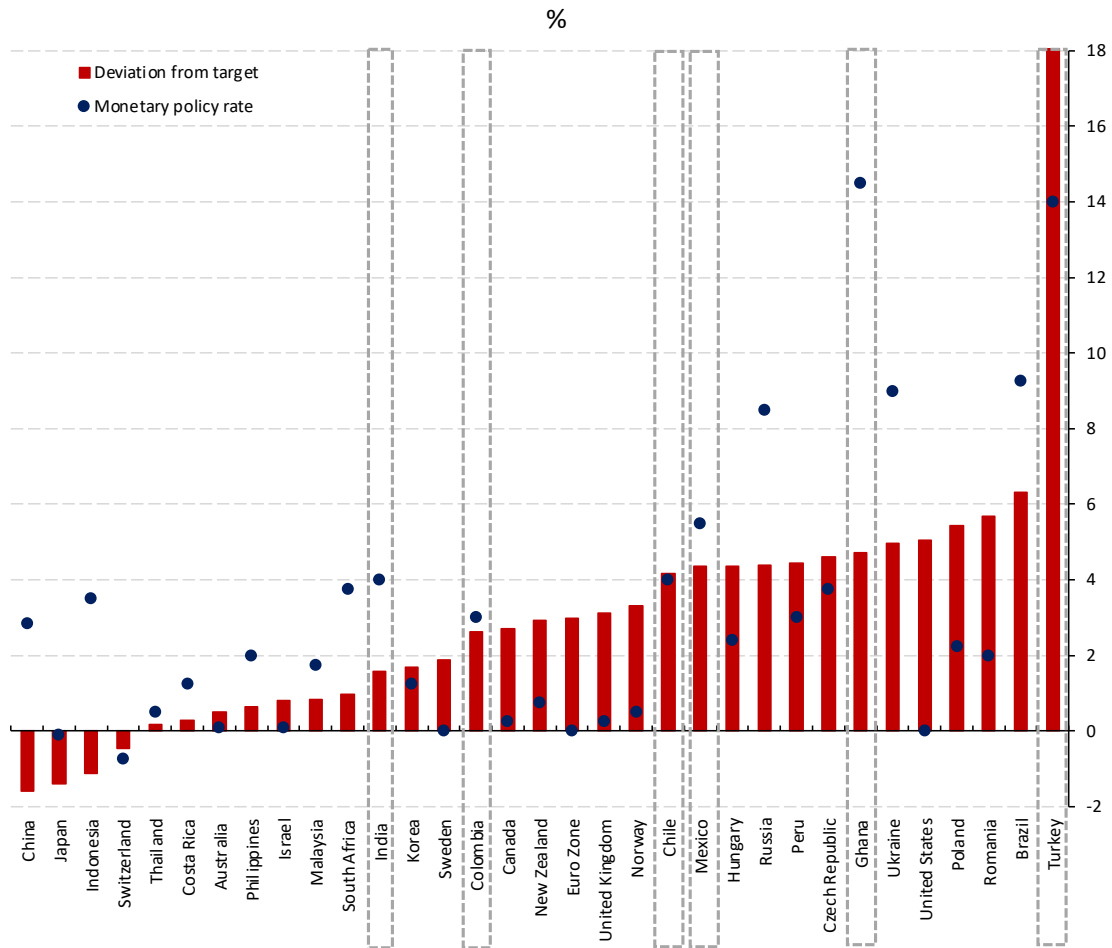
/1 Inflation rate for november or december of 2021, dependig on data availability.

Source: Graph included in the presentation "The Mexican Economy in 2022: Outlook and Challenges" Gerardo Esquivel Hernández, Deputy Governor, Bank of Mexico. HSBC´s 10th Annual Mexico Opportunities

Figure A.5 Ex-Ante Real Interest Rate at the Beginning of 2022: Selected Countries (Percentages)
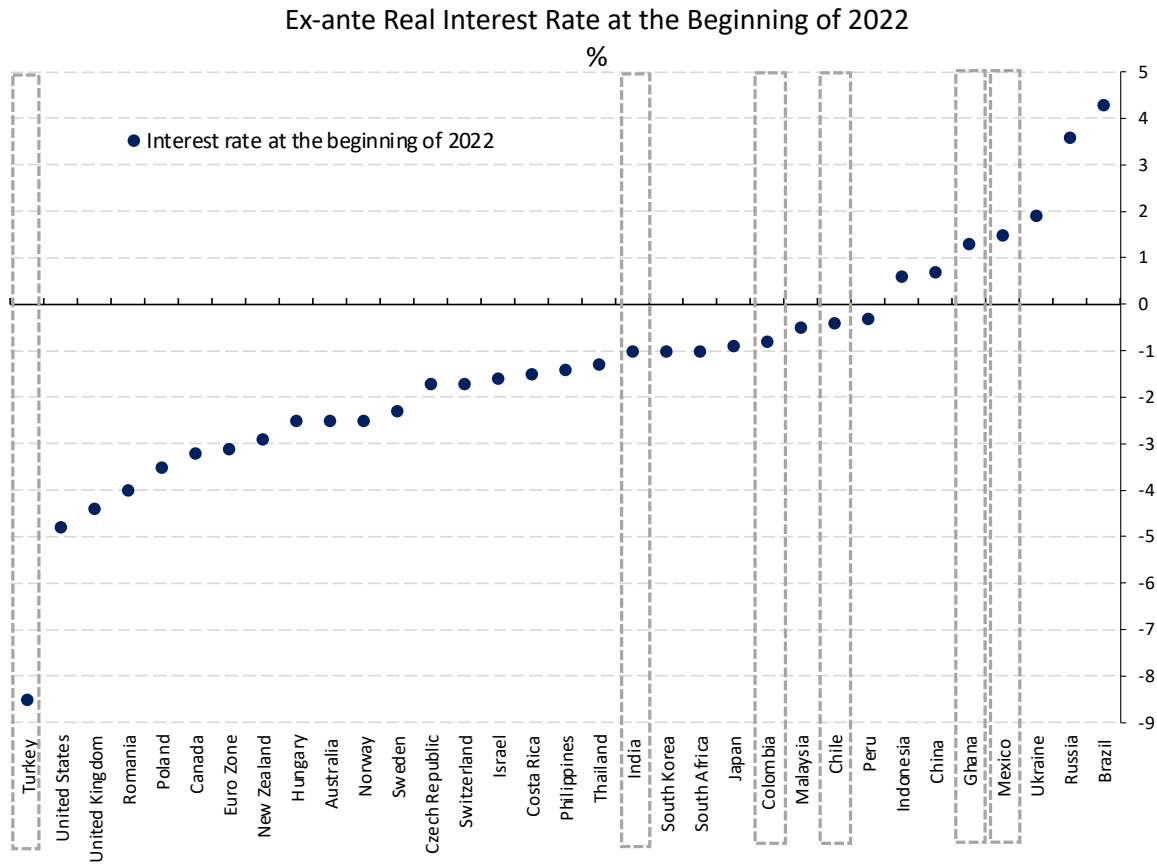
Ex-ante Real Interest Rate at the Beginning of 2022

%

● Interest rate at the beginning of 2022

Source: Graph included in the presentation "The Mexican Economy in 2022: Outlook and Challenges" Gerardo Esquivel Hernández, Deputy Governor, Bank of Mexico. HSBC´s 10th Annual Mexico Opportunities

Figure A.6 Financial Market Depth Index: Selected Countries 2000-2019. (Index FDM)

Source: Authors´ own calculations based on data from IMF, Balance of Payments Statistics (2022).

Figure A.7 Effective Nominal and Real Exchange Rate in relation to the US Dollar: Selected Countries 2005-2019
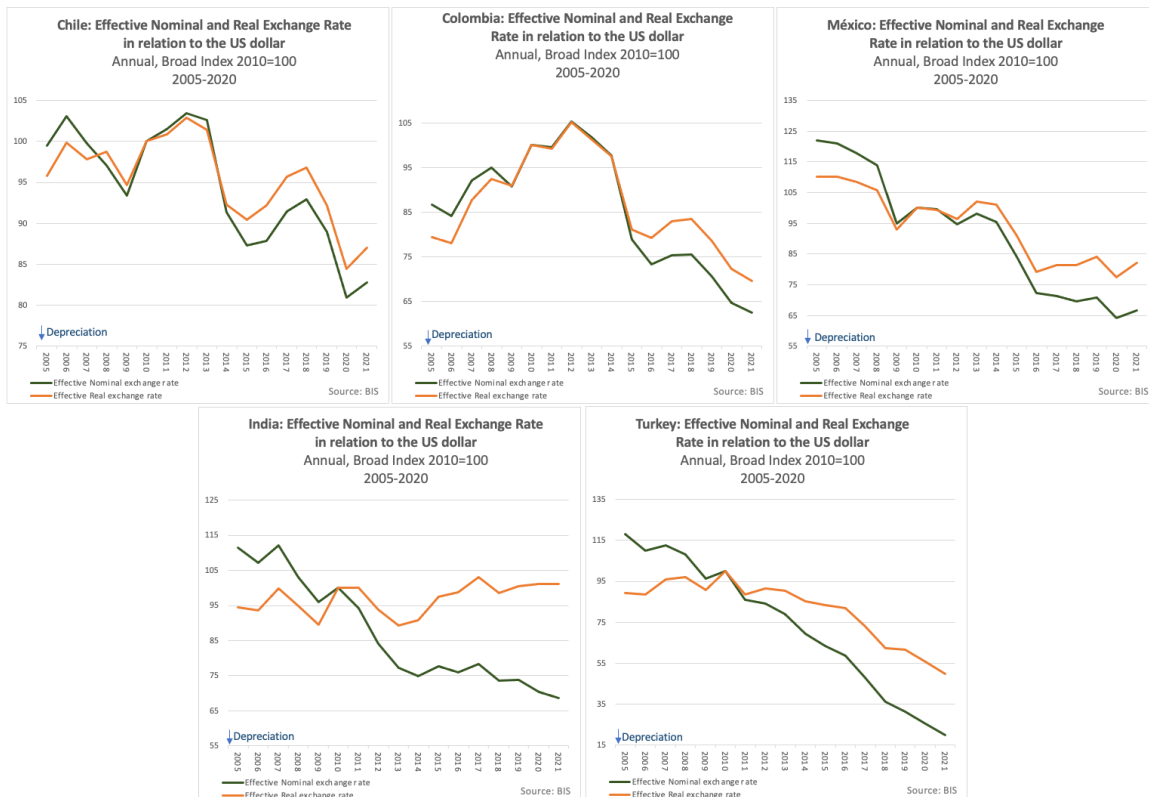
Source: Authors´ own calculations based on data from the BIS (2022).

Annex II. BBPC Model: A brief survey introducing foreign capital flows

a) Introduction

In the real world, there are numerous examples of semi-industrialized economies that register trade deficits for fairly long periods without detonating any type of balance-of-payments crisis as long as the overall deficit does not significantly increase as a proportion of GDP. Motivated by these insights, Moreno-Brid (1998-99) and McCombie and Thirlwall (1997) introduced a revised version of the canonical model that does consider this situation. Their extension of the BPCG model explicitly allows for the possibility of a persistent trade deficit. In other words, it allows for persistent foreign capital inflows, in the context of a sustainable trajectory of accumulation of foreign debt relative to GDP. In their models, the original assumption of a long-term trade balance (X - M = 0) is replaced by the formulation of a long-term constant ratio of the trade deficit as a proportion of GDP. This deficit is financed by foreign capital inflows, i.e., by private or public external debt.

For mere background, let us summarize the model of Moreno-Brid (1998-99). It consists essentially of four equations:

$$\dot{x} = \eta(\dot{p}_d - \dot{p}_f) + \pi\dot{z} \tag{1}$$

$$\dot{m} = \psi(\dot{p}_f - \dot{p}_d) + \xi\dot{y} \tag{2}$$

$$\dot{B} = 0 = (\gamma\dot{m} - (\gamma - 1)\dot{x} - \gamma(\dot{p}_d - \dot{p}_f)\text{-}\dot{y}) \tag{3}$$

$$\mu = \frac{\dot{p}_f m}{(\dot{p}_f m - \dot{p}_d x)} \tag{4}$$

Equations 1 and 2 are the conventional demand functions for exports and imports. The third equation defines the long-term balance of payments constraint as a constant trade deficit as a proportion of GDP, where the proportion is expressed by "*B*". To facilitate the algebraic expressions, equation (4) is an identity that defines the proportion of imports relative to the trade deficit as μ. The solution of this model gives the following expression of $\dot{y}$, the long-term growth consistent with a trade deficit that is invariable as a proportion of GDP.

$$\dot{y} = \frac{[\mu\,(1+\psi+\eta)-\eta](\dot{p}_d-\dot{p}_f)}{\xi\mu-1} + (\mu - 1)\frac{\pi\dot{z}}{\xi\mu-1} \tag{5}$$

As the original model explains, it can be reasonably assumed that the numerator is different from zero.[35] In addition, given that θ is the initial ratio of the value of exports relative to imports (by assumption smaller than 1.0), then by construction:

$$\mu = \frac{1}{1 - \theta}$$

---

[35] As Moreno-Brid (1998-99) explained: "the non-negativity [of the denominator] is met if the structure of the domestic economy is such that an increase in real domestic income [that is not the result of a surge of exports] will unavoidably lead to a higher trade deficit.

$$\theta = \frac{p_d X}{p_f m}$$

Then equation 5 can also be expressed as:

$$\dot{y} = \frac{(1+\psi+\theta\eta)\ (\dot{p}_d-\dot{p}_f)}{\xi-(1-\theta)} + \theta\,\frac{\pi\dot{z}}{\xi-(1-\theta)} \tag{6}$$

As equation 6 shows, in this extended model, the balance-of-payments constrained growth rate $\dot{y}$ is influenced by the initial magnitude of the trade deficit.

b) Introducing foreign capital flows in the BPCG model: a very brief survey of more sophisticated approaches

As mentioned, within the theoretical framework of balance-of-payments constrained growth, some authors, including Thirlwall himself, have tried to integrate the dynamics of net foreign capital flows. In recent years, efforts to incorporate international capital flows and debt sustainability into BPCG modeling have led to much more sophisticated approaches than the first attempts of McCombie and Thirlwall, (1997) and Moreno-Brid, (1998–99).

In this section, we briefly review some of the more interesting attempts to explicitly consider the influence of foreign capital flows on the balance-of-payments constrained growth rate of a semi-industrialized economy. We have identified three different approaches: i) the internal/external imbalances approach, ii) the business cycles approach with a constrained balance of payments, and iii) the long-term sustainability of the external debt approach.[36]

b.1) Capital flows, economic growth, and an internal/external imbalances view

The BPCG approach, in its emphasis on external imbalances (current account deficits) as the binding constraint on economic growth, traditionally assumes away the influence of other constraints rooted in internal imbalances originating in, on the one hand, the budget deficit and public-debt dynamics (for example following the three-gap literature), or, on the other hand, in the private sector´s saving and investment. To face this question, Soukiazis et al. (2012, 2014) put forward a theoretical model in which they introduce the role of public finance´s imbalances as an additional restriction to growth still within the BPCG-model perspective. In brief, their extension of the BPCG model considers possible constraints on long-term economic growth in addition to income elasticities of foreign trade and the momentum of external demand from the effects of the financial aspects of fiscal deficit and public debt dynamics.

The Soukiazis et al growth model is summarized in the following equations[37]:

---

[36] An important caveat. Our purpose in this section is not to provide a comprehensive review of all the relevant papers within the BPCG literature that take explicitly into account the influence of capital flows. Our intention is just to identify the, in our view, most interesting approaches that have been developed to face this issue. We illustrate the way they have done so in each case by very succinctly summarizing a key paper of each of these three approaches.

[37] Where $\dot{x}, \dot{m}, \dot{p}, \dot{p^*}, \dot{y}, \dot{c}, \dot{g}, \dot{k}, \dot{r}, \dot{d}, \dot{b_H}, \dot{b_F}$ and $\dot{e}$ are the growth rates of exports, imports, domestic prices, foreign prices, domestic income, private consumption, government expenditures, investment, real interest rate, budget deficit, the public debt owned by home, foreign bond holders and nominal exchange rate, respectively. Additionally, w_D, w_B, w_M and w_X are respectively the ratios of budget deficit, public debt, imports, and exports on income. Finally, $(1 - \xi)$ represents the percentage of public deficit financed by external markets.

$$\dot{m} = \pi_c \dot{c} + \pi_g \dot{g} + \pi_x \dot{x} + \pi_k \dot{k} + \delta_m (\dot{p}^* + \dot{e} - \dot{p}) \tag{7}$$

$$\dot{x} = \varepsilon_x \dot{y}^* + \delta_x (\dot{p}^* + \dot{e} - \dot{p}) \tag{8}$$

$$\dot{c} = \varepsilon_x \dot{y}_d \tag{9}$$

$$\dot{k} = \varepsilon_k \dot{y} + \varepsilon_k \dot{r} \tag{10}$$

$$G_n + iB_H + i^* B_F e = tYP + D \tag{11}$$

$$\dot{g} = \frac{t\dot{y}}{w_G} + (\dot{d} - \dot{p})\frac{w_D}{w_G} - [\Delta i + i(\dot{b}_H - \dot{p})]\frac{w_{BH}}{w_G} - [(e\Delta i^* + i^*\Delta e) + i^* e(\dot{b}_F - \dot{p})]\frac{w_{BH}}{w_G} \tag{12}$$

$$XP + D_F e - i^* B_F e = MP^* e \tag{13}$$

Equations 7 and 8 are somewhat modified versions of the demand functions of exports and imports. The latter now captures the influence on imports of the different components of domestic income (consumption, government spending, exports, and gross fixed capital formation). Equations 9-10 are rather standard functional expressions for consumption and investment; the former is determined mainly by disposable income and the latter by an accelerator mechanism and the influence of the real interest rate. Equations 11 and 12 introduce the government sector. Equation 11expresses the government budget in nominal terms, to introduce a fiscal constraint, and equation 12presents the long-term growth of public spending in real terms compatible with (11), stressing the influence of the budget deficit as a proportion of GDP (w_D) and the corresponding government expenditure ratio (w_G). Equation 13 introduces the condition of external equilibrium reflected in the current account of the balance of payments. The left-hand side shows net external revenues as given by the sum of exports, non-resident acquisition of government bonds and net interest rate payments to foreign bondholders. On the right-hand side is the total imports.

Proceeding as in Soukiazis et al. (2014), the solution of this model gives the following expression:

$$\dot{y} = \frac{A}{B}, \text{ where}$$

$$A = \begin{bmatrix} \left(\varepsilon_x - \frac{w_M}{w_X}\left(\frac{P^* e}{P}\right)\pi_x \varepsilon_x\right)\dot{y}^* + \left(\delta_x\left(1 - \frac{P^* e}{P}\frac{w_M}{w_X}\pi_x\right) - \delta_m \frac{w_M}{w_X}\left(\frac{P^* e}{P}\right)\right)(\dot{p}^* + \dot{e} - \dot{p}) \\ + \left(\dot{p} - \frac{P^* e}{P}\frac{w_M}{w_X}(\dot{p}^* + \dot{e})\right) + (1-\xi)\frac{w_D}{w_X}(\dot{p} - i^*) - (1-\xi)\frac{w_B}{w_X}\Delta i^* \\ -\left(\frac{P^* e}{P}\right)\frac{w_M}{w_X}\left\{ \begin{matrix} \frac{(\Delta i - \Delta \dot{p})\xi w_B}{(1-t) + r\xi w_B}(\pi_c \varepsilon_c) + \pi_k \varepsilon_r(\Delta i - \Delta \dot{p}) + \\ + \pi_g\left[-\Delta i \frac{\xi w_B}{w_G} - \Delta i * e(1-\xi)\frac{w_B}{w_G}\right] \end{matrix} \right\} \end{bmatrix} \tag{14}$$

$$\text{and } B = \frac{w_M}{w_X}\left(\frac{P^* e}{P}\right)\left\{\pi_c \varepsilon_c + \pi_k \varepsilon_k + \pi_g\left(\frac{t}{w_G} + \frac{w_D}{w_G} - \frac{i\xi w_B}{w_G} - i * e(1-\xi)\frac{w_B}{w_G}\right)\right\} - (1-\xi)\frac{w_D}{w_X}$$

Though far from necessarily obvious, equation (14) states that the long-term growth rate of domestic income is determined by internal and external imbalances and key relative prices.

Numerator A breaks down into several terms: the first measures the impact of external demand on domestic growth; the second reflects the substitution effect through the change in relative prices; the third is the trade volume effect, and the following terms measure the impact of domestic imbalances on domestic growth. The denominator B essentially captures the effect of the import elasticities of the demand components on domestic growth.

In this way, the authors put forward a BPCG-model that captures the effects on the long-term rate of expansion of domestic income of the net inflow of foreign and domestic capital to buy government bonds and the outstanding stock of public debt.

b.2) Integrating the Business Cycle in the BPCG-model

As Tony Thirlwall has repeatedly stressed, his so-called Law identifies how the balance-of-payments, or more precisely, the balance of trade or the foreign trade dynamics, can act as a constraint on an economy′s long-term rate of expansion. In its most basic version, as we explained above, the model assumes away or does not capture the influences of the real exchange rate and foreign capital inflows. Some authors have incorporated key insights of the BPCG-model in a medium-term analysis that explicitly considers the effects of foreign capital flows. In this regard, Garcimartín et al. (2016) stand out by introducing a revised version of the BPCG model that allows for business cycles and a distinction between short and long-term rates of economic expansion constrained by the balance-of-payments. In summary, their model essentially consists of the following equations[38]:

Long-term:

$$PX + T = MP^* \tag{15}$$

$$X = A\left(\frac{P}{P^*}\right)^{\gamma} Y^{*\varepsilon} \tag{16}$$

$$M = B\left(\frac{P^*}{P}\right)^{\eta} Y^{\pi} \tag{17}$$

$$\dot{y}_{lr} = \frac{\dot{z} + \varepsilon\dot{y}^*}{\pi} \tag{18}$$

Short-term[39]:

$$XPZ + K = MP^* \tag{19}$$

$$X = A\left(\frac{P}{P^*}\right)^{\gamma} Y^{*\varepsilon} e^{\varepsilon_2 K_r} D_x \tag{20}$$

$$M = B\left(\frac{P^*}{P}\right)^{\eta} Y^{\pi} e^{\pi_2 K_r} D_m \tag{21}$$

$$\dot{y}_{sr} = \frac{(s_x\dot{p} - \dot{p}^*) + (s_x\gamma + \eta)(\dot{p} - \dot{p}^*) + s_x\varepsilon\dot{y}^* + s_x\dot{d}_x + s_x\dot{z} + s_x\dot{k} + (s_x\varepsilon_2 - \pi_2)\dot{K}_r - \dot{d}_m}{\pi} \tag{22}$$

---

[38] Where X and M stand for export and import volumes; P and P^* represent the domestic and foreign price levels (in a common currency); Y^* and Y are world and domestic incomes; K denotes net capital inflows; Dx and Dm stand for short-run deviations for exports and imports; A and B are positive constants; $\eta < 0$ and $\gamma < 0$ are import and export price elasticities; and $\pi > 0$ and $\varepsilon > 0$ are import and export income elasticities.

[39] Where K_r stands for net capital inflows in real terms $\left(K_r = \frac{K}{p^*}\right)$ and $s_x = \frac{PXZ}{PXZ+K}$; $s_k = \frac{K}{PXZ+K}$

The first group of equations represents the long-term growth path of the economy, with equation 15 showing the balance-of-payments equilibrium including unrequited transfers *(T)* following Alonso and Garcimartín (1998). Equations 16 and 17 are exports and imports functions, respectively, which depend on relative prices and domestic or foreign income. Equation 18 gives the long-term rate of growth of the domestic economy constrained by the trade balance, which depends, in keeping with the BPCG tradition, on the economic growth of the "rest of the world", weighted by the ratio of the income elasticities of exports and imports and the rate of expansion of *Z = (PX + T)/PX*, a component that considers the dynamics of foreign transfers relative to exports.

The second group of equations represents the short-term growth path of the economy. Equation 19 sets the equilibrium condition of the balance of payments with the crucial characteristic that net capital inflows (i.e., trade deficit) are allowed in the system´s short-term path. Equations 20 and 21 are exports and imports functions, modified to allow for the possible direct impact of net capital inflows (K_r) through the growing availability of foreign currency. Equation 22 represents the growth rate of domestic income consistent with the short-term constraint given by the trade balance and the inflow of foreign capital. In this model, the business cycle is given by the difference between the short-term and long-term rates of growth of the domestic economy:

$$\dot{y}_{sr} - \dot{y}_{lr} = \frac{(s_x\dot{p}-\dot{p}^*)+(s_x\gamma+\eta)(\dot{p}-\dot{p}^*)+(s_x-1)(\dot{z}+ \varepsilon\dot{y}^*)+s_k\dot{k}-s_x\dot{d}_x-\dot{d}_m+(s_x\varepsilon_2-\pi_2)\dot{K}_r}{\pi} \tag{23}$$

Perhaps the key conclusion of their model of the business cycle and the BPCG is that variations in net capital inflows and trade shocks are the two factors that drive short-term deviations of the economy from its long-term growth path.

b.3) Long-Term Foreign Debt Sustainability Approach.

Another approach to the inclusion of capital flows within this theoretical perspective is that of Bhering et al. (2019) who focuses on long-term debt sustainability. Their model is composed of the following equations[40]:

$$BoP = X - M - R + F \tag{24}$$

$$F = M - X + R \tag{25}$$

$$D - D_{-1} = M - X + R \tag{26}$$

$$R = rD_{-1} \tag{27}$$

Equation 24 presents the balance of payments as given by the sum of the current account balance (exports *X*, minus imports *M,* minus net income sent abroad, *R*) and the financial account (net inflow of foreign capital, *F*). Equation 25 sets the equilibrium condition that net capital inflows must be equal to the current account deficit; in other words, there is no long-term net accumulation or decumulation of the Central Bank´s foreign reserves. Equation 26 is the identity of the net accumulation of foreign debt given by the financial account´s

---

[40] Where *X* and *M* stand for export and import volumes; *R* represents net income sent abroad and *F* shows the net inflow of foreign capital.

balance. In equation 27 net income payments abroad are given by interests on outstanding external debt.

In addition, in the model, foreign debt sustainability is defined in terms of the ratio of external debt to exports. From equations 26 and 27, the level of the debt/exports ratio in period t is given by[41]:

$$d = \frac{M}{X} - 1 + \frac{1+r}{1+gx}d_{-1} \tag{28}$$

Introducing a maximum level of *"d"* given by, for example, the view of international financial institutions leads to:

$$\frac{M}{X} = 1 + d_{max}\left(\frac{gx-r}{1+gx}\right) \tag{29}$$

In the above d_{max} is the maximum value of d given by the limits to external debt financing set by international financial institutions:

$$d_{max}\left(\frac{gx-r}{1+gx}\right) = b \tag{30}$$

where b is the maximum proportion of imports to exports for which the level of indebtedness is at its maximum as determined by the conditions of foreign credit restriction. In this model, the long-term rate of growth of domestic output restricted by the balance of payments is expressed as follows:

$$Y_{BP} = \frac{X(1+b)}{m} \tag{31}$$

The main results that emerge from the previous equation (31) are that long-term sustainable capital flows can positively affect the level of production in the long term; however, they will not have any effect on modifying the growth rate compatible with the restriction of the balance of payments, since ultimately exports should tend to grow at the same rate as imports.

In conclusion, Bhering et al., (2019) take the debt/exports ratio as the relevant sustainability indicator because exports are the source of cash flow in international currency used to pay liabilities, in addition to introducing an external credit restriction in the form of a maximum level.

---

[41] Where d is the debt-to-exports ratio and g_x is the growth rate of exports.

References

Aizenman, J., Binici, M., & Hutchison, M. M. (2014). *The transmission of Federal Reserve tapering news to emerging financial markets* (Working Paper 19980). National Bureau of Economic Research.

Alba, C., Cuadra, G., Hernández, J. R., & Ibarra, R. (2021). *Capital Flows to Emerging Economies and Global Risk Aversion during the COVID-19 Pandemic. Working Papers 2021-17, Banco de México.*.

Alonso, J.A., & Garcimartín, C., (1998). A new approach to balance-of-payments-constrained growth model. *J. Post Keynesian Econ*. 21 (2), 259–282.

Barbosa-Filho, N. (2001). The balance-of-payments constraint: From balanced trade to sustainable debt. *BNL Quarterly Review*, *54*(219), 381–400.

Beirne, J., Renzhi, N., & Volz, U. (2021). Local currency bond markets, foreign investor participation and capital flow volatility in emerging Asia. *The Singapore Economic Review*.

Beirne, J., Renzhi, N., Sugandi, E., & Volz, U. (2020). Financial market and capital flow dynamics during the COVID-19 pandemic. No.1158, Asian Development Bank Institute, June.

Bhering, G., Serrano, F., & Freitas, F. (2019). Thirlwall's law, external debt sustainability, and the balance-of- payments constrained level and growth rates of output. *Review of Keynesian Economics*, *7*(4), 486–497.

Blecker, R.A. (2013). Long-run growth in open economies: export-led cumulative causation or a balance-of- payments constraint? In G. C. Harcourt & P. Kriesler (Eds.), *The Oxford Handbook of Post-Keynesian Economics*, vol. I, *Theory and Origins* (pp. 390–414). Oxford University Press.

Board of Governors of the Federal Reserve (2022), *Federal Open Market Committee, Statement*, March 16. In https://www.federalreserve.gov/newsevents/pressreleases/monetary20220316a.htm

Carstens, A., & Shin, H. S. (2019). Emerging markets aren't out of the woods yet. F*oreign Affairs*.

Cerutti, E., Claessens, S., & Puy, D. (2019). Push factors and capital flows to emerging markets: why knowing your lender matters more than fundamentals. *Journal of International Economics*, 119, 133-149.

Chowdhury, A.A., and J.K. Sundaram K. Sundaram (2022). Stagflation Threat: Be Pragmatic, Not Dogmatic, *Challenging Development*. March. In https://jomoglobaldev.substack.com/p/stagflation-threat-be-pragmatic-not?s=r

Curtiz, M. (1942). *Casablanca*, Hal B. Wallis Production.

Elliot, L. (2022). War in Ukraine could lead to food riots in poor countries, warns WTO boss, *The Guardian* March 24.

Fratzscher, M., Lo Duca, M., & Straub, R. (2018). On the international spillovers of US quantitative easing. *The Economic Journal*, 128(608), 330-377.

Gallagher, K.P. and R. Kozul-Wright (2022). *The Case for a New Bretton Woods*, Polity Press. Cambridge U.K.

Garcimartín, C., Alonso, J. A., & Rivas, L. (2012) Convergence and balance of payments constrained growth: is there a puzzle? In: E. Soukiazis & P. A. Cerqueira (Eds.), *Models of Balance of Payments Constrained Growth* (pp. 189–216). Palgrave Macmillan.

Garcimartín, C., Kvedaras, V., & Rivas, L. (2016). Business cycles in a balance-of-payments constrained growth framework, *Economic Modelling*, *57*, 120–132.

Henning, J. (2022). The FED ends the $6 trillion QE4: How the markets may react, *Value & Momentum Breakouts,* May.

Hernández, M., and A.Sánchez (2022). Superan remesas a inversión pública, Reforma March 30.

IMF (2009). *Balance of Payments and International Investment Position Manual*, Sixth edition (BPM6), Washington DC.

McCombie, J. S. L., & Thirlwall, A. P. (1994). *Economic Growth and the Balance-of-Payments Constraint*. Macmillan.

McCombie, J. S. L., & Thirlwall, A. P. (1997). Economic growth and the balance-of-payments constraint revisited. In P. Arestis, G. Palma & M. Sawyer (Eds.), *Markets, Unemployment and Economic Policy: Essays in Honour of Geoff Harcourt*, vol. 2 (pp. 498–511). Routledge.

McCombie, J. S. L., & Thirlwall, A. P. (Eds.) (2004). *Essays on Balance of Payments Constrained Growth: Theory and Evidence*. Routledge.

Moreno-Brid, J. C. (1998–99). On capital flows and the balance-of-payments-constrained growth model. *Journal of Post Keynesian Economics*, *21*(2), 283–298.

Moreno-Brid, J. C. (2003). Capital flows, interest payments and the balance-of-payments constrained growth model: a theoretical and empirical analysis. *Metroeconomica*, *54*(2–3), 346–365.

Rhodes W. & J.Lipsky (2022). Act now to Act now to prevent a new sovereign debt crisis in the developing world, *Financial Times*, March 23.

Sandbu, M. (2022). Economic impact of war in Ukraine could go from bad to worse, *Financial Times*, March 30.

Setterfield, M. (2006). Thirlwall's law and Palley's pitfalls: a reconsideration. In P. Arestis, J. McCombie & R. Vickerman (Eds.), *Growth and Economic Development: Essays in Honour of A. P. Thirlwall* (pp. 47–59). Edward Elgar.

Setterfield, M. (2011). The remarkable durability of Thirlwall's law. *PSL Quarterly Review*, *64*(259), 393–427.

Setterfield, M. (2013a). Endogenous growth: a Kaldorian approach. In G. C. Harcourt & P. Kriesler (Eds.), *The Oxford Handbook of Post-Keynesian Economics*, vol. I, *Theory and Origins* (pp. 231–256). Oxford University Press.

Setterfield, M. (2013b). Exploring the supply side of Kaldorian growth models. *Review of Keynesian Economics*, *1*(1), 22–36.

Singh, A, (1977). UK Industry and the World Economy: A Case of De-industrialization?, *Cambridge Journal of Economics*, vol. 1, issue 2, 113-36.

Soukiazis, E., & Cerqueira, P. A. (Eds.) (2012). *Models of Balance of Payments Constrained Growth: History, Theory and Empirical Evidence*. Palgrave Macmillan.

Soukiazis, E., Cerqueira, P., & Antunes, M. (2012). Modelling economic growth with internal and external imbalances: empirical evidence from Portuga*l*. *Economic Modelling*, *29*(2), 478–486.

Soukiazis, E., Cerqueira, P., & Antunes, M. (2014). Explaining Italy's economic growth: A balance-of-payments approach with internal and external imbalances and non-neutral relative prices. *Economic Modelling*, *40*, 334–341.

The Economist (2022), Recession roulette: A toxic mix of recession risks hangs over the world economy, *Leaders*. April 9.

Thirlwall, A. P. (1979). The balance of payments constraint as an explanation of international growth rate differences. *Banca Nazionale del Lavoro Quarterly Review*, *32*(128), 45–53.

Thirlwall, A. P. (1983). A plain man's guide to Kaldor's growth laws. *Journal of Post Keynesian Economics*, *5*(3), 345–358.

Thirlwall, A. P. (1991). Professor Krugman's 45-degree rule. *Journal of Post Keynesian Economics*, *14*(1), 23–28.

Thirlwall, A. P. (2011). Balance of payments constrained growth models: history and overview. *PSL Quarterly Review*, *64*(259), 307–351.

Thirlwall, A. P., & Dixon, R. J. (1979). A model of export-led growth with a balance of payments constraint. In J.K. Bowers (Ed.), *Inflation, Development, and Integration: Essays in Honour of A. J.Brown* (pp. 173–192). Leeds University Press.

Thirlwall, A. P., & Hussain, M. N. (1982). The balance of payments constraint, capital flows, and growth rate differences between developing countries. O*xford Economic Papers*, 34(3), 498–510.

Tolstoy, L (1873-1877). *Anna Karenina*. The Russian Messenger House.

United Nations (various years). *World Economic Situation and Prospects* (WESP), International Labor Organization (various years). Geneva, Switzerland.