Financial integration, productive development and fiscal policy space in developing countries

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1. Introduction

The Covid-19 pandemic has given rise to a massive global economic shock. Almost all governments worldwide had to intervene with bold fiscal measures either to provide emergency support to households and firms during lockdowns or to finance longer-term recovery plans. The Ukraine war now sets new no-less cumbersome challenges with public finances subsidizing economic actors hit by increasing energy and food prices. Dismal global economic forecasts may require national governments to keep on pursuing active fiscal policy in the near future. Fiscal space, however, is not equal among countries. Empirical evidence suggests it is larger in developed countries than in developing and emerging ones – EDE henceforth (Kose *et al.*, 2022), and that wide differences also exist among EDE countries themselves (Heller, 2005). On top of this, the space for fiscal policy may have changed through time due to increasing EDE countries' integration in the global financial market and exposure to mobile capital flows, among other factors. How financial integration influences fiscal policy in EDE economies is likely to be crucial in the current scenario of progressive abandoning of quantitative easing and restrictive monetary policy in developed countries, and (therefore) tightening liquidity in global financial markets.

In this paper, we analyse the relation between financial integration and fiscal policy in the context of a small open developing economy. Our goal is to analyse the implications on economic dynamics of fiscal policies that respond to and deal with finance-led cyclical macroeconomic volatility. More specifically, we study how restrictive fiscal measures, cuts in public purchases in particular, which are supposedly meant to avoid exchange rate crisis, excessive external indebtedness and capital flights, may actually exacerbate macroeconomic instability rather than not. In doing this, we also consider how the productive pattern of the economy and the ensuing capability to export (and/or to reduce import dependency) shape such relation. Ceteris paribus, structural change and successful productive diversification in EDE countries may in fact increase the external solidity of the economy and open more space for expansionary fiscal policies or reduce pressures for the adoption of austerity programs.

We develop our arguments by presenting a simple macro-aggregated model in which foreign capitals play a leading role in the determination of domestic demand injections (private consumption and investment on top of public purchases) and the short-run demand-driven macroeconomic equilibrium. The medium-to-long-run dynamics of the economy is in turn described by the joint evolution of the real exchange rate and of foreign debt-to-capital stock ratio. In this regard, we formally model the boom-and-bust dynamics (i.e., exchange rate appreciation and increasing external indebtedness then followed by currency collapses and massive capital outflows)

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that integration in global financial markets often generate in EDE countries. Given such fundamental dynamics, we describe the (undesirable) effects of contractions in public expenditures originally aimed at addressing mounting external imbalances, the accumulation of external debt and rising interest rates. We finally describe how an economy that is better capable to generate current account surpluses via "improved" parameters reflecting productive development and diversification may structurally become more stable and avoid (misplaced) recurse to fiscal adjustments.

The paper is organized as follows. Section 2 provides a brief review of the existing literature about financial integration and fiscal policy in EDE economies, as well as of the frequent pro-cyclical nature of fiscal policy itself in such countries. Section 3 presents the fundamental structure of our model and the determination of the short-run equilibrium. Section 4 moves the attention to cyclical medium/long-run cyclical dynamics in EDE countries. Section 5 describes the dynamic effects of (restrictive) fiscal policies and the stabilizing role of more developed and diversified productive systems. Section 6 concludes.

2. Financial integration and fiscal policy: a brief literature review

The relation between fiscal policy and external account in EDE economies is a long-standing core topic in development economics. It thus comes with no surprise it is now at the forefront of the economic debate given bold fiscal actions taken by most governments worldwide in the wake of Covid-19. On the one hand, international economic institutions note that fiscal responses to Covid in 2020-2021 has been generally milder in EDE countries than in advanced economies (IMF, 2022). On the other hand, ongoing discussion is about how to create enough fiscal policy space for public support to post-Covid recovery (Cimoli and Kozul Wright, 2022). Both analyses explicitly or implicitly recall to the possible endogeneity of EDE countries' fiscal space to constraints imposed by the foreign sector and EDE countries' positions in the balance of payments (McCombie and Thirlwall, 2002; Neto and Vernengo, 2004; Arestis and Sawyer, 2010; Vernengo and Perez-Caldentey, 2020). It is even the more so in the present era of financial globalization, i.e., a system in which financial integration and international financial flows can quickly change the space of domestic fiscal policy (Kohler and Stockhammer, 2022; Hein and Truger, 2012).

The concept of fiscal space regards the possibilities that a government has to allocate/create funding for specific objects (i.e., social policies, investment) without threatening the sustainability of the economy and of its financial position (Heller, 2005, Perotti, 2007). The fiscal space constraints concrete policy action (Roy *et al.*, 2012), defining the limits for a stable expansion of policies aimed at promoting national socio-economic development, including social protection (Ortiz *et al.*, 2015), as well as investments (Heller, 2005) and structural change (Cimoli *et al.*, 2020). It also defines limits to fiscal policy responses to crises (Romer and Romer, 2019), which has been usually weaker in (EDE) countries with high debt and/or reduced access to financial market. Giròn and Correa (2021) provide a clear synthesis of this concept when they cite ECLAC (2020) and state that in Latin America, in the last decade, "the priority of the region has been to safeguard the sustainability of the public [so that] the spending policy has focused on containing its growth, which has led to a reduction in primary spending to adjust the increasing weight of interest payments" (Giròn and Correa, 2021, p.555).

In the mainstream literature, the debate about the link between domestic spending, public spending first and foremost, the external account and foreign debt goes back to the so-called twin deficit hypothesis (Miller and Russek, 1989). In this view, public and foreign deficits (debts) are correlated with causality running from government budget to the current account balance. Larger government deficits in fact entail a decline in government and overall domestic savings. This in turn brings to (temporary?) economic expansion, rising interest rates and declining private investment. In the mainstream view, the crowding-out of private investment may bear negative implications as

to productivity dynamics and the competitiveness of the domestic economy. More relevantly, public deficits result in larger trade and current account deficits financed by foreign capitals attracted by higher interest rates. Such external imbalances may ultimately give rise to the excessive accumulation of foreign debt and perhaps pave the way to external debt crises. In this regard, more recent contributions about the perverse link between public debt and financial instability, or about the negative effects of high public debt over growth, somehow represent natural developments and complements of the twin deficits theory. On the one hand, various contributions stress how fiscal variables such as credit to public sector and fiscal deficits can as predictors for currency and financial crises (Kaminsky *et al.*, 1998). On the other hand, Reinhart & Rogoff (2010), among others, note the negative effects of high public debt ratios on economic growth. Such negative effects are partially due to the fact that fiscal responses to economic contractions are weaker in countries with high debt, as the level of public debt limits the possibilities for fiscal policy (Ostry *et al.*, 2010; Arslanalp and Tsuda, 2014). High public debts make policy makers more concerned about debt sustainability and loss of financial market access, and fiscal multipliers are smaller when fiscal space is limited (Huidrom *et al.*, 2020). This problem is exacerbated by *procyclical* fiscal policy in EDE countries (Ilzetzki and Végh, 2008). Rising public expenditures and widening fiscal deficits during booms render fiscal policy inoperative at best, or contractionary and destabilizing at worst, when downturns come[1].

The complex link between fiscal policy and the external account is not unknown to heterodox theories either. Indeed, in line with the balance of payments constraint tradition (Thirlwall, 1979; McCombie and Thirlwall; 2002), the external sector imposes strong limitation expansion in domestic demand and, therefore, to economic growth. Countries that require foreign currency to pay for their external debt need to always adjust their economies, in terms of domestic absorption and foreign account aiming at a balance of payments stability (Ocampo, 2011). Under external constraints, a regime that Ocampo (2011) labels "BoP dominance", the ability to do fiscal policy is then directly compromised (Barbosa-Filho, 2004; Ocampo, 2011), as the government is constantly required to adjust spending, controlling aggregate demand to its foreign accounts, indicating a constant commitment to debt sustainability both in terms of domestic and of foreign debts. For heterodox theories, expansionary fiscal policies, public investment feeding productive development in particular, would be desirable in demand-driven backward economies (Neto and Porcile, 2017). Binding external constraints, however, do not allow for them, if not in the short run. Interestingly, the productive structure of the economy also plays a role in shaping fiscal space. More diversified economies are more resilient to the effects of foreign debt on domestic spending, being able to generate stronger reactions though fiscal spending. That is particularly relevant observation from a structuralist post-Keynesian perspective, as non-price competitiveness is a central source of export demand (Dávila-Fernandez and Oreiro, 2022; Gräbner et al., 2020; Cimoli and Porcile, 2014). The less developed is the productive structure of the economy, instead, the more stringent is the external restriction and narrower the space for fiscal policy.

Which is the role of financial integration and international capitals in all this? Mainstream theories generally claim that financial integration and capital account liberalization is what EDE countries need to avoid fiscal policy-led instability. This view dates back to financial repression theory. Following Mckinnon (1973) and Shaw (1973), rising (perhaps excessive) public expenditures is possible only if financial operators are bound to purchase public bonds, interest rates are capped at artificially low levels, and investors cannot freely move funds in and out the economy. Financial repression and fiscal profligacy, however, come along with distortions and long-run damages to the

[1] An "extreme" version of mainstream theory suggests however that fiscal consolidations may have expansionary outcomes (Alesina and Perotti, 1997), even during recessions, when they are based on cut of public expenditures and modify people's expectations about debt dynamics and overall financial stability.

economy (Roubini and Sala-i-Martin, 1992; Haslag and Koo, 1999; Hoffmann, 2019). Indeed, funds are diverted away from productive *private* investment, inflation likely increase and external competitiveness declines, external imbalances widen, and the exchange rate is frequently depreciated (with risks of an inflationist spiral). In the end, the quest for fiscal discipline and long-term economic growth inevitably requires financial and capital account liberalization.

In "financialized" EDE countries, the macroeconomic framework loses space for discretional (unwise?) policies. First, "financial deregulation obtained the central banks' autonomy, whose main objective was to set inflationary goals, leaving aside the economic development" (Giròn and Correa, 2021, p.553). Second, according to the classical debate of the impossible trinity, or policy trilemma (Mundell, 1962), economies with open financial account and fixed (or quasi-fixed) exchange rates have difficulties in maintaining a sovereign monetary policy. This is even the more so if, consistent with recent literature about the "global financial cycles" (Rey, 2015), a dilemma actually replaced the trilemma. The dilemma is now between a fully liberalized financial account or the implementation of capital controls. When capitals can move freely, even flexible exchange rates become useless to insulate domestic monetary policy from external (global) financial cycles. Domestic monetary policy *has to* take restrictive (expansionary) stances whenever liquidity abounds (evaporates) in the global financial system, regardless of the real needs of the home economy. In this context, limits imposed to domestic monetary policy are implicitly set to fiscal policy as well. In fact, monetary policy cannot take any accommodating stance in favour of fiscal policy. It most likely become strictly conservative and gets even more restrictive (i.e., less benevolent with respect to the Treasure) whenever possible fiscal expansions might scare foreign investors and lead to capital outflows. Margins of maneuverer for fiscal authorities in EDE countries with currencies in the bottom part of world hierarchy (Prates, 2020) become very tight, if not supported by a favourable international financial climate. Without such support, the possibility of conducting a discretional fiscal policy will be very limited in EDE countries, including the one focused on long-run structural transformation (Cimoli *et al.*, 2020).

Some empirical contributions tend to confirm that financial integration may have made the management of the fiscal balance more sustainable and wiser than in the past, and reduce fiscal policy procyclicality. Alesina and Perotti (1997), Alesina *et al.* (1998), Kim (2003), and Furceri and Zdzienicka (2011), for instance, find that the size of the fiscal deficit has been generally smaller in financial integrated economies. This is in line with the view that financial integration is needed against fiscal dominance. Frankel *et al.* (2013) find that deeper financial integration, as measured by the Chinn-Ito index, reduces the cyclical component of government expenditures, in EDE countries in particular. However, there is no consensus yet about the alleged virtues of financial integration in conducting to "good" macroeconomic policies, diligent fiscal stances, and macroeconomic stabilization. First, above contributions use a limited country coverage focusing on OECD countries mostly. Second, the process of financial and capital account opening since the late 1980s and early 1990s – labelled by Rodrik (2011) as hyper-globalization or financialization by Palley (2013) – has resulted in a strong movement of international capital fluctuating in developing countries (Calvo et al, 1996). While this process allowed an inflow of capital to EDE countries, the volatility of these flows together with the type of macroeconomic policies required to manage them have resulted in a new source of economic constraint and instability to the peripheral world (Bortz and Kaltenbrunner, 2018; Botta, 2007; Paula *et al.*, 2017). Indeed, when reflecting upon the 1990s, Agènor already noted in 2003 that "several large recipients of capital inflows suffered from some, or a combination of some problems – namely, a rapid increase in liquidity, inflationary pressures, real exchange appreciation, and growing external imbalances." (Agènor, 2003, p.1106-1107). And he adds that "some types of policy responses (such as sterilised intervention, or a tightening of fiscal policy) can be effective in mitigating the adverse macroeconomic effects of large fiscal inflows in

the short term [but] over time these polices may become less effective or too costly to pursue" (Agènor, 2003, p.1107). More recently, Ostry *et al*. (2016) go as far as recognizing that "portfolio investment and banking and especially hot, or speculative, debt inflows seem neither to boost growth nor allow the country to better share risks with its trading partners [whilst] costs in terms of increased economic volatility and crisis frequency seem more evident" (Ostry et al., 2016, p.39).

When it comes to the specific relation between financial integration and fiscal policy, some recent contributions note that *finance-led* procyclical fiscal policy is still there in EDE countries (Alberola *et al.*, 2016; Alberola and Sousa, 2017; Benetrix and Lane, 2017). EDE countries may have in fact improved their capability to manage public budgets through "normal" business cycles or cycles related to booms-and-busts in the price of primary commodities. Perhaps thank to the introduction of fiscal rules, domestic governments may have effectively recorded large public surpluses in good times, i.e., during booms in the price of exported primary commodities, to open more space for fiscal deficits in bad times, i.e., with the bust of in the primary commodity bubble. Frankel (2013), for instance, puts emphasis on the specific case of Chile from 2008 to 2009. Things, however, get much more complicated with (external) finance-led cycles. On the one hand, Alberola and Sousa (2017) note how financial cycles bear stronger effects over structural fiscal budgets than commodity cycles. If these effects are not properly taken into account, they may induce fiscal authorities into mistakes and procyclical public expenditures. More importantly for our analysis, in Latin America, external financing conditions continue to play a key role in the determination of fiscal stances (Alberola *et al.*, 2016). Periods of abundant liquidity in international financial markets and large capital inflows to EDE countries lead to expansionary fiscal policies. Subsequent dearth in foreign capitals, however, easily prompt painful contractions in the public budget in periods of economic contraction. In a way, Benetrix and Lane (2017) support this story when the find that surging capital inflows, as captured by deeper current account deficits, cause larger public deficits. This is in turn consistent with Nikiforos *et al*. (2015) when analysing the mechanisms behind the accumulation of Greek debt in the way to the Greek financial crisis. They find that it is the external account that (Granger) causes the fiscal stance, thus suggesting reverse causality with respect to the "twin deficits" hypothesis. In the end, better more counter-cyclical fiscal policies in EDE countries in the wake of the 2007-2008 financial shock first and Covid-19 were likely made possible by over-expansionary monetary policies in core economies and flooding liquidity in international financial markets.

The economic mechanisms behind these facts could be easily captured through the lenses of post-Keynesian/structuralist theory. During expansionary phases in global financial cycles, risk aversion declines. Foreign lenders become more willing to take higher risks onboard and finance booming EDE countries even with rising foreign debt burdens (Minsky, 1983). Private debt builds up more frequently than public debt (Taylor, 1998; Ocampo *et al.*, 2009). Fiscal policy may also become more expansionary (not necessarily leading to fiscal deficits) if governments try to take advantage of cheap international credit. This increase in the fiscal space is only able to continue up to a certain point though. It ends in an external constraint when the external finance-led cycle reverts. This may happen when central banks in core economies switch to monetary restrictions and rising interest rates, foreign financial shocks hit, and/or EDE countries' imbalances become hardly sustainable any longer. This has been the experience of many Latin American countries in the 1990s (Neto and Vernengo, 2004; Frenkel and Rapetti, 2009), but also of some Southern EU countries before the 2007-2008 crisis (Stockhammer, 2016). In the declining stage of the (global) financial cycle, sudden stops and increasing private funds outflows can take place. Public debt may also have to bail out private ones. And "official" foreign capitals from international financial institutions (IMF) or foreign governments (the US Treasure in Mexico in 1994-1995 or EU governments in the case of Greece) may replace foreign private capitals. However, official financial support usually comes with tough

conditionality. Austerity measures come into play (Neto and Porcile, 2017) and fiscal policy turns strongly pro-cyclical. The possibility of using the public budget for social policy, public investment, is impeded because priority is given to honouring external financial commitments. Effects on short-run growth may be ultimately tough (Kohler and Stockhammer, 2022). They may even come together with permanent output losses and destabilizing effects, since fiscal austerity leads to structural reversions (Gechert *et al.*, 2019), and cuts to public investments further worsen non-price competitiveness and structural external imbalances of the economy (Neto and Porcile, 2017).

In the next sections of the paper, we try to formalize the interaction between capital flows and fiscal policy in open financially integrated EDE countries. We do so with a simple post-Keynesian/structuralist model. We first look at the cyclical dynamics possibly set in motions by large capital inflows and how domestic fiscal policy fits into these cycles with the attempt of counter-acting mounting external imbalances. Similar to Neto and Porcile (2017), we show how fiscal contractions may actually heightened medium-to-long-term instability rather than taming it. Different from them, however, we pay more attention to the role of foreign capitals as leading factor in the determination of macroeconomic fluctuations and fiscal policy stances. We finally look at how productive development, product diversification and perhaps integration into GVCs, perhaps with the necessary support of capital controls, may enable EDE countries to create a more stable macroeconomic environment and open more space for expansionary fiscal policies.

3. The model

Let assume a small open developing economy that is (partially) integrated in the global financial market[2]. The economy is demand-driven, as available capital is not used at full capacity and there is no shortage of labour. Capital goods "*K*" are imported from abroad and the domestic currency value of the capital stock is eP_fK. P_f is the foreign-currency price of one unit of the capital good, whilst "*e*" is the nominal exchange rate, i.e., the quantity of domestic currency purchased with one unit of the foreign one, say one dollar[3]. The price of the domestic good is P_h. Prices are taken as constant in the short run, whilst they change from one period to the other all along the transition to the medium/long-run (see more on this below). Given these assumptions, equation (1) defines real consumption (in terms of the domestic good) normalized by the capital stock "*K*":

$$\frac{C/P_h}{K} = c = c_0 f - c_1 q + c_w(1-\tau_w)\sigma u + c_\pi(1-\tau_\pi)(1-\sigma)u \qquad (1)$$

In equation (1), domestic consumption is a function of the different propensities to consume out of wages and profits, with "σ" as the wage share and "*u*" capacity utilization. τ_w and τ_π stand for income tax rates over wages and profits, respectively. The first two terms in equation (1) try to capture the relation that likely exist between domestic consumption and foreign (net) capital inflows "*f*" and the real exchange rate "*q*", respectively. More specifically, f is net capital inflows in real terms as a ratio of the capital stock: $f = \frac{eF_f}{eP_fK} = \frac{(F_f/P_f)}{K}$. We assume $c_0 > 0$. Following Ghosh & Chandrasekhar (2009), an increase in net capital inflows may come along with an expansion in domestic credit and more debt-financed consumption expenditures. The real exchange rate "*q*", in

[2] The assumption of partial financial integration in the global financial economy is functional to the development of our analysis that aims at investigating the effects of possible further steps towards full liberalization of capital flows and of the financial account.

[3] In this model, an increase in "*e*" stands for a depreciation of the domestic currency. Lower values of "*e*", instead, imply an appreciation.

turn, is defined as $\left(q = \frac{eP_f}{P_h}\right)$. We assume a negative relation between "*c*" and "*q*". Given developing EDE countries' imports of consumption goods, when the real exchange rate depreciates, domestic actors' purchasing power decreases, and so do their consumption expenditures.

Equation (2) describes capital accumulation. Equation (2) first relates investment decisions by domestic firms (i.e., the purchase of foreign capital goods) to "*f*" and "*q*". In this regard, we assume investment to move very much in line with consumption behaviours. First, when foreign capitals pour into the domestic economy, they may likely feed domestic credit booms that in turn lead to larger credit-financed investment on top of more consumption expenditures. Second, an appreciated real exchange rate (i.e., lower "*q*") may speed up capital accumulation by increasing domestic firms' (profits) purchasing power with respect to the imported capital good. More than this, with domestic firms indebted (at least partially) in foreign currency, real exchange rate appreciations make their balance sheet more solid and could possibly encourage further expansions in investment (Perez-Caldentey & Vernengo, 2021; Bonizzi & Kaltenbrunnen, 2020; Perez-Caldentey et al. 2019)[4].

$$\frac{I/P_h}{K} = g_K = b_0 f - b_1 q + b_2 u - b_3 r \qquad (2)$$

With $b_i > 0$

In equation (2), we finally assume that domestic investment responds positively (negatively) to increases in capacity utilization (the interest rate), respectively.

Equation (3) formalizes public purchases. Given some exogenous expenditures (γ_0), we assume that domestic government reduces public purchases when either the domestic interest rate "*r*" or the *external* debt stock (as a ratio of the capital stock) of the economy $d = \frac{eD_f}{eP_f K} = \frac{D_f/P_f}{K}$ increase.

$$\frac{G/P_h}{K} = g_p = \gamma_0 - \gamma_1 r - \gamma_2 d \qquad (3)$$

With $\gamma_i > 0$.

In a way, these assumptions aim at capturing two stylized facts about the behaviour of public budgets in EDE countries. First, public budgets, public expenditures in particular, have been frequently asked by international financial institutions to take restrictive stances in reactions to mounting external imbalances and accumulating foreign liabilities, even in the run-up or in the wake of economic crises. Second, governments in EDE countries are often tempted to raise public expenditures in times of financial bonanza in order to take advantage of cheap foreign credit. The two effects, taken together, may well reproduce pro-cyclical dynamics in public finances, public expenditures first and foremost, documented above.

Equation (4), finally, described net exports as normalized by the "imported" capital stock. In equation (4), "*h*" stands for an exogenous component in net exports that may capture home

[4] Despite such possibly *direct* expansionary effect of real exchange rate depreciations over domestic firms' investment, the final effect of "*q*" over "*I*" remains uncertain. Indeed, it also depends on the *indirect* effect that real exchange rate appreciations may carry out over investment by affecting aggregate demand, capacity utilization and, eventually capital accumulation via the accelerator. In this sense, should exchange rate depreciations have strong expansionary effects by boosting exports and limiting imports, aggregate investment may actually increase rather than decrease along with higher values of "*q*". See more on this below.

economy's income elasticity of exports. "*m*", instead, is obviously related to imports' income elasticity.

$$\frac{NX/P_h}{K} = \frac{X/P_h}{K} - \frac{M(q,P_hY)/P_h}{K} = x(q) - m(q,u) = x^n = h + jq - mu \qquad (4)$$

In equation (4), we also assume that the foreign "real" demand of domestic goods is a positive function of "*q*" whilst the domestic demand of imported goods responds negatively to an increased (depreciated) real exchange rate. Overall, we may assume that the Marshall-Lerner condition holds true and that there is an overall positive relation between x^n and q (i.e., $j > 0$).

Equations (1) – (4) formalize the real side of the economy. Equation (5), in turn, takes a look at the financial side and to domestic interest rate "*r*" more specifically.

$$r = \mu_0[r_0 + \alpha(\pi - \pi^T)] + \mu_1\left[r_f + \phi(d,q)\right] \qquad (5)$$

With $\mu_0 > 0;\ 0 \leq \mu_1 \leq 1; \alpha > 0; \phi_d > 0;\ \phi_q < 0$

We assume "*r*" to be defined according to two broad factors. First, we assume that "*r*" depends on domestic central bank's effort to get domestic inflation to the target. We assume domestic central bank to adopt an inflation targeting strategy that exclusively focus on inflation. Consistent with a pretty standard Taylor rule, domestic central bank increases "*r*" whenever domestic inflation (π) is higher than targeted one (π^T). "r_0", instead, stands for a sort of "natural" interest rate that, in central bankers' view, may prevail when current inflation is at target. It also represents a "floor" rate in the determination of "*r*" that central bank imposes to possibly set "*r*" higher than foreign rate "r_f", to keep the exchange rate appreciated and inflation low[5]. In equation (5), μ_0 stands for the relative importance of such domestic channel in setting "*r*".

The determination of domestic interest rate is also influenced by the level of integration of the economy in the world financial system. Therefore, in equation (5), we assume "*r*" to depend positively on foreign interest rate "r_f" as well as on the country factor risk ϕ. In turn, we assume the country risk factor to be positive function of the accumulated stock of external debt (as a ratio of the capital stock) "*d*", as well as of the real exchange rate "*q*". On the one hand, the higher the external debt-to-capital stock ratio, the higher is the financial exposure of the domestic economy to foreign creditors and, therefore, its perceived risk of default[6]. On the other hand, at least in the case of EDE countries exporting primary commodities, an increase in the price of the exported goods (i.e., a lower value of "*q*") is usually taken as indicator of better capability to support external debt. Moreover, an appreciation in the nominal and hence real exchange rate (again, a *decline* in the level

[5] In increasing number of EDE countries has moved to pure inflation targeting since early 2000s. Theoretically, such a monetary regime would imply exclusive focus on inflation and a free-floating exchange rate regime (Frenkel, 2006). In reality, this is not the case, as central banks in EDE countries usually pay great attention to exchange rate as relevant "pass-through" channel of foreign inflation to domestic one. It is for this reason that monetary institutions in EDE countries may privilege relatively high interest rates, positive net capital inflows and an appreciated exchange rate as best strategy to keep domestic inflation low (Botta, 2021).

[6] There are several alternative indicators that may capture the external financial solidity of the economy. One could think about the external debt-to-export ratio, the debt service-to-export ratio or the ratio between external debt and foreign reserves, for instance. In this model, we use the external debt-to-capital stock ratio. We do so because this is a more immediate measure of the relation between (external) liabilities and total assets of the economy. Also, following equation (4), a certain level of proportionality exists between domestic capital stock and foreign exports. In the end, in our model, installed capital stock also gives an idea of the economy's capability to generate exports and make its external financial position sustainable.

of "q") may improve the balance sheet of domestic firms indebted in foreign currency. Overall, the economy may appear a safer place to foreign investors, hence a reduction in ϕ and "r".

In equation (5), μ_1 capture the importance of foreign forces in determining "r". It ranges from 0 to 1 according to the level of integration of the economy in the global financial market. On the one hand, μ_1 would be equal to 0 in the case of an economy closed to international capital flows. On the other hand, it would be equal to 1 with perfect integration in the global financial system.

For the sake of simplicity, we assume that foreign capital flows consist of international loans that take place either via foreign purchases of domestic bonds or international banks' credit. We thus neglect to consider portfolio investment related to equities. Equation (6) formalizes net foreign capital inflows as a function $\upsilon(.)$ of the gap between the domestic and foreign one once adjusted for the country factor risk:

$$f = \upsilon(r - r_f - \phi) \qquad (6)$$

In equation (6), "υ" represents international capitals' responsiveness to interest rates' differential and changes according to the level of financial integration of the economy. The more integrated the economy is, the higher is υ and the stronger is foreign capitals' reaction to any variation "r", "r_f" or ϕ. Ceteris paribus, with the exception of the case of full financial integration, an increase in the country factor risk will reduce interest rate differential $(r - r_f - \phi)$ and lead to reductions in net capital inflows if not capital reversals.

The final set of equations below describe the determination of domestic and foreign inflation. As to the dynamics of domestic prices, we first assume that domestic firms apply a fixed mark-up over unit labour costs. Domestic inflation is thus given by the joint dynamics of domestic nominal wages and labour productivity. This is stated in equation (7) below:

$$\pi = \widehat{W} - \hat{a} \qquad (7)$$

In equation (7), π is domestic inflation, $\widehat{W}$ is the growth rate in nominal wages and $\hat{a}$ is the growth rate of labour productivity. For the sake of simplicity, we assume the dynamics of labour productivity to be exogenous. Indeed, this model aims at analysing the role of financial integration and international capital in the determination of macroeconomic fluctuations in EDE countries as well as the space for fiscal policy. A more realistic endogenous dynamics of labour productivity would have made the model more complicated without adding much to our analysis. We preferred to keep this piece of the story out of our story.

Equation (8) below in turn models percentage variation in nominal wages. In a very simplistic fashion, we assume trade unions to bargain nominal wage's increases according to expected inflation (π^e) and improvements in labour productivity ($\hat{a}$). Also, we assume domestic economic actors to trust domestic monetary institutions such that expected inflation is set equal to central bank's inflation target (see equation (9)).

$$\widehat{W} = \pi^e + \hat{a} \qquad (8)$$

$$\pi^e = \pi^T \qquad (9)$$

Equations (7) – (9) offer an oversimplified description of inflation dynamics in the home economy. Indeed, distributive shares are assumed constant and inflation is independent by any distributive struggle between wage earners and profit earners. It does not react to changes in the level of economic activity and to any possible gap between current capacity utilization and normal one. As

such, inflation emerges as exogenous and always equal to the target. The introduction of these elements of endogeneity in inflation dynamics would certainly make our model more realistic. However, they would also increase its complexity (the short run equilibrium – see below – would become fully endogenous, with "*u*", "*g*", "*f*" and "*r*" all determined simultaneously) without modifying the essence of our narration. Once again, this model is on the link between international capitals, cyclical macro dynamics and the scope for fiscal policy in (more or less) financially open EDE countries. In this context, we focus on the *nominal* exchange rate rather than relative prices as main channel through which foreign capitals influence the *real* exchange rate, external imbalances and the evolution of the economy. Additional unnecessary degrees of complexity can thus be safely avoided.

Equation (10) defines foreign inflation (π_f). It takes it as exogenous and equal to ($\overline{\pi_f}$):

$$\pi_f = \overline{\pi_f} \qquad (10)$$

3.1 Short-run equilibrium

Equations (1) – (9) determine the short-run equilibrium of the model. Causality is simple. Given domestic inflation from equations (7) – (9), and with "*d*" and "*q*" fixed in the short run, equation (5) determines the interest rate "*r*". This in turn defines net capital inflows according to equation (6). With the financial side of the economy now set, equations (1) – (4) jointly determine the short-run equilibrium values for capacity utilization and capital accumulation. More specifically, equation (11) below defines the macroeconomic equilibrium between domestic production (normalized by the capital stock) and aggregate demand:

$$u = c(u, f, q) + g_K(u, f, q, r) + g_P(r, d) + x^n(q, u) \qquad (11)$$

Now take equations (1) – (4) and plug them into (11). After some mathematical passages and re-arranging terms, one obtains two explicit solutions for both capacity utilization and the growth rate of the capital stock. They are stated in equations (12) and (13) below:

$$u^* = \frac{(\gamma_0+h)+(c_0+b_0)f(q,d)-(c_1+b_1-j)q-(\gamma_1+b_3)r-\gamma_2 d}{\{1-[c_w(1-\tau_w)\sigma+c_\pi(1-\tau_\pi)(1-\sigma)+b_2-m]\}} = \frac{1}{\xi}[\varphi_0 + \varphi_1 f(q,d) - \varphi_2 q - \varphi_3 r(q,d) - \gamma_2 d] \qquad (12)$$

With: $\xi = \{1 - [c_w(1-\tau_w)\sigma + c_\pi(1-\tau_\pi)(1-\sigma) + b_2 - m]\}$ and:

$$\varphi_0 = (\gamma_0 + h) > 0 \; ; \varphi_1 = (c_0 + b_0) > 0 \; ; \varphi_2 = (c_1 + b_1 - j) \lesseqgtr 0 \; ; \varphi_3 = (\gamma_1 + b_3) > 0$$

$$g_K^* = b_0 f - b_1 q + b_2 u^* - b_3 r \qquad (13)$$

It is worth noting that the short-run equilibrium level of capacity utilization is a negative function of the domestic interest rate "*r*" as we as of the accumulated stock of external debt "*d*" due to the negative impact that "*d*" could possibly display over government expenditures as well as on further capital inflows. On the contrary, short-term capacity utilization responds positively to "*f*" as periods of large net capital inflows have been frequently associated with domestic credit booms and rising (private) consumption and/or investment expenditures. The sign of the relation between u^* and "*q*" is in turn uncertain. Indeed, appreciations of the real exchange rate "q" could be either expansionary or contractionary depending on the specific values of "exchange rate"-related parameters in equation (11) and the relative strength of the different mechanisms through which the real

exchange rate influences capacity utilization. This is formally stated in equation (14), which gives us the partial derivative of u^* with respect to "*q*":

$$\frac{\partial u^*}{\partial q} = \frac{1}{\xi}\left[\varphi_1 \frac{\partial f}{\partial q} - \varphi_2 - \varphi_3 \frac{\partial r}{\partial q}\right] \lessgtr 0 \qquad (14)$$

Following Perez-Caldentey and Vernengo (2021) and Kohler and Stockhammer (2022), real exchange rate appreciations may lead to (perhaps temporary and unsustainable) expansions in capacity utilization if they stimulate higher consumption and investment expenditures by increasing the purchasing power of households and firms (see parameters c_1 and b_1 as components of φ_2 in equation (14)). The expansionary effects of real exchange rate appreciations could be even stronger if domestic firms indebted in foreign currency decide to scale up their investment as a consequence of supposedly more solid balance sheets. The same if true if more appreciated real exchange rate reduce perceived risks by foreign lenders (domestic borrowers) such that "*f*" rises and "*r*" declines. In line with new developmentalist thinking (Bresser-Pereira et al., 2014; Marconi, 2012), real exchange rate appreciations carry out undoubtedly negative effects over capacity utilization via net exports by reducing the price competitiveness of domestic goods with respect to foreign ones (see component "*j*" of parameter φ_2). Which scenario will eventually prevail is a matter of the specificities of each peculiar economy under scrutiny. And the picture would get even more complicated if we would consider likely non-linearity with which changes in the real exchange rate affects economic activity through the multiple channels just mentioned.

It is easy to see from equation (13) that also the sign of capital accumulation's response to variations in the real exchange rate is uncertain:

$$\frac{\partial g_K}{\partial q} \lessgtr 0 \rightarrow \begin{cases} (\partial u^*/\partial q) < 0 \rightarrow (\partial g_K/\partial q) < 0 \\ (\partial u^*/\partial q) > 0 \rightarrow \begin{cases} (\partial g_K/\partial q) > 0 \; if \; b_2 \frac{du^*}{dq} > \left[b_1 - b_0 \frac{\partial f}{\partial q} + b_3 \frac{\partial r}{\partial q}\right] \\ (\partial g_K/\partial q) < 0 \; if \; b_2 \frac{du^*}{dq} < \left[b_1 - b_0 \frac{\partial f}{\partial q} + b_3 \frac{\partial r}{\partial q}\right] \end{cases} \end{cases}$$

Real exchange rate appreciations may either lead to more investment or a reduction in capital accumulation depending on the relative *direct* and *indirect* strength of the financial/balance sheet versus net export mechanisms outlined above. Despite such uncertainty, contractionary devaluation (i.e., $((\partial u^*/\partial q) < 0)$ will certainly come along with declining investment. This is due to negative effects of an increase in "*q*" over "*f*", "*r*" and "u^*" (on top of its direct negative effect on domestic investment by reducing the purchasing power of domestic firms with respect to imported capital goods). Expansionary devaluation (i.e., $((\partial u^*/\partial q) > 0)$ will instead lead to rising capital accumulation only if investment's (positive) response to an expanding economy more than compensate for possible downscaled investment due to deteriorating balance sheets and an overall worse monetary environment (i.e., a higher "*r*").

4. Finance-led medium-to-long-run cycles

So far, we have assumed the real exchange rate "*q*" and the (external) debt-to-capital stock ratio "*d*" to be constant in the short run. These variables in turn change over the medium and the long run. In the last forty years, increasing integration of EDE countries in the global financial market and exposure to global financial cycles have frequently given rise heightened macroeconomic volatility characterized by cyclical dynamics in the joint evolution of "*q*" and "*d*" (Kohler, 2019). In this section,

we provide a simplified representation of such finance-led macroeconomic volatility. Let focus first on the evolution through time of the real exchange rate.

Consistent with the definition of the real exchange rate provided above, percentage variation of "*q*" is nothing else than the percentage variation of the nominal exchange rate "*e*" plus the inflation differential between foreign and domestic inflation. This is stated in equation (15) below:

$$\hat{q} = \hat{e} + \overline{\pi_f} - \pi \qquad (15)$$

Whilst, for the sake of simplicity, inflation rates are taken as exogenous, the variation through time of the nominal exchange rate is endogenous and determined by *notional* imbalances in the Balance of Payments. Consistent with Bhaduri (2003), Kholler (2021), and Stockhammer and Kholler (2022), equation (16) below says that the (percentage) variation of the nominal exchange rate is a function $\rho(.)$ of the several components of the Balance of Payments (BoP), with ρ as the sensitivity of the nominal exchange rate to any temporary nominal imbalance in the BoP itself:

$$\hat{e} = \rho\left[\underbrace{(x^n(u^*(q,d),q) - r(q,d)d)}_{-}, \underbrace{f(q,d)}_{-}, \underbrace{\Omega}_{+/-}\right] \qquad (16)$$

In equation (16), the nominal exchange rate responds negatively to possible surpluses in the current account of the economy as determined in the short run, i.e., $(x^n(u^*(q,d),q) - r(q,d)d)$. Indeed, positive net exports that exceeds interest payments on external debt may push the domestic currency to appreciate so that $\hat{e} < 0$ and "*e*" decreases. By the same token, positive net capital inflows, i.e., $f(q,d) > 0$, may equally lead to an appreciation of domestic currency. Finally, in equation (16), Ω stands for other components of the Bop such as changes in foreign reserves that here we take as exogenous and possibly guided by policy decisions. The sign of their effect on the dynamics of the exchange rate is positive as, ceteris paribus, domestic monetary institutions willing to accumulate (decumulate) foreign reserves will tend to depreciate (appreciate) the domestic currency.

If we plug equation (16) into (15) and we then multiply both sides by *q*, we obtain the expression of the dynamics of the real exchange rate. We report this below in equation (17):

$$\dot{q} = q\left\{\rho[(x^n(u^*(q,d),q) - r(q,d)d), f(q,d), \Omega] + (\overline{\pi_f} - \pi)\right\} \qquad (17)$$

As to (foreign) debt-to-capital stock ratio, once noticed that net capital inflows represent changes in the stock of debt "*D*", its variation through time is given by multiplying its percentage change $\hat{d} = \left[\frac{f(q,d)}{d} - g_K(q,d)\right]$ by "*d*" itself in equation (18):

$$\dot{d} = d\left(\frac{f(q,d)}{d} - g_K(q,d)\right) \qquad (18)$$

Equations (17) and (18) form a system of two non-linear differential equations giving rise to complex dynamics in the (*q*-*d*) space. We can capture such dynamics in proximity of the steady state by analyzing steady state values of partial derivatives of $\dot{q}$ and $\dot{d}$ with respect to state variables "*q*" and "*d*". Let's take $\dot{q}$ first. The expression below gives the own partial derivative of $\dot{q}$ with respect to the current value of the real exchange rate itself:

$$\left.\frac{\partial \dot{q}}{\partial q}\right|_{SS} = \left.\frac{\partial \rho(.)}{\partial q}\right|_{SS} = \frac{\partial \rho}{\rho x^n}\left(\frac{\partial x^n}{\partial q} + \frac{\partial x^n}{\partial u^*}\frac{\partial u^*}{\partial q}\right) - \frac{\partial \rho}{\partial r}\frac{\partial r}{\partial q}d_{SS} + \frac{\partial \rho}{\partial f}\frac{\partial f}{\partial q}$$

By substituting from equations (5) and (11), we get:

$$\left.\frac{\partial \dot{q}}{\partial q}\right|_{SS} = \rho_{x^n}\left[j - \frac{m}{\xi}\left(\varphi_1 \frac{\partial f}{\partial q} - \varphi_2 - \varphi_3 \mu_0 \frac{\partial \phi}{\partial q}\right)\right] - \rho_r \mu_0 \frac{\partial \phi}{\partial q} d_{SS} + \rho_f \frac{\partial f}{\partial q} \lessgtr 0 \qquad (19)$$

With $\rho_{x^n} = \frac{\partial \rho}{\rho x^n} < 0$; $\rho_r = \frac{\partial \rho}{\partial r} < 0$; $\rho_f = \frac{\partial \rho}{\partial f} < 0$; $\frac{\partial f}{\partial q} < 0$; $\frac{\partial \phi}{\partial q} > 0$;

The sign of partial derivative (19) could be either positive or negative. On the one hand, its sign depends on the contractionary or expansionary effects of a real exchange rate devaluation over short-run economic activity u^*(i.e., the term in round parentheses in equation (19)) once put together with the direct positive effect of changes in "*q*" over net exports (as captured by parameter "*j*"). On the other hand, it also depends on the effects that changes in "*q*" bring about in the BoP via its impacts on interest payments on the accumulated debt stock (i.e., $\rho_r(\partial r/\partial q)d$) and, perhaps more importantly, over net capital inflows, (i.e., $\rho_f\,(\partial f/\partial q)$). Ceteris paribus, contractionary exchange rate devaluations, by curtailing u^* and improving the economy's current account, tend to generate self-stabilizing effects of "*q*" over its own dynamics. Expansionary devaluations, in turn, more likely lead to further depreciations of the nominal and real exchange rate.

"Pure" finance-related mechanisms through which "*q*" influences its own dynamics all carry out destabilizing effects[7]. Indeed, a real exchange rate appreciation tends to reduce interest payments "*rd*" over accumulated external debt stock "*d*", so that the economy's current account improves and *less* pressures for an exchange rate depreciation take place via BoP. More than this, a real exchange rate depreciation further stimulates surges in net positive capital inflows, as the balance sheet of domestic borrowers is perceived more solid and foreign investors become more eager to invest in the economy.

In equation (19), ρ_{x^n}, ρ_r, and ρ_f stand for the responsiveness of the nominal (and real) exchange rate to the various components of the BoP, net exports, net interest payments and net capital inflows, respectively. In general, given the far larger size of financial flows with respect to trade relations and the increasing importance of financial flows in the determination of finance-related macroeconomic economic variables, the nominal (and real) exchange rate among others, it makes sense to assume the latter destabilizing effects to prevail over the former stabilizing ones. More formally, if $|\rho_f| \gg |\rho_r|$, and (or) $\varphi_1$is sufficiently small, we may safely assume that $\left.\frac{\partial \dot{q}}{\partial q}\right|_{SS} > 0$.

The partial derivative of $\dot{q}$ with respect to "*d*" in turn reads:

$$\left.\frac{\partial \dot{q}}{\partial d}\right|_{SS} = \left.\frac{\partial \rho}{\partial d}\right|_{SS} = \rho_{x^n}\left(\frac{\partial x^n}{\partial u^*}\frac{\partial u^*}{\partial d}\right) - \rho_r\left(\frac{\partial r}{\partial d} d_{SS} + r_{SS}\right) + \rho_f \frac{\partial f}{\partial d}$$

By taking the partial derivative of u^* and "*r*" with respect to "*d*" from equations (5) and (11), we obtain:

$$\left.\frac{\partial \dot{q}}{\partial d}\right|_{SS} = \rho_f \frac{\partial f}{\partial d} + \left[\rho_{x^n}\frac{m}{\xi}\left(\varphi_1 \frac{\partial f}{\partial d} - \varphi_3 \mu_0 \frac{\partial \phi}{\partial d}\right) - \rho_r\left(\mu_0 \frac{\partial \phi}{\partial d} d_{SS} + r_{SS}\right)\right] \lessgtr 0 \qquad (20)$$

Once again, the sign of this partial derivative is uncertain. Indeed, the recessionary effects that an increasing external debt brings about, directly or indirectly, via lower public purchases, consumption

[7] Increases in net capital inflows as stimulated by a real exchange rate appreciation may also boost short-run economic activity by expanding debt-financed domestic consumptions and investments. Ceteris paribus, this effect will tend to counter-act further appreciations of the real exchange rate, as it leads to a worsening trade and current account balance.

and investments, tends to improve the current account of the economy and, hence, reduces pressures for exchange rate's depreciations. However, quick enough responses of net capital inflows and net interest payments to rising concerns about increasing external debt could easily lead to repeated devaluation of the exchange rate, such that the sign of derivative (20) is eventually positive.

If we move our attention to the evolution of the foreign debt-to-capital stock ratio, equation (21) shows the partial derivative of equation (18) with respect to the real exchange rate evaluated at the steady state:

$$\frac{\partial \dot{d}}{\partial q}\Big|_{SS} = \frac{\partial f/\partial q}{d_{SS}} - \left[b_0 \frac{\partial f}{\partial q} + b_2 \frac{\partial u^*}{\partial q} - (b_1 + b_3 \mu_0 \frac{\partial \phi}{\partial q})\right] \lesseqgtr 0 \qquad (21)$$

The first term in equation (21) shows the effect that a depreciation of the real exchange rate brings about the stock of external debt (as a share of the capital stock) by affecting net capital inflows. The effect is negative. In fact, a depreciated exchange rate may increase the perception of vulnerable balance sheets of domestic borrowers with respect to currency mismatch. The country risk factor ϕ increases, driving down net capital inflows and the dynamics of external debt. The term in square parentheses in equation (21), instead, captures how the exchange rate affects capital accumulation in the domestic economy. Several forces are at play. On the one hand, increasing interest rates (i.e., $b_3\mu_1(\partial\phi/\partial q)$), lower purchasing power in term of the *imported* capital good (i.e., b_1) and the slowdown in foreign finance-led credit boom (i.e., $b_0(\partial f/\partial q) < 0$) all curtail capital accumulation and destabilize the debt-to-capital stock ratio. A contractionary devaluation would exacerbate this. Expansionary effects of exchange rate depreciations (i.e.,$(\partial u^*/\partial q) > 0$) compensate contractionary/destabilizing forces above by stimulating capital accumulation via the accelerator term b_2. The final result is again uncertain. For the sake of our analysis, we assume that the first stabilizing effect prevails over destabilizing forces, at least for relatively low values of the steady state debt-to-capital stock ratio d_{SS}. In the end, this assumption amounts to capital accumulation that does not react too strongly to changes in the interest rate[8], something that available empirical evidence tends to confirm (Sharpe and Suarez, 2014; Taylor, 2014).

Equation (22) below finally shows the effects of "*d*" on its own dynamics:

$$\frac{\partial \dot{d}}{\partial d}\Big|_{SS} = \frac{(\partial f/\partial d) - (f_{SS}/d_{SS})}{d_{SS}} - \left[b_0 \frac{\partial f}{\partial d} + \left(b_2 \frac{\partial u^*}{\partial d} - b_3 \mu_0 \frac{\partial \phi}{\partial d}\right)\right] \lesseqgtr 0 \qquad (22)$$

The first term in equation (22) in undoubtedly negative (since that $(\partial f/\partial d) < 0$) and this certainly tends to stabilize the debt-to-capital stock ratio. However, the second term into squared parentheses is negative: a higher stock of foreign debt curtails domestic capital accumulation via a multiplicity of channels: (i) the credit-boom channel ($b_0(\partial f/\partial d)$); (ii) the accelerator channel ($b_2(\partial u^*/\partial d) < 0$), which becomes more acute the more domestic government is adverse to the accumulation of foreign debt (i.e., γ_1 and γ_2 largely positive; (iii) the interest rate channel, i.e., $b_3\mu_1(\partial\phi/\partial d)$. For the sake of our analysis, assume again that the former stabilizing effect dominates the latter destabilizing one. In particular, in order to better study the effects of structural changes in the stance taken by fiscal policy to the evolution of foreign indebtedness, assume that domestic government's expenditures are mostly insensitive to "*r*" and "*d*". Other way around, we assume $\left(\partial \dot{d}/\partial d\right)\big|_{SS} < 0$.

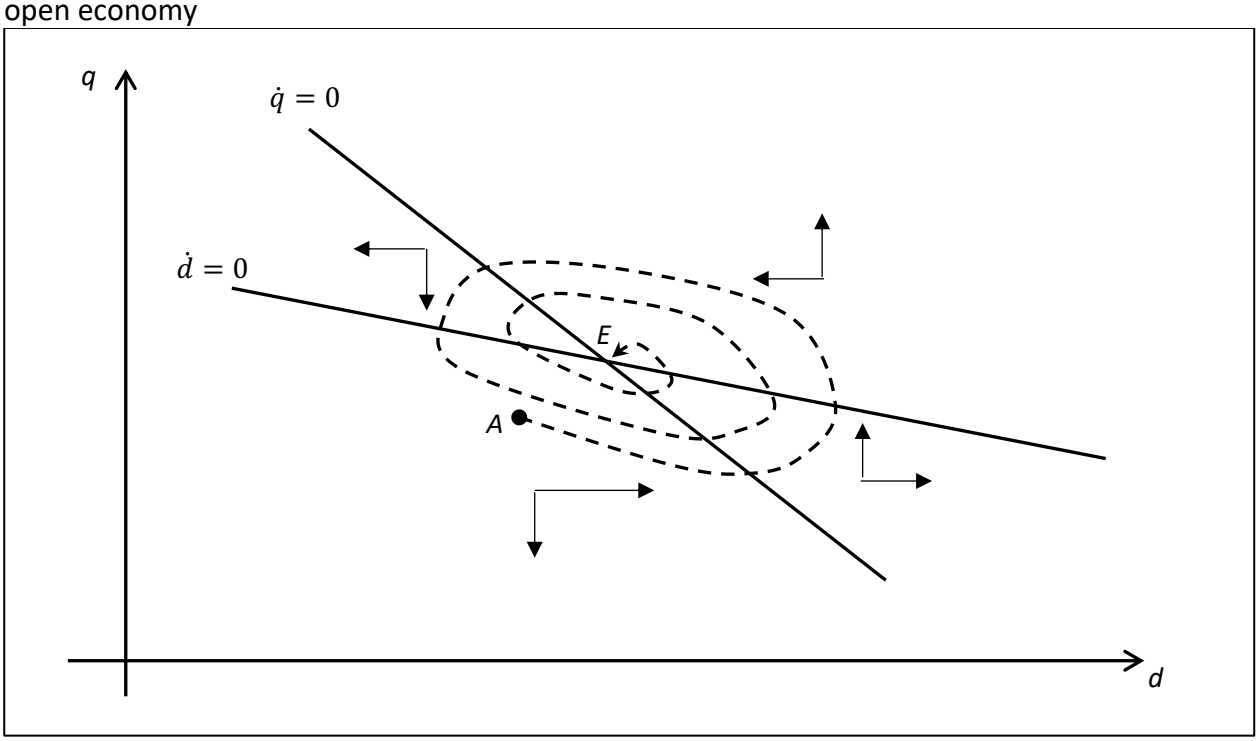
[8] We can similarly assume that the accumulation of productive capital in the tradable sector of the economy is rather insensitive to credit booms, once again a pretty well-known stylized fact, at least in some developing countries since 2010 (Ibarra, 2011; Perez-Caldentey and Vernengo, 2021; Perez-Caldentey *et al.*, 2019).

Given this set of partial derivatives, the dynamics of the economy in the (*q*-*d*) space in the neighbourhood of the medium/long-run equilibrium is determined by the Jacobian Matrix (M.1) below:

$$J_{M.1} = \begin{matrix} \dot{q} \\ \dot{d} \end{matrix} \begin{matrix} q & d \end{matrix} \begin{bmatrix} + & + \\ - & - \end{bmatrix} = \begin{bmatrix} \left.\frac{\partial \dot{q}}{\partial q}\right|_{SS} & \left.\frac{\partial \dot{q}}{\partial d}\right|_{SS} \\ \left.\frac{\partial \dot{d}}{\partial q}\right|_{SS} & \left.\frac{\partial \dot{d}}{\partial d}\right|_{SS} \end{bmatrix}$$

Multiple scenarios may emerge depending on the relative slope of the two geometric loci for $(\dot{q} = 0)$ and $(\dot{d} = 0)$. Local stability requires the determinant *det.*($J_{M.1}$) of Jacobian matrix $J_{M.1}$ to be positive and trace tr.($J_{M.1}$) to be negative. The first condition is fulfilled when the locus for $(\dot{q} = 0)$ is steeper, in absolute terms, than the locus for $(\dot{d} = 0)$. The latter, in turn, is satisfied when $\left|\left(\partial \dot{d}/\partial d\right)\right|_{SS}| > (\partial \dot{q}/q)|_{SS}$. Figure 1 portrays this scenario. More specifically, it shows the convergent cyclical dynamics in the (*q*-*d*) characterizing it.

Figure 1 – Finance-led cyclical dynamics between (real) exchange rate and foreign debt in a small open economy



Let assume that domestic government liberalizes at large the financial account of the economy and adopts neoliberal-type reforms appealing international investors (the privatization of state-owned companies and/or the opening of productive sectors to foreign investors). Alternatively, expansionary monetary policies in developed countries reduce perceived global financial risks and liquidity abounds in international financial markets. A quick surge in capital inflows moves the domestic economy to point A and ignites a cumulative process where exchange rate appreciation feeds back positively into new waves of (speculative) capitals and vice versa. A well-known episode of financial bonanza takes place feeding the expansion of the economy. Finance-led euphoria comes together with mounting imbalances, however. Real exchange rate appreciation likely causes the progressive worsening of the trade account, as cheaper imported goods substitute for increasingly

more expensive domestic ones. This is even the more so if positive foreign exchange-led effects in the balance sheet of domestic borrowers expand the economy further. At some point, payments to foreign lenders also increase due to rising external debt and the connected risk premia, leading to even larger current account deficits. Such imbalances and the ensuing slowdown in capital inflows eventually invert exchange rate dynamics. The exchange rate starts to depreciate, making foreign investors even more nervous. Sudden stops and capital reversals may follow soon, together with the collapse of the exchange rate. The initial boom is eventually ends up in a burst.

5. Financial integration and fiscal policy space

5.1 "Pro-Austerity" governments

The cyclical dynamics just described is mostly rooted in "pro-cyclical swings in *private* (italics is from the original quoted contribution) spending that are financed by borrowing from the rest of the world" (Ocampo et al., 2009, p.76). And external factors related to global financial cycles have emerged as primary kick-starter of such processes, at least in the last three decades (Combes & Sow, 2017). Available evidence suggests such private sector-led interactions more frequently shape the evolution of EDE countries than public sector disarrays (Taylor, 1998; Ocampo et al., 2009). Nonetheless, mainstream economic theory mostly identifies public expenditures and ensuing large public deficits as main drivers of current account deficits financed via accumulation of foreign debt. In this view, fiscal indiscipline is the ultimate responsible for financial instability and macroeconomic volatility, with causality running from domestic (public) imbalances to external ones. This is the well-known "twin deficits" theory (Miller and Russek, 1989).

Consistent with such approach, EDE countries have been usually advised IMF-type structural adjustment programs putting emphasis on restrictive fiscal packages (Griffith-Jones & Ocampo, 2009). To some extent, even the more recent experience of Greece does not make an exception to this mantra. Further liberalization of capital flows is an additional structural reform that is meant to enforce fiscal discipline by exposing the behavior of domestic governments to the judgement of international financial investors (Nikiforos, 2015).

Let assume that such strengthened fiscal discipline imposes local governments to more vigorously cut public purchases whenever external debt increases. More formally, let assume γ_2 takes largely positive values, so that $\gamma_2 \gg 0$. In this context, even relatively small increases in the external debt may induce domestic government to reduce aggregate demand and capacity utilization, with positive effects over the current account balance of the economy. In the mainstream view, this would in turn avoid excessive external borrowing and external debt crises.

In our model, such "pro-austerity" fiscal regime affects the medium-to-long-run dynamics of the economy in two ways. First, a structurally more contractionary fiscal policy stance reduces the short-run equilibrium value of capacity utilization u^*. Indeed, taking equation (11) and the partial derivative with respect to γ_2, we get:

$$\frac{\partial u^*}{\partial \gamma_2} = -\frac{1}{\xi} d < 0$$

Ceteris paribus, this leads to a structural improvement in the trade and current account balance of the economy. As a consequence, the locus for $(\dot{q} = 0)$ moves upward and to the right. More formally:

$$\left.\frac{dq}{d\gamma_2}\right|_{\dot{q}=0} = -\frac{\rho_x n\left(\frac{m}{\xi}\right)d_{SS}}{\left\{\rho_x n\left[j-\frac{m}{\xi}\left(\varphi_1\frac{\partial f}{\partial q}-\varphi_2-\varphi_3\mu_0\frac{\partial \phi}{\partial q}\right)\right]-\rho_r\mu_0\frac{\partial \phi}{\partial q}d_{SS}+\rho_f\frac{\partial f}{\partial q}\right\}} > 0$$

Second, structurally lower public purchases and capacity utilization curtail capital accumulation via the accelerator effect. By doing so, however, pro-austerity fiscal measures may change the slope of the locus for $(\dot{d}=0)$ by affecting how quickly capacity utilization and capital accumulation contract when "*d*" rises. Keeping in mind that $(\partial u^*/\partial d) = -(\gamma_2/\xi)$ from equation (11), one can easily verify that:

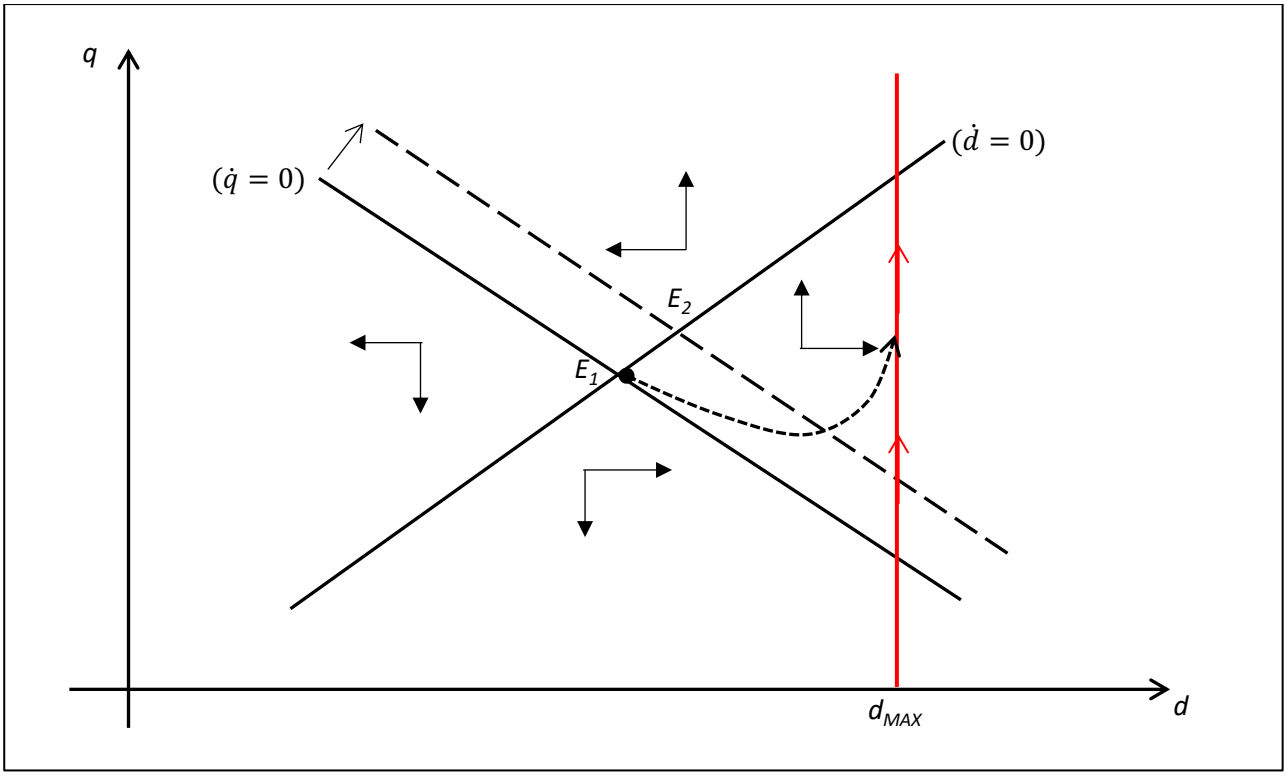
$$\frac{\partial\left((\partial \dot{d}/\partial d)|_{SS}\right)}{\partial \gamma_2} = \frac{b_2}{\xi} > 0$$

If austerity-led reduction in capital accumulation is strong enough, the slope of the locus for $(\dot{d}=0)$ may eventually turn into positive. If so, the new Jacobian matrix $J_{M.2}$ below will now guide the dynamics of the system:

$$J_{M.2} = \begin{matrix} \\ \dot{q} \\ \dot{d} \end{matrix}\begin{matrix} q & d \\ + & + \\ - & + \end{matrix}$$

Whilst the determinant det.($J_{M.2}$) of the new system remains positive, the condition about trace is now violated as tr.($J_{M.2}$) certainly turns positive. Fiscal austerity may be self-defeating. It may actually de-stabilize the (external) debt-to-capital stock ratio and the entire economy rather than putting them on a safer stable track. We portray the medium-to-long-run systemic instability caused by fiscal austerity in Figure 2.

Figure 2 – Austerity-led macroeconomic instability



In Figure 2, the initial effect of fiscal austerity is to induce a notional surplus in the BoP and possibly cause an appreciation of the real exchange rate. This in turn attracts foreign capitals as foreign lenders more easily finance apparently more solid (due to improved currency mismatch in their balance sheets) domestic borrowers. The increase in foreign debt triggers an immediate response by domestic authorities, that sharply cut public purchases. Whilst this helps to keep the exchange rate appreciating, the debt-to-capital stock ratio increases further also due to stagnating or declining investment. Such a dynamics, however, won't last long. In fact, continuous increase in foreign debt and rising concern about its sustainability will slow down net capital inflows and may cause the exchange rate to start depreciating. In this new scenario, however, the devaluation of the real exchange rate won't prompt any decline in the debt-to-capital stock ratio. This will in fact keep on growing as capital accumulation will plummet due to over restrictive fiscal policies and low capacity utilization. The economy will diverge towards the maximum level of foreign indebtedness allowed by foreign lenders. This is represented by d_{MAX} in Figure 1. Once reached that level of debt exposure, the economy will likely default and the exchange rate collapse together with drying up (at least private) foreign capitals. Domestic institutions may have to adopt extraordinary measures, and perhaps benefit of some external support, to finally stabilize the exchange rate at a much depreciated level. In the end, the real-economy consequences of financial-led dynamics can be very harsh. And mainstream misinterpretations of such dynamics that wrongly focus on alleged public sector disarrays can make them worse. Equation (22) below shows the deep throat in capacity utilization (and hence employment) in an overburdened economy with excessive external debt. This is even deeper if massive exchange rate devaluation is strongly contractionary.

$$u^*_{d_{MAX}} = \frac{1}{\xi}[\varphi_0 + \varphi_1 f(q, d_{MAX}) - \varphi_2 q - \varphi_3 r(q, d_{MAX}) - \gamma_2 d_{MAX}] \qquad (22)$$

5.2 Structural change, productive development and integration in GVCs

Heterodox theories, Latin American structuralism in particular, have traditionally put emphasis on structural change and productive development as relevant drivers of long-term development trajectories. The productive structure of the economy, however, may also influence cyclical finance-led macroeconomic dynamics at the center of our analysis.

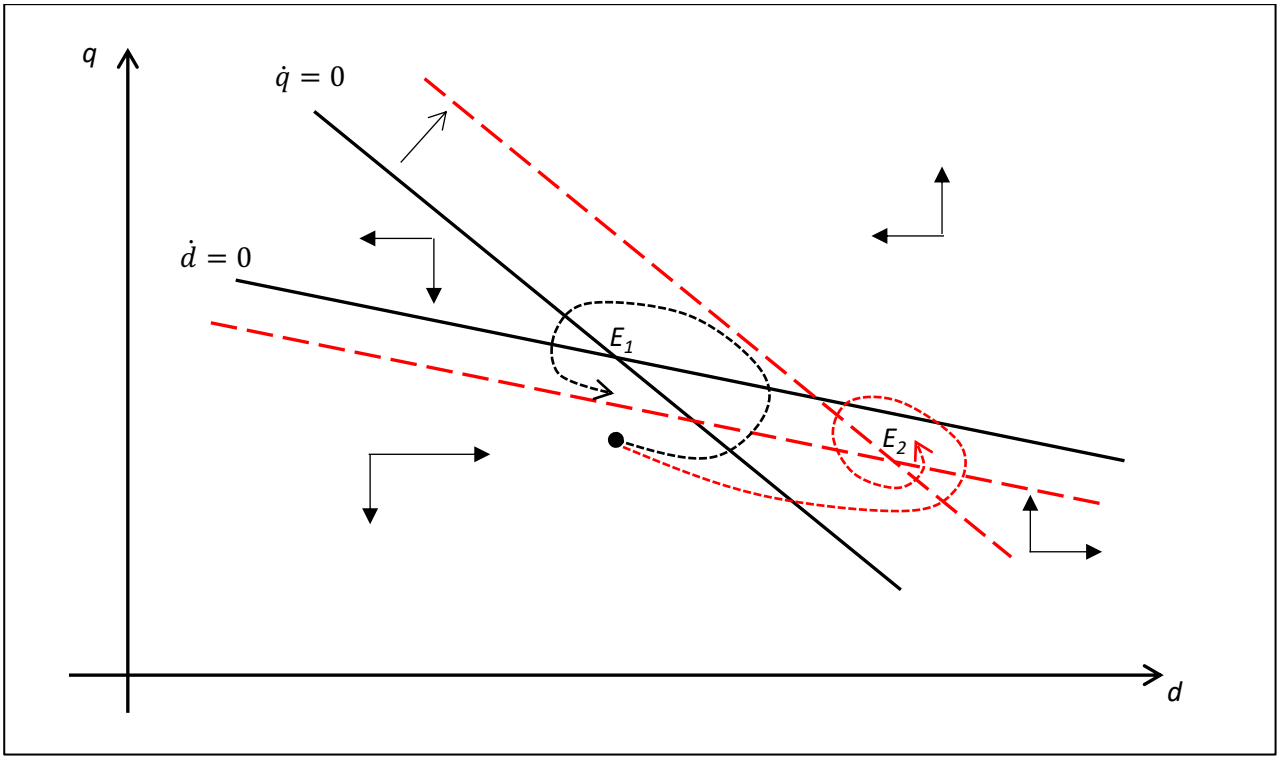
Let assume, for instance, an economy with a more diversified and advanced productive structure, a larger range of exported goods and, say, an almost structural current account balance. The case of China and of other emerging Asian economies easily comes to mind. In this model, we can capture the structural productive features of the economy via changes in the parameters affecting next exports and hence the current account balance and the dynamics of the nominal and real exchange rate. In particular, productive development, productive diversification and a widening spectrum of exported goods could be associated with higher values of "*h*" and smaller values for "*m*" in equation (4). Such changes in "*h*" and "*m*" in turn influence the position of the locus for ($\dot{q} = 0$). Similar to what seen before, the locus for ($\dot{q} = 0$) may likely move up and to the right even in presence of an increased export-led short-run capacity utilization u^* (see equation (11)). The economy's structural capability to export more and import less makes it more reliant to finance-driven appreciations of the nominal and real exchange rate.

Larger net exports and increased capacity utilization also affect capital accumulation via the accelerator effect. Ceteris paribus, domestic firms could permanently raise capital accumulation such that even the locus for ($\dot{d} = 0$) also moves. More specifically, it moves down and to the left. Given our assumptions about the signs of partial derivatives (21) and (22), an appreciation of the real exchange rate or a reduction in "*d*" would be required to stabilize the debt-to-capital stock

ratio. We portray such dynamic macroeconomic consequences of productive development in Figure 3 below.

As it clearly emerges from Figure 3, the medium/long-run equilibrium of the economy moves from E_1 to E_2 featuring a permanently higher value of the debt-to-capital stock ratio and a more appreciated equilibrium real exchange rate. Other way around, thanks to its more diversified productive and trade pattern, the economy can now "afford" a higher level of the external debt stock without fear of an external debt crisis. Moreover, it can potentially resist a longer initial phase of finance-led real exchange rate appreciation before cyclical volatility kicks in. This can be easily considered as signs of stronger economic resilience to the macroeconomic instability as possibly caused by financial integration. More than this, a current account balance that is structurally more solid may also reduce (political) pressures on domestic governments to adopt fiscal austerity measures in the attempt of correcting external imbalances. Expansionary fiscal policies may actually be contemplated if the domestic government aims at keeping the economy close to the initial equilibrium. and this creates more space for expansionary fiscal policies.

Figure 3 – Productive development and economy's resilience to finance-led instability



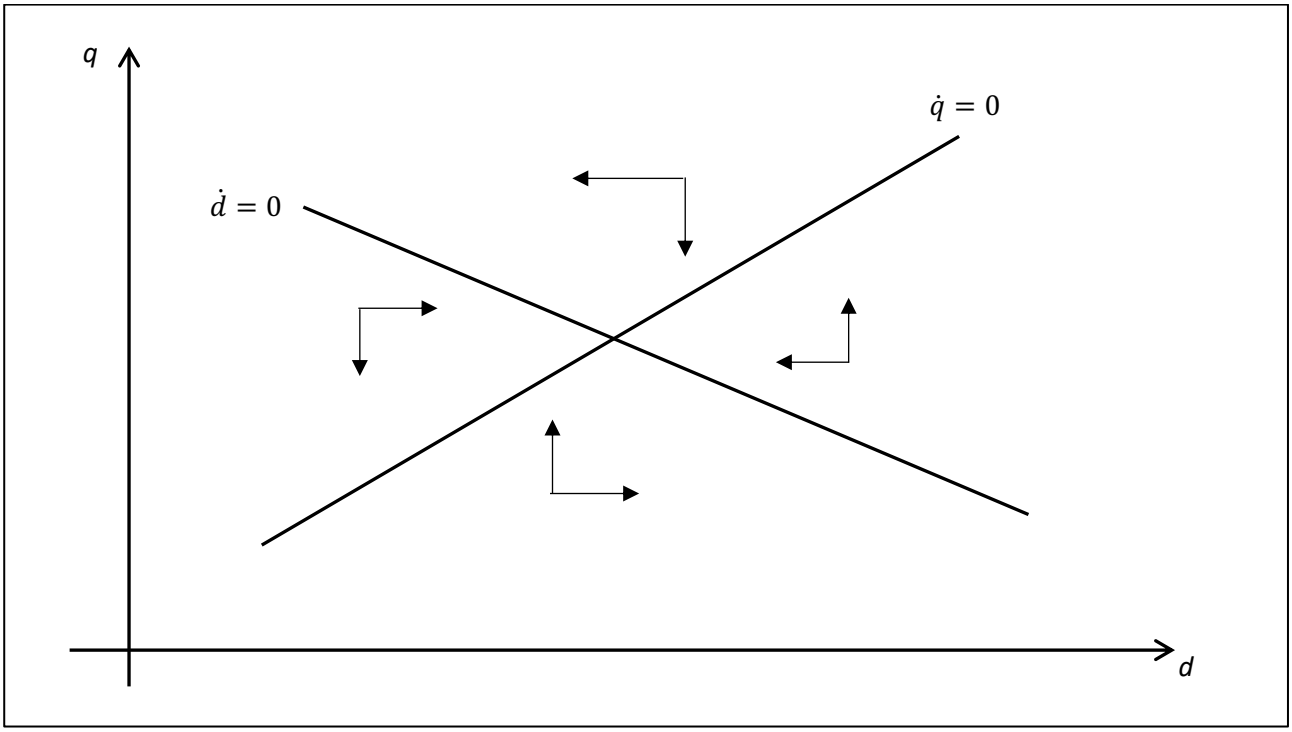
Despite an undoubtedly improved macroeconomic environment, finance-related mechanisms can still be source of macroeconomic volatility. Indeed, dynamics in the neighborhood of equilibrium E_1 or E_2 still presents the cyclical pattern described above. In this context, let assume that productive development and diversification is also coupled with increasing participation to Global Value Chains (GVCs). Available empirical evidence notes how this fact may considerably increase net exports' sensitivity to the real exchange rate (Ahmed et al, 2017; Zhao et al, 2020). In this model, this additional structural feature of several EDE countries could be easily captured by assuming an increased value of parameter "*j*". High net exports' sensitivity to exchange rate dynamics may obviously be source of concern when large capital inflows lead to exchange rate appreciation. Nonetheless, a high enough value of "*j*" (still unlikely) might nevertheless, influence the slope of the

isocline for ($\dot{q} = 0$). It can certainly make it steeper, and possibly turn it into positive, even though this last event remains unlike to happen due to the larger size of capital flows compared to trade flows, and the predominance of finance-related factors in the determination of foreign exchange dynamics. A good mix of strategic trade integration (into GVCs) and capital restrictions could however make the job.

The dynamic implications of such "structural change" are wide. The Jacobian matrix $J_{M.3}$ below captured them from a mathematical point of view. Figure 4, in turn, offers a graphical representation.

$$J_{M.3} = \begin{matrix} \\ \dot{q} \\ \dot{d} \end{matrix} \begin{matrix} q & d \end{matrix} \begin{bmatrix} - & + \\ - & - \end{bmatrix}$$

Figure 4 – Dynamic effects of trade integration in GVCs and high price elasticity of net exports (plus capital controls).



The new negative effects of "*q*" on its own dynamics undoubtedly tends to stabilize the economy and dampen cyclical volatility. Indeed, the determinant det.($J_{M.3}$) is certainly positive and the trace tr.($J_{M.3}$) negative. The system becomes locally stable. In this context, the space for expansionary fiscal policy may widen further. On the one hand, policy makers could worry less about the effects fiscal expansions could bring about the current account. Indeed, possible fiscal policy-induced current account deficits may "self-adjust" by giving rise to exchange rate depreciations that brings the economy back to equilibrium. On the other hand, exchange rate depreciation may more likely have expansionary effects on capacity utilization itself, given stronger price elasticity of net exports.

All in all, the virtuous of structural change and productive development do not pertain the domain of long-term growth only. They can well contribute to generate a more stable macroeconomic environment, at least partially immune to finance-led macroeconomic cyclical volatility. The sheer size of capital flows in current international relations however suggests that full

immunity could be attained only with restrictions to capital mobility itself. When dealing with finance-related virus, one jab is good, two are better.

6. Conclusions

In this paper we explored the complex linkages between fiscal policy space, financial integration and productive structure in emerging and developing economies (EDE). The existing mainstream literature on fiscal responsibility in open economies points out to a (negative) causality running from the spending behaviour of the public sector and external indebtedness emerging from the twin deficit hypothesis. Heterodox contributions in the post-keynesian and structuralist traditions, on the other hand, stress the fact that the dynamics of EDEs are BoP dominated, hence reversing the causality put forward by their academic counterparts.

There seems to be a partial consensus, however, on the effect of short-term, or speculative, capital inflows on economic performance of these economies, with increasing volatility and crisis frequency (Ostry et al, 2016) which ultimately brings to less fiscal receipts and deteriorating government balances. This makes fiscal policies in EDEs highly procyclical, in particular during period of abundant liquidity in international financial markets, which may trigger the build-up of private indebtedness (both external and internal) and, to a slower pace, government expenditure. Yet, with the reversal of the international financial cycle, both private and public agents may end up more indebted (also for the need of the former to be bailed out by the latter) as they are required to make painful adjustments in their stances to restore market confidence.

We formalized the interactions between capital flows and fiscal policy by developing a simple open economy macro dynamic model with a cyclical dynamics that is possibly set in motions by large capital inflows. We observe how domestic fiscal policy fits into these cycles with the attempt of counter-acting mounting external imbalance. Our contribution resides on our much higher attention to the role of foreign capitals as leading factor in the determination of macroeconomic fluctuations and fiscal policy stances compared to the current literature.

Our results show how fiscal contractions may actually increase medium-to-long-term instability rather than tame it. Local stability analysis reveals a convergent medium-run cyclical dynamic between the real exchange rate and foreign debt, which can be disrupted by exogenous shocks such as pro-austerity fiscal measures, whose effects are destabilizing. Rising foreign debt to capital stock ratio, caused initially by a cut in government purchases to sustain a Bop surplus, leads to self-defeating effects as foreign investors lose confidence in the resilience of the economy while the real exchange rate and domestic spending keep on plummeting.

Finally, we look at how productive development, product diversification and potential integration into GVCs, with the necessary support of capital controls, may enable EDE countries to create a more stable macroeconomic environment and open more space for expansionary fiscal policies. If EDEs implement policies that directly tackles their resilience, such as industrial policies that aims at diversifying their productive structure while increasing their participation in GVC, that may actually help to tame the external-led financial cycle between the foreign exchange and foreign flows, allowing these countries to sustain a more appreciated exchange rate and higher level of external debt. Finally, we show that a policy mix that includes GVC integration and capital controls dampen cyclical volatility and helps to build fiscal space.

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