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ABSTRACT
Modern Money Theory (MMT) has become very popular among some progressive economists. Its basic argument is that budget deficits are usually not a constraint on government spending, The authors, progressives themselves, argue that some aspects of MMT are useful, but others are incomplete or confusing. They focus on the application of MMT to developing countries.

Modern Money Theory (MMT) has become central to political discussions. From a sociological point of view, it can be seen as a hybrid of an academic school of thought and an activist policy group. The dual nature of MMT, as a theoretical school derived from some strands of Post Keynesian economics, mostly associated with the work of Hyman Minsky and his disciple L. Randall Wray, and a political movement connected to the more progressive parts of the Democratic Party, to some extent the result of the role of Stephanie Kelton as an economic advisor to Senator Bernie Sanders, and to some market practitioners, in particular, Warren Mosler creates a certain degree of confusion. This is compounded by the differences between the adoption of MMT principles in advanced or developed economies in the center, and developing countries in the periphery. While we believe that many propositions of MMT are essentially correct, we do believe that some of the confusion can be clarified, by separating some of the theoretical issues from the policy or activist views, and adopting some of the concepts of center and periphery developed by Structuralist authors, when analyzing developing countries.

Functional Finance is the active use of government spending to stabilize the economy and optimize growth. Chartal Money is the view that the value of money is a function of its adoption by a government, not necessarily its function as a medium of exchange. These two concepts are central to MMT. A third is an Employer of Last Resort (ELR) Program, now often referred to as Job Guarantee (JG).[2] We would add a fourth element that seems to be part of all policy discussions in the context of open economies, namely a preference for a flexible exchange rate regime over managed exchange rate regimes with capital controls, as a policy choice that would create more fiscal space—more room to spend. We are here interested fundamentally in the Functional Finance aspects which are central for any discussion of fiscal policy, even though part of the central

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argument to Functional Finance, and, hence, MMT is that both fiscal and monetary policy are intertwined.

This paper argues that Functional Finance is applicable to developing countries, whether in the Tropics or not, to be precise. Not only the issues raised by critics regarding the risks of inflation in advanced economies are misplaced, but also the fears of the implications about Functional Finance policies in developing countries are often confused. In particular, there is a disconnect between the issues of debt in foreign and domestic currency. Functional Finance principles hold when dealing with the debt in domestic currency, but that, of course, does not mean that there are no limitations to the pursue of fiscal policy, which is well known by MMT authors. But the nature of the constraints is often misunderstood even within the MMT literature.

We look, in the first place, to the limits to fiscal policy in countries that need to borrow in foreign currency. We briefly analyze the limitations of exchange rate depreciation, the role of capital controls, and the issue of inflation and hyperinflation. We then look exclusively to the issue of debt in domestic currency, and under what circumstances developing countries might have limits to fiscal expansion in domestic currency.

In our view, these issues require some clarifications. In particular, we believe that there is an overemphasis in the MMT literature on the question of the choice of exchange rate regime and the importance of a flexible regime and its effect on policy space that is ultimately misplaced. The role of capital controls is under-analyzed, and the importance of the balance of payments constraint is often neglected. We also analyze the limits that are more specific to debt in domestic currency, which are political in nature, but that are also associated with the peripheral nature of developing countries. Our work builds on the Post Keynesian traditions used by MMT authors, but we emphasize the importance of Latin American Structuralist ideas in order to clarify the limits to fiscal policy in the periphery.

The Limits When There is Debt about Foreign Currency

Sovereign currencies are essentially currencies that are issued on the basis of the power of the state and are legal tender in their issuing country. Sovereign currencies might be pegged to a metallic standard, as many currencies were during the gold standard, or to a foreign currency, as most currencies were during the Bretton Woods system. Wray (2012, 42) suggests that even though some developing countries peg their currencies, something that he suggests constraints policy space, MMT analysis of sovereign currencies applies to developing countries.[3]

Note that what constraints the policy space is not the choice of fixed versus flexible or floating exchange rate, but the necessity to obtain foreign currency, particularly the key international reserve currency, associated to the needs to import foreign intermediary and capital goods,[4] and service debt in foreign currency. Moreover, the accumulation of debt increases the demand for a foreign currency not only because it leads to higher debt service obligations but also because it increases risk perception as there is greater exposure to currency mismatches. The available data shows that developing countries, in particular, the general government and the especially the non-financial corporate sector have increased their external debt over time.[5]

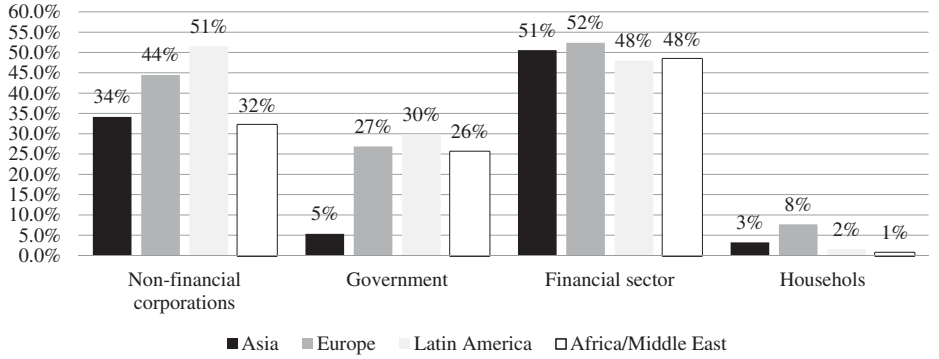

Figure 1. Total foreign currency debt, April 2019 (Percentages). Source: Institute of International Finance (2019).

Table 1. Net foreign currency assets of the non-government corporate sector as percentage of exports for selected emerging market economies 2007–2014.

	2007	2008	2009	2010	2011	2012	2013	2014
Brazil	−43.3	−37	−45.6	−54.4	−60.2	−72.2	−64.1	−74.6
Chile	−20.6	−34.6	−51.8	−44.8	−43.8	−47.1	−48.5	−58.7
India	−10.3	−9.7	−15.1	−18	−18.9	−21.3	−27.4	−30.3
India	−15.3	−16.5	−18.4	−18.2	−16.1	−19.1	−19.5	−18.6
Indonesia	−12.6	−7.9	−4.9	−8.7	−14.5	−23.1	−31.3	−41.1
Malaysia	−8	−12.7	−14.5	−8	−7.9	−5.1	−10.8	−8.7
Philippines	−0.7	−2.9	−1.4	−11.5	−15.8	−23.5	−25.5	−16.3
Thailand	8.7	1.6	−1.6	−4.9	−1.7	−6.7	−7.9	−4.0
Hungary	−30.7	−40.1	−48.9	−34.4	−26.3	−26.3	−22.6	−16.9
Poland	−14.4	−27.6	−42	−38.5	−31.2	−30.6	−28.6	−22.7
Russia	−37.2	−16	−8.1	−5.5	−1.3	−2.1	−5.7	1.5
Turkey	−41.8	−37.7	−46.1	−64.4	−60.5	−67.9	−86.9	−91.4

Note. The values are given in percentages. The values of the net foreign currency assets of the non-government corporate sector are computed as "net foreign assets of depository corporations (excluding central bank) plus non-bank foreign currency cross-border assets with BIS reporting banks less non-bank foreign currency cross-border liabilities (excluding debt securities) to BIS reporting banks less international debt securities outstanding of non-bank and non-government sectors in foreign currency; outstanding position at year-end."
Source: Chui, Kuruc, and Turner (2016, Table A2).

The debt stock for developing economies as a whole expanded from 61 to 95% of GDP. For the same period, non-financial corporate sector debt in advanced economies only grew from 88 to 91%. The surge in non-financial corporate sector debt has been shown to be a widespread trend for emerging economies. In the case of the non-financial corporate sector, the available evidence shows a sizable foreign currency component. The data presented in Figure 1 shows that non-financial corporations and the financial sector are the sectors with the highest percentage of debt issued in foreign currency, 40 and 59% on average, respectively, compared to 22 for the government and 4% for households.

In addition, the available evidence also indicates that the private sector of several developing economies have in fact, a currency, mismatch and that it has increased after in the post-Financial Global Crisis Period. This is illustrated in Table 1 shows the net currency assets as a percentage of exports for selected Latin American, Asian, Central European and other developing economies for the period 2007–2014. In other words, it is the balance of payments that constitutes the main limitation upon the policy space of

developing countries, and the choice of exchange rate regime would increase or decrease policy space depending on certain circumstances.

This is not an issue between fixed and floating exchange rate regimes, but whether the external constraint is or is not binding. In order to understand the problem, it is necessary to discuss briefly the idea of the balance of payments (BOP) and why it is a constraint on economic growth in peripheral countries, and the idea that goes back to the ideas of Raúl Prebisch and his followers at the Economic Commission for Latin America and the Caribbean (ECLAC), and that was further developed by Kaldorian authors, like Wynne Godley and Anthony Thirlwall (e.g., McCombie and Thirlwall, 1994).

The simple BOP accounting suggests that the balance of payments is given by the following equation:

$$X - M + F + \Delta R = 0 \tag{1}$$

X, and M represent exports and imports, F represents the net flows of capital and ΔR the variations of reserves of the relevant reserve currency. For simplicity, we assume that there are no factor payments, so that exports and imports correspond to the Current Account (CA) result, and that there are no distinctions between portfolio and foreign direct investment flows. In this case, a trade deficit is necessarily compensated by positive capital inflows and/or variations in reserves. That is:

$$M - X = F + \Delta R \tag{2}$$

This might be interpreted as suggesting that the CA is balanced by the flows of capital and variations of reserves. Wray (2012, 130–131) suggests that this implies that there are no imbalances, and, hence, exchange rate variations are not necessary to deal with BOP problems. By national accounting identities as shown in Equations (1) and (2), in a given time period, say a year, a current account deficit must be balanced by the sum of the financial account plus changes in international reserves. But this does not imply that a country can sustain over time any level of the current account deficit. Although there are no strict current account thresholds the evidence for developing countries shows that the higher is the current account deficit the less likely it is sustainable over time.

A simple exercise for Latin American and Asian economies considering what is by historical standards a low and high current account threshold level, 2.5 and 7% of GDP, respectively,[6] shows that few countries are able to maintain over time a low level of a current account deficit and that no country is able to maintain a high level of the current account deficit. As shown in Figures 2 and 3 for both Latin American and Asian economies there is an inverse relationship in both cases between the number of recorded cases of current account deficits of 2.5 and 7% of GDP and the number of years during which these deficits were sustained.

In the case of the upper bound of a 7% current account deficit, 22 countries in Latin America and 41 countries in Asia and the Pacific, were able to sustain this deficit during the course of one year, and 13 and 19 countries respectively over two consecutive years. Thereafter the number of countries able to sustain a current deficit over 4 and 5 years drops precipitously (four and ten in the course of four consecutive years and none and between 1 and 3 over the course of five or more consecutive years for each

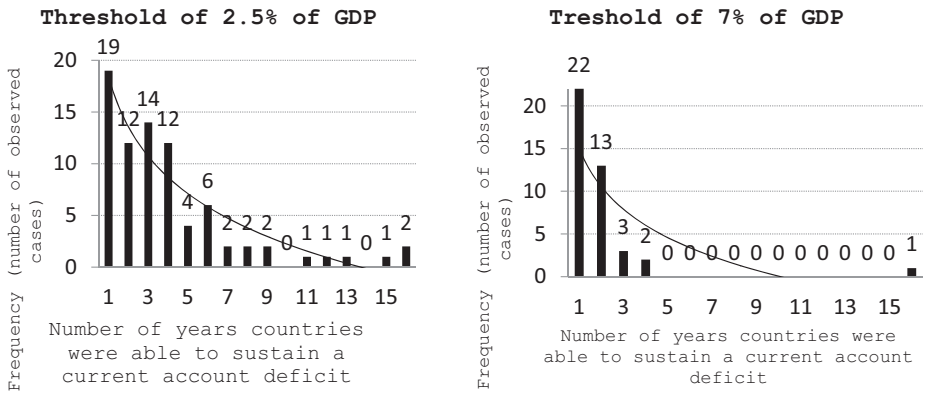

Figure 2. Latin America: years of duration of CA deficits according to two thresholds (2.5 and 7% of GDP) 1980–2013. Source: Vera and Pérez Caldentey (2015).

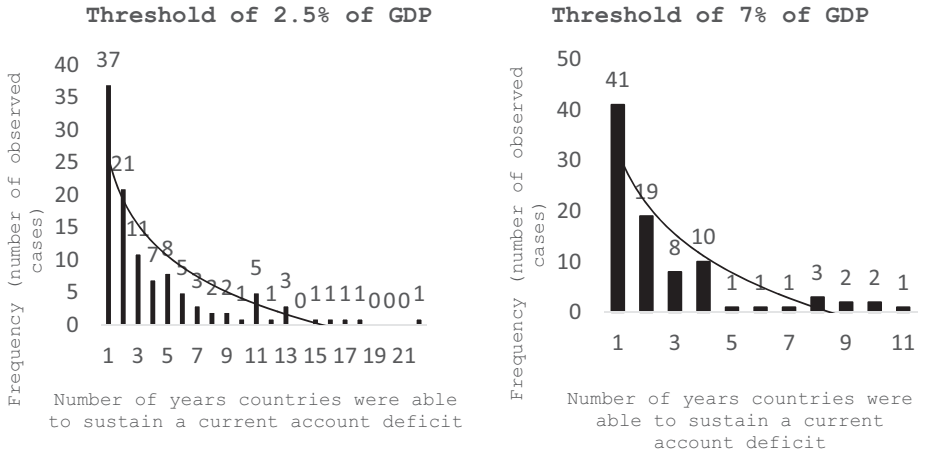

Figure 3. Asia and the Pacific: years of duration of CA deficits according to two thresholds (2.5 and 7% of GDP) 1980–2013. Source: On the basis of World Bank (2019).

region respectively. In the case of the lower bound (2.5% of GDP) the data shows that 19 and 37 countries were able to sustain this current account deficit during a year for Latin America and the Caribbean. And in the case of both regions minority of countries were able to sustain this deficit for more than 4 consecutive years.

It is certainly true that, in any given year, and for whatever current account deficit, no matter its magnitude, the balance of payments deficit must be in balance in an accounting sense as explained above. But as the above exercise shows this does not mean any current account deficit is sustainable over time and that as a result there is no economic problem to be dealt with, and that can be ignored. Further, the notion is that even in the presence of an outflow of capital, and possibly a loss of reserves, there is no need for central bank intervention in a developing country (Wray 2012, 121). This is more problematic, in a sense, since most external problems are related to capital account issues, and developing countries have to be very careful about the possibility of capital flight.

While it is absolutely correct to argue, as Wray suggests, that "… a government that spends using its own floating and nonconvertible currency cannot be forced into default" (Ibid., 131; emphasis added), that says very little about what kind of default might be expected from this hypothetical developing country. It cannot be forced into default on debt its own currency, but it might be forced into a default into its foreign obligations, and to avoid it be forced to promote contractionary fiscal policies to curtail imports and/or increase interest rates, and deal with the outflows of capital and loss of reserves alluded above. It is not whether it is desirable or not to eliminate the CA deficit, it is a matter of need to do it, more often than not. It is a binding restriction.

The notion that there is no default, in domestic currency, does not need the qualifier of the exchange rate regime. But even if default is not possible, as we suggest, that does not mean fiscal policy is unconstrained. It might be constrained by a CA deficit, if it is not possible to finance it, or when access to reserves is not an option. A floating regime does not necessarily alleviate the problem, and it might make things worse.

On the Effects of Depreciations and Capital Controls

Depreciation of the currency, may not do anything to solve the CA deficit, but the notion that a government can allow the currency to depreciate without intervention is a bit puzzling, to say the least. An extensive Structuralist literature, building on the work by Albert Hirschman, Carlos Díaz-Alejandro, and culminating in a famous paper by Paul Krugman and Lance Taylor, suggests that depreciations are contractionary.[7] This implies that depreciation, actually, resolves the BOP problem, but by throwing the economy into a recession, and reducing imports (M), when capital flows (F) and reserves (R) are not accessible.

According to MMT, the fact that under a floating regime frees the country from converting its currency into another one is sufficient to eliminate the risk associated with running out of reserves (Ibid., 161). However, the reason the government of a developing nation must be always concerned with capital flows and reserves is not related to the convertibility of its currency, but to the need to pay for its short-term obligations in foreign currency, and even if those do not exist, for its need to import essential intermediary and capital goods that would paralyze the economy if they are not imported. That is why the proposition that floating rates provide more space for domestic policy should also be qualified.[8] If the depreciation forces a contraction, there is no extra space for policy, in fact.

And that is the reason why very few countries in the developing world have truly free-floating exchange rate regimes. There are three main reasons for managed currencies. First, due to their production and consumption requirements, inflation in developing countries tends to be driven by costs rather than aggregate demand pressures. Any depreciation of the exchange rate has a significant passthrough effect on the domestic process. Second, this can limit aggregate demand expansion. A decline in policy interest rates means, unless outward flow capital controls are in place, greater inflation. So, the interest rate must be kept a level high enough to avoid depreciation. But also, a depreciated currency and lower real wages might reduce consumption, having a contractionary effect. Third, depreciating exchange rates can have significant balance sheet effects, the

more so the higher are external debt liabilities, and these also can have contractionary effects.

Depreciation not only raises debt service costs but can also increase the value of the stock of liabilities by increasing the local-currency value of outstanding debt. If the collateral for the debt is likewise denominated in a local currency, a currency depreciation will result in a value loss of the collateral. In such a situation, the collateral will no longer support the value of the stock of debt. The end result may be a deleveraging process or a greater demand for foreign exchange to balance asset and liability accounts. In the case of the non-financial corporate debt sector or even the financial sector, depending on its size and importance in the market and the number of firms behaving in this way, this type of behavior can result in an asset sell-off or further devaluation pressures. In both cases the end-result can be an increase in the value of the foreign debt stock. In the specific case of the non-financial corporate sector the available evidence indicates that beyond a given external debt leverage threshold firms tend to contract investment.[9]

While depreciation would be more problematic than MMT authors seem to anticipate, their discussion of capital controls is more reticent. Capital controls do provide more space for policy, as noted by Wray: "Capital controls offer an alternative method of protecting an exchange rate while pursuing domestic policy independence" (Ibid., 129). However, the importance here is less related to the protection of the exchange rate peg, as MMT authors presume than the need of economizing essential hard currency, the international reserve currency, to pay for short-term obligations and avoid default, in foreign currency, and for essential imports, when the former is not an issue.

In this sense, there is a clear misunderstanding of the role of the BOP constraint by MMT authors, both the more theoretical and the more policy-oriented parts of the school of thought. The BOP is an accounting identity, and it might not be always binding. But the issue for developing countries is that they must import essential goods for maintaining the economy functioning and growing to incorporate the growing labor force, and, reduce the gap in income per capita with advanced economies. That implies that developing countries must be concerned with reserves even if the currency is not convertible to gold, dollars or other hard currency.

Further, the experience of Latin America throws doubts on MMT notion that a floating rate provides more space for policy. Note that Latin America grew faster in the 1950s and 60 s, like most of the world, during the so-called Golden Age of capitalism. That was a period in which exchange rates were relatively rigid. Mexico, for example, maintained its exchange rate fixed from 1954 to 1976 (at $12.50 pesos per US dollar [US$]), when the infamous Peso Problem led a currency crisis, that is, after the collapse of Bretton Woods. This is the same period of what Mexican economists refer to the period of stabilizing development, in which the economy grew faster than advanced economies (Moreno-Brid and Ros, 2007, 136).

Also, exchange rates, everything else constant, are inversely related to real wages, and, in part, the higher rate of growth in Latin America during the Import Substitution Industrialization (ISI) or State-led development period could be associated to the combination of appreciated exchange rates, which also allowed for cheap imports of machinery, and higher real wages.

This insistence of the advantages of flexible rates, against a more managed exchange rate system with capital controls, seems similar to the so-called New Developmentalist school in Latin America.[10] There is a reason why at least some developing countries have learned to accumulate significant reserves, in fact, more than just a couple, and to intervene in foreign exchange markets.[11]

Note that Wray (2012, 286) seems to think that there is an evolution from developing countries, that would move from a situation in which managed float and capital controls would be acceptable, but eventually they would graduate to a float without capital controls. The notion is that all countries follow a similar path toward free float and free capital mobility. It misses the hierarchy of money, and the issues of why certain currencies are used as international money (Fields and Vernengo, 2013).

The Limits to Debt in Domestic Currency

Developing countries for sure also borrow in their own currencies, and in fact, since the collapse of the dot-com bubble at the beginning of the century, the international environment has allowed for significant expansion of borrowing by developing countries in their own currencies, and the accumulation of significant amounts of reserves in dollars, the international reserve currency. In this case, in debt in its own currency, the country certainly cannot default,[12] as correctly pointed out long ago by Functional Finance authors, and by MMT authors more recently.

In order to analyze the dynamics of borrowing in its own currency we develop an extended Domar like model of debt dynamics, and provide a simple simulation of results with reasonable parameters. The simple Domar model shows the dynamics of domestic debt, which responds to the primary deficit plus the difference of the rate of interest and the rate of growth of the economy, times the debt-to-GDP ratio:

$$\dot{d} = \frac{(G - T)}{Y} + (i - g)d \tag{3}$$

Equation (3) suggests that the growth of the debt-to-GDP ratio (d-dot), depends on the primary balance as a share of GDP, where variables have their traditional meanings (G, for spending, T for taxes, and Y for GDP), plus the difference between the rate of interest (i) on debt and the rate of growth of GDP (g), weighted by the debt-to-GDP ratio. Note that, as the size of the debt-to-GDP ratio becomes larger, the second component, that is, the one that depends on the difference between the rate of growth of debt, represented by the interest rate, versus the rate of growth of the ability to pay, which in domestic currency depends on the growth of the economy, becomes the dominant one.[13] This result suggests that the bias of MMT authors for relatively lax monetary policy with low-interest rates is particularly important when the debt-to-GDP ratio is high.[14]

We additionally assume that government spending growth determines output growth through a simple multiplier process, and that taxes grow with the growth of the economy:

$$g = \alpha\gamma \tag{4}$$

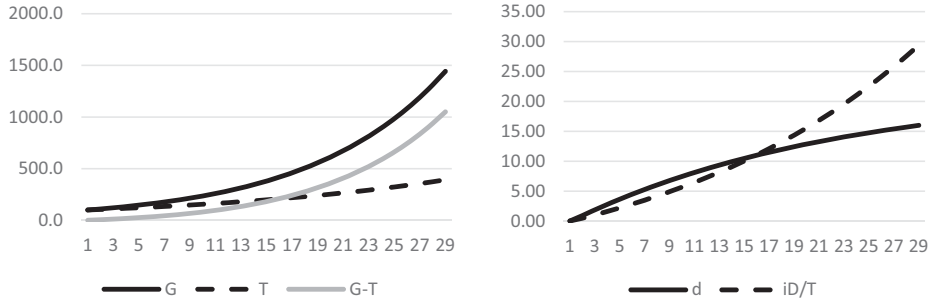

Figure 4. Burden of interest/simulations.

Where α is the multiplier and γ is the rate of growth of autonomous government spending. And finally:

$$\tau = \beta g \tag{5}$$

Where τ is the growth of tax revenue, β is a coefficient and taxes grow proportionally with GDP. Now the rate of growth and the primary balance have been endogenized, and only government spending and the rate of interest are exogenous. Exogenous fiscal and monetary policy are associated to autonomous spending and the setting of the rate of interest, and monetary policy is important because it set limits to how much it can be borrowed (and how much it would cost to service the outstanding debt).

Under reasonable assumptions, with relatively high interest rates, somewhat normal, but not small or large, multiplier, low effect of growth on taxes ($i = 0.1$; $\alpha = 0.5$, $\beta = 0.5$) it is possible to have not only, as in the Domar model that the debt-to-GDP ratio increases exponentially, but also the interest rate burden, meaning the interest payments as a share of taxes, increases significantly. In the simple simulation, even with debt-to-GDP at low levels (15%), the share of interest payments on total revenue grows rapidly to about 30% of tax revenue. In other words, even if the debt-to-GDP ratio is not growing excessively, the burden of debt grows relatively fast. That is more problematic than the increase in the debt-to-GDP ratio. Graphs in Figure 4 show the dynamics of the main variables in the simulation.

Note that there is no real problem with financing the debt, and taxes are certainly not financing spending, not only because causality goes from spending, in this case, exogenous government spending, to revenue, as the logic of effective demand would require, but also because all taxes are the result of the growing economy in this simplified model. Of course, no government can spend more than 100% of its tax revenue on servicing its own debt. But limits should set in well before that, and it is important to notice that there are limits to how much a government can push up, politically speaking, the interest rate burden. There is nothing here that makes Functional Finance, or MMT, principles inoperative. It is still true that countries do not default in their own debt, and that government spending generates income, and, hence, tax revenue.

There are distributive issues, and the limits to government action are mostly political in nature. Interest payments are mostly to banks, corporations and the wealthy individuals that hold public debt. In other words, there are clear political limits to the expansion of the interest rate burden. The political economy of the conflict would depend on who carries the burden of taxation, that in this story fundamentally benefits financial

rentiers[15] since when the burden of interest is high, a significant amount of government revenue ends up in their hands.

It should be noted that in the historical case of England in the 18th century, when debt-to-GDP reached high levels, at about 260%, one of the important ways in which the British were able to out-finance the other major European powers, fundamentally France, was the ability to borrow long-term at low rates. This is not precisely the case of a developing country, but it might be a useful example since the UK was not the hegemonic country yet, its debt was convertible to gold, at least after the famous mistake by Sir Isaac Newton which put its economy on a de facto gold standard (Eichengreen, 1996). Brewer (1988, 119) suggests that a large part of the UK debt was funded debt, that is, it was debt for which specific taxes were set aside to service it, and it tended to be long-term, while unfunded debt was usually short-term debt. Debt service consumed a great amount of the budget, but that was simply the result of the incredibly large amount of debt, since interest rates remained relatively low. Here the role of the central bank is crucial, since it can affect, if it wishes to, the interest rate on public debt. There are a few historical examples of that, with the United States during the Great Depression and World War II, just before the Treasury-Fed Accord of 1951, being the most prominent.[16]

In the British case, in an economy that was not yet hegemonic, or at least not completely so, emerging from a dispute with the Dutch for the access to long-distance trade in Asia, and in a more direct dispute with France, borrowing was in bonds, that were ultimately redeemable in a metallic standard. Therefore, it is clear that default was possible, and to some extent tied to military fortunes. Note that in this context providing guarantees about the ability to service the debt was crucial.

Taxes were central not because they funded spending, but because the stream of future taxes guaranteed the payment of interest to the rentiers. Essentially a process of redistribution that favored financial markets. Higher taxation on the wealthy could compensate for the inequality caused by a high burden of interest payments, when the accumulation of debt is in domestic currency. Wray (2012, 146) argues that: "MMT is not opposed to using taxes on high incomes and high wealth in an attempt to reduce inequality." And he suggests eliminating Treasury securities that benefits rentiers as a possible measure for reducing inequality (Ibid.).

However, for developing countries there are circumstances that lead to a high interest rate burden, and it might be harder and even counter-productive to reduce it. This is the case of some of the small island developing states of (SIDS)in particular in the Caribbean and in some cases in the Asia-Pacific region including Fiji and Papua New Guinea.[17] Other small countries in the Asia Pacific region that are considered SIDS such as Nauru and Tonga have also high debt burdens.[18] High real interest rates are a necessary tool to attract capital flows, and deal with poor export performance. The high-interest rates, not only cause a relatively burden of interest payments but in addition, they create the political conditions for forcing austerity policies.[19]

Even if the higher spending is financial, local governments, often dependent on international institutions like the International Monetary Fund (IMF) and US ones like the United States Agency for International Development (USAID) tend to be pressured to reduce fiscal deficits. In this case, it is less the dispute between rentiers and those with

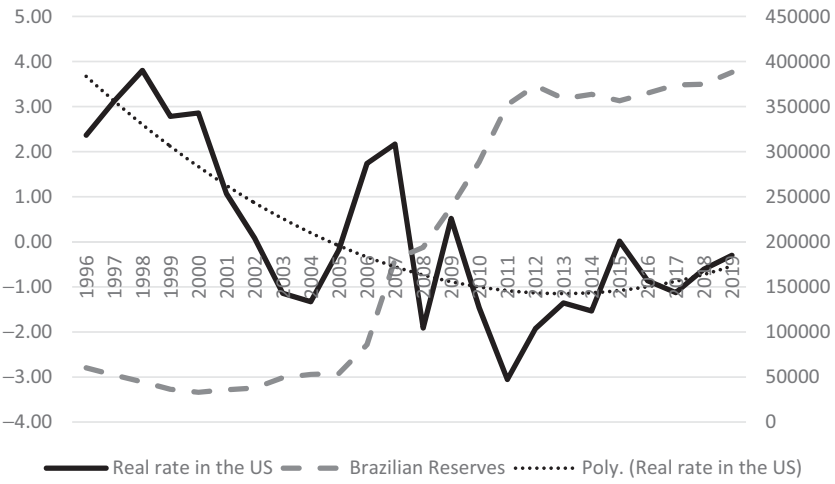

Figure 5. US real base rate and Brazilian Foreign Reserves. Source: Ipeadata and FRED.

interests in productive activities that clash. The role of a developed country's institutions in forcing a certain political agenda affects fiscal policies.

Here again the problems of not issuing a reserve currency even if it is a sovereign currency that is not pegged to the reserve currency become relevant. Developing countries might be forced to have higher domestic interest rates to preclude capital flight. Still, it is possible to do expansionary fiscal policy, of course, unless the BOP constraint was reached, but with higher interest rates, if society is willing to accept the higher interest rate burden and the fiscal transfers to rentiers that it entails. In other words, the interest burden of debt in domestic currency is tied to the external constraint and the need to attract capital, or at least prevent capital flight, even when debt is in domestic currency. In this sense, we think that Mitchell et al. (2019, 555; emphasis added) are not entirely correct when they argue that: "With a floating exchange rate, the interest rate target can be set to be consistent with domestic policy goals," by which they mean fundamentally full employment.

The limitations of interest rate policy in developing countries can be seen in the interest rate burden, which is persistently higher, for example, for the small Caribbean countries than for the United States. This certainly does not imply that expansionary fiscal policy is impossible in developing countries. It suggests that the political economy of it is considerably more complex than even MMT authors tend to understand, and having debt in the countries own currency, with a floating currency, might not be sufficient to push back on the enforcement of higher rates of interest, in a world with high mobility of capital, and international organizations pushing for austerity.

This is true of even larger developing nations, that would have a higher degree of autonomy than the small Caribbean nations discussed above. The political economy of the Brazilian case might be of interest to illustrate our point. After stabilization in the mid-1990s, Brazil maintained very high real rates of interest, often among if not the highest in the world. This implied a high-interest burden, as can be seen in Figure 5. The Brazilian government in the period shown had for the most part, other than at the end of the series, primary surpluses, and nominal fiscal deficits, and that difference is

essentially the financial burden of public debt. For the period the average corresponds to about 6.2% of GDP, and that huge transfer to the owners of public bonds is what corresponds to the large share of interest payments on total government spending.

The question one might ask is why a left-of-center government, like the ones led by both Luis Inácio Lula da Silva and his successor, Dilma Rousseff, would maintain such a large transfer to the relatively wealthy, which would be many times larger than the most famous of the social transfer programs, the Bolsa Família program. Note that the Worker's Party administration did, in fact, use redistributive policy to reduce inequality, like a policy of increasing the minimum wage, and that inequality fell in Brazil, and, indeed, in the whole of Latin America and no other world region during the 2000s, in part because similar policies were pursued by other left-of-center governments during the so-called Pink Tide (Cornia, 2014).

There are at least two reasonable answers to that question, in our estimation. First, high-interest rates were necessary to attract capital flows and accumulate international reserves. This also was instrumental in keeping the exchange rate under control, and with that checking the inflationary pressures that could ensue from both persistent depreciation and higher wages. Second, and perhaps more speculatively, they needed to keep rentiers within the electoral coalition, or at least not overtly in revolt, and maintain political stability.[20] It is clear that guaranteeing a stable remuneration for rentiers was central for early central banks, like the alluded case of the UK in the 18th century.

Arguably, the strategy in Brazil backfired. Protests in 2013, by essentially low-income groups concerned with the high cost of urban transportation, spread to middle-class protests, and by 2015, the industrial and financial interest groups were openly criticizing the government, and demanding, somewhat inconsistently, for fiscal adjustment. But, from our perspective, the important issue is that Brazil did accumulate significant amounts of foreign reserves, and that precluded an external crisis, something that took place, for example, in neighboring Argentina.

As shown in Figure 5, as the real rates in the United States became negative, and real rates remained positive in Brazil, there was a significant accumulation of reserves. In other words, high-interest rates in this particular case were instrumental in creating fiscal space, even if the redistributive effects were fundamentally negative, and had to be compensated by social transfers and policies to increase formal jobs increasing real wages.

Concluding Remarks

Modern Money Theory is, to some extent, an offshoot of Post Keynesian economics, that has become increasingly popular.[21] We share many of the same preoccupations and principles and most of their conclusions. However, we do believe that some clarifications regarding the role of the external constraint, exchange rate regimes, the use of capital controls, the relevance of reserves and the political economy of spending and taxation are important when dealing with developing countries. These are seen as necessary refinements of the argument needed to understand functional finance in developing countries.

Here are some MMT arguments that need some qualification in our view:

- The notion that a government that spends its own floating and currency cannot be forced into default in that currency is correct, but it can still default in foreign currency and might be forced into austerity policies in order to reduce external imbalances. So even without defaulting there is a limit to the expansion of debt in domestic currency;
- A government should be concerned that it might run out of foreign currency reserves even if it does not convert its domestic currency to foreign currency (or gold), simply because it must obtain foreign reserves to pay at least for essential intermediary and capital goods. This is compounded by the needs to service debt in foreign currency, and for that reason, that should be kept to a minimum whenever it is possible;
- It is not clear that floating or flexible exchange rate regimes are always preferable to manage or fixed exchange rates complemented by some type of capital controls, even in the more open world of the floating dollar standard in the post-Bretton Woods era.[22] Flexible rates are both inflationary and contractionary, and the exchange rate has distributive effects, that may imply that under certain conditions a stable an appreciated exchange rate could be conducive to higher growth;
- Hyperinflations tend to occur because countries do need to make payments in foreign currency, be that for the needs of development, the requirements of war, or simply by the imposition of foreign powers (e.g., reparations), and are not connected to problems with the tax system, let alone the central bank printing press. That is an additional reason to be concerned with floating exchange rate regimes and the size of reserves kept by the central bank;
- If debt denominated in foreign currency is to be kept under control, to preclude an external crisis that forces austerity at home (to reduce essential imports), then exports must grow faster than the interest on foreign debt. The structure of imports and exports is central to the fiscal space of a developing country. Geopolitical factors become relevant in this respect since access to export markets and to foreign finance in hard currency is controlled by hegemonic countries;
- While it is true that there is no default in domestic currency, the political economy of spending and taxing matters. This is true in advanced economies, but certainly even more so in developing countries. In advanced economies, it is often a question of who benefits, and crucially a political limitation. In developing economies, the external constraint and the need to avoid capital flight and accumulate hard currency is paramount.

Notes

1. A preliminary version was discussed during a roundtable at the Eastern Economic Association (EEA) Meetings in New York, in March 2019, and presented at the New School Economic Department Seminar Series in September of the same year.
2. Wray in the debate at the Eastern Economic Association meeting suggested that Functional Finance was a late addition to MMT, and was not central to their early arguments.

Although that seems somewhat surprising, it is important to note that Abba Lerner, a key author on Chartal Money, is also the main author behind Functional Finance views.

3. In his words: "most developing nations adopt their own domestic currency. Some of these peg their currencies, hence surrender a degree of domestic policy space, as will be discussed below. However, since they do issue their own currencies, the analysis here of sovereign currency does apply to them" (Ibid.). We take this to mean that the principles of functional finance do apply to developing countries, meaning that there is no default on domestic currency.
4. Note that imports for direct consumption are more easily cut than intermediary and capital goods which are necessary for production and growth, if the economy is to expand, and, hence, integral to the functioning of the economy. There is a long tradition within Latin American Structuralism, that echoes classical political economy notions of how production is a circular process, about the relevance of the role of imported means of production. See for example, Rodríguez (2006).
5. This behavior is in line with the accumulation of debt at the global level. Global debt has been climbing since the late 1990s: from 1997 to 2019 it rose from US$74 billion to US$257 billion, 217 and 322% of world GDP, respectively. This increase in global debt has several different features. Mounting debt is a systemic trend, affecting developed and developing economies and all sectors, non-financial corporate, government, household and financial. Available evidence for 2007–2019 (first quarter) shows that debt rose from US$35 to US$48 billion for households, from US$35 to US$70 billion for government, from US$54 to US$65 billion for the financial sector and from US$43 to US$74 billion for the non-financial corporate sector. It is clear that while government debt in domestic debt is safe, this is not the case with private debt, and that systemic risk sometimes forces the government to act as a lender of last resort. On the risks on that front for sovereign countries, one has only to look at the experience in the United States after the collapse of the housing bubble.
6. Note that the foreign debt to export ratio is a better gauge of external sustainability, since it provides the actual ability to repay in foreign currency.
7. For a discussion of that literature in a Post Keynesian model of currency crisis see Cline and Vernengo (2016). In that paper it is noted that if the foreign debt (denominated in foreign currency) to export ratio is to be kept from growing without limit, then exports must grow faster than the interest on foreign debt. This is an extension of the traditional Domar sustainability condition for open economies with foreign denominated debt.
8. MMT authors seem to suggest that a depreciated currency helps with the BOP problem, even if they suggest it is not central, since it might ease the external constraint. Mitchell et al. (2019, 390: emphasis added) say about the risks of "strong currency appreciation" that: "rising exchange rates [appreciation for them] can work against the development strategy because foreign currency prices of the nation's output rise relative to world prices," in other words, an appreciation would make their production less competitive. The principle of substitution seems to work here. There is no citation that we could find that suggests that appreciation could be good, via its distributive effect, or that depreciations could be deleterious, and have contractionary effects.
9. Higher interest payments, higher risk profile, which increases the difficulty of obtaining funding, and the desire to repair weak balance sheets and to build a buffer against illiquidity or possible default are some of the factors that account for a negative relationship between leverage (debt) and investment. Pérez Caldentey, Favreau Negront, and Mendez Lobos (2018) apply a nonlinear threshold model to a subset of 261 firms from Latin America (Argentina, Brazil Chile, Colombia, Mexico and Peru) and find a negative relation between cash flow and investment beyond a leverage (measured as the ration between debt and assets) threshold of 0.77.
10. For the New Developmentalist view see Bresser-Pereira (2016). Note that New Developmentalists are somewhat conservative on fiscal policy, favoring some degree of adjusting in order to avoid the inflation that would follow the economy achieving full employment, as a result of a more depreciated currency, higher exports and economic

growth. There is an extreme optimism about the effect of exchange rates. Wray (2012) shows less enthusiasm for the ability of the exchange rate to solve BOP problems, but still thinks, as the conclusion shows, that a floating regime is better than a managed regime with capital controls. In our view, there is no way to guarantee a priori, which system is better, but in many cases the latter would be preferable, and much less to argue as Mitchell et al. (2019, 519; emphasis added) that a floating rate is "a necessary condition for gaining policy independence." They also suggest that a "JG requires a flexible regime if it is to be effective (Ibid., 305; emphasis added), and given the importance of a JG for MMT this implies that flexible rates are strongly preferred over managed rates with capital controls.

11. This is essentially the same point made by Epstein (2019, 10), who argues that: "there is a significant amount of empirical evidence that flexible exchange rates do not fully insulate developing countries from the waves of capital sloshing around the international financial markets, and that flexible exchange rates will not create sufficient policy space for these countries to pursue MMT macroeconomic policies."
12. It is clear that a government may choose to do so, even though it is hard to see what would be the point of defaulting, when monetization or selling bonds is always an alternative for the central bank. In any case, the government of Argentina, under Mauricio Macri in 2019 did default in domestic bonds in pesos. Our suggestion is that in this case the reason was political, to frighten voters, after his defeat in the primary elections and before the actual elections.
13. This is essentially a similar result as the one derived in Mason and Jayadev (2018).
14. Low interest rates seem appropriate in these conditions. We will discuss situations in developing countries in which high rates are necessary. A different and more problematic notion associated to some MMT authors, in this respect, is the supposition that there is a natural rate of interest, and that it is zero. See Forstater and Mosler (2005). It is worth noticing that, in our view, the normal rate can actually be any rate that the social conditions and the pressures imposed on the monetary authorities would permit.
15. There is always the option of taxing rentiers. The political economy aspects of taxation have not been discussed in great detail by MMT authors. In part, perhaps, because there are differences between the school of economic thought and the political activists within MMT, with Mosler (2019) being explicitly against taxation of income, both for families and corporations.
16. The Federal Reserve under Marriner Eccles guaranteed a rate of 2.5% on long-term bonds for US long-term bonds. Similarly, Quantitative Easing (QE) can be seen as a policy effected to try to reduce long-term interest rates. See Vernengo (2009).
17. For 2018 debt interest payments as percentage of government revenue was estimated at 9.5% and 12.6% for Fiji and Papua New Guinea respectively.
18. See ADB (2018).
19. One of the most important consequences of debt accumulation is that the government's role is divorced from the provision of public goods, including health, educations and pensions, and services and from functional finance. The government spends its resources in managing its debt. In the case of one of the small islands developing states of the Caribbean, Jamaica, for example, more than 70% of the government's expenditure is spent on debt management.
20. Here we contradict, to some extent, the excellent analysis of Boito (2018) on the role of financial interests and the collapse of PT's government in 2015 and 2016.
21. We were somewhat surprised by Wray's comment, at the EEA meeting, that MMT authors were kicked out of Post Keynesian economics. Not just for the obvious reason that nobody has that authority, and we certainly think that many of his ideas remain firmly Post Keynesian, but also, because he is one of the coeditors of the *Journal of Post Keynesian Economics*, the prime journal of that school of thought.
22. It must be clear that we do not believe that there is any significant chance that there will be a change in the near future in the flexible dollar standard, and that we do not advocate any

return to a fixed exchange rate regime for the international monetary system. On the persistence of the flexible dollar standard see Fields and Vernengo (2013).

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Disclosure Statement

The opinions here expressed are the authors' own and may not coincide with the institutions with which they are affiliated.

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