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Leakages, Injections, Exchange Rates, and Trade (Im)Balances

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Recall from chapter one that the Neoclassical version of macroeconomics assumes an automatic tendency toward full employment. In the example offered there, whenever a decline in investment threatened to lower the level of aggregate demand, the rate of interest would fall sufficiently to reinvigorate spending and stave off recession. In the absence of frictions or other impediments to the free-market process, the rate of interest acts to maintain the level of demand necessary for full employment to prevail.

The larger story here is one of leakages and injections. Leakages from the income stream (like saving) lower the level of aggregate demand, while injections (like investment) increase it. In equilibrium leakages must equal injections; but it is the route by which they come to that point that determines the character of the macroeconomy as that equilibrium may or may not be consistent with the full-employment level of output. As suggested above, in the Neoclassical story, spending is able to remain at that maximum while interest rate adjustments set leakages equal to injections; in the Post Keynesian story, however, it is the level of economic activity that

bears the burden. This means that it is entirely possible, even probable, that economic activity could come to rest at the less-than-full employment level in seeking a position consistent with the leakages-injections equilibrium.

Consider these opposing viewpoints in an open economy. If imports are added to the list of leakages and exports to the list of injections, there now exists a potential problem for Neoclassicism. While interest rates are assumed to adjust to keep savings and investment at the full employment level, they have no direct effect on imports and exports. Thus, in the absence of an alternative explanation, it is possible that a fall in exports or a rise in imports could cause economic activity to come rest at less-than-full employment. That this does not occur is due to the fact that Neoclassical economists envision exchange rates as playing the same role in creating import/export adjustments as the interest rate does in the savings/investment sphere. Whenever net exports become negative, thus threatening the economy with recession, currency prices are expected to fall and thereby encourage exports and discourage imports. Currency depreciation reinvigorates domestic demand in the same way as an interest rate decline and it allows the economy to remain at full employment.¹

That currency prices move so as to equalize imports and exports is a common theme in mainstream models. Ronald MacDonald writes, "...most theoretical models of exchange rate determination would define a true long-run equilibrium as one in which the current account equals zero" (MacDonald 1995: 482). And though it is rarely portrayed as such, it is one of the legs by which the full-employment assumption is maintained. However, the conditions necessary to create

the automatic adjustment of exchange rates described above are very specific and, unfortunately, not descriptive of the world in which we actually live. To understand why this is so requires taking a look at the currency market in the context of the balance of payments. In the end, it will be demonstrated that when international transactions are dominated by capital and not trade flows, exchange rates do not operate to drive the latter to zero (and thereby maintain aggregate demand). Trade imbalances can continue indefinitely and, for deficit countries, they represent a drain on the level of economic activity no different than that created by a rise in savings or a fall in investment. This argument is consistent with that made by Tony Thirlwall in his balance-of-payments growth constraint theory (Arestis, McCombie, and Vickerman 2007).

EXCHANGE RATES AND THE BALANCE OF PAYMENTS

At the simplest level, there are only three reasons for demanding foreign currency:

1. importation of goods and services;
2. direct foreign investment, or purchases of foreign assets for ownership purposes; and
3. portfolio foreign investment, or purchases of foreign assets for short-term capital gain.²

The total demand for any currency is simply the summation of these three. For example (taking the US as the home country and assuming for simplicity that only Americans hold dollars), the total demand for foreign currency is found by adding 1) the schedule (at various exchange rates) of foreign currency desired by US agents who wish to purchase foreign goods and services, 2) the schedule of foreign currency desired by US agents who wish to purchase foreign assets for ownership purposes, and 3) the schedule of foreign currency desired by US agents who wish to

purchase foreign assets for short-term capital gain.

Figure 4.1 offers a graphic illustration of the demand for foreign currency for the dollar-foreign currency (\$-FX) market. The presentation is very simple, with E as the price of foreign currency in dollars ($\$/FX$), Q of FX the quantity of foreign currency, and D for FX the demand for foreign currency as derived from the demand for imports, direct foreign investment, and portfolio foreign investment. Note the negative slope implying that, *ceteris paribus*, the quantity of foreign currency demanded will fall as its price rises.

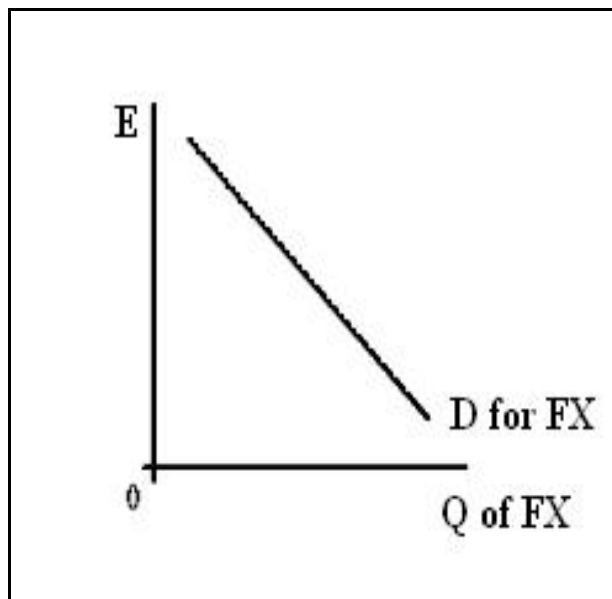


Figure 4.1: Demand for foreign currency ($E = \$/FX$).

Figure 4.2 shows the supply of FX. Foreign currency is offered to Americans when foreigners wish to obtain dollars (its positive slope is a function of the fact that E is the inverse of the price

of dollars).³ Note that in a two-country world (or when treating the rest of the world as a single state, as here), S of FX is identical to D for \$. In other words, those who are supplying foreign currency to the market are simultaneously demanding dollars (and those who are supplying dollars are demanding foreign currency). Hence, the positively sloped line in Figure 4.2 can be labeled either S of FX or D for \$. We will adopt the latter as it will make the exposition more straightforward.⁴ Figure 4.3 shows equilibrium in the \$-FX market.

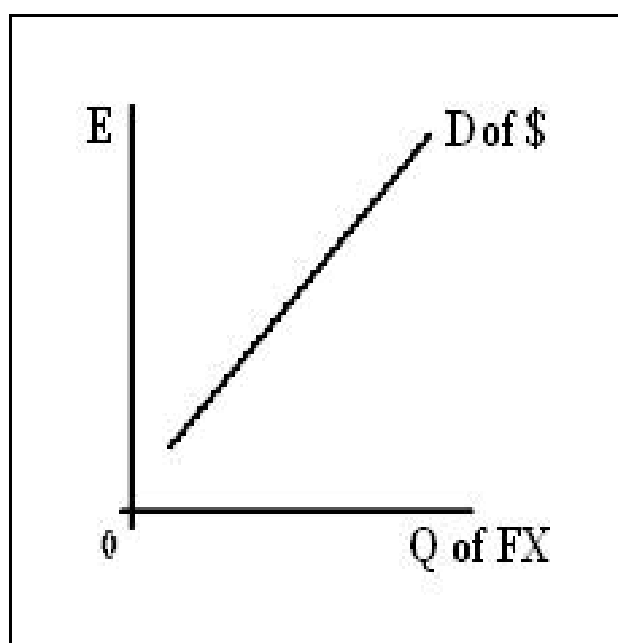


Figure 4.2: Supply of foreign currency or the demand for dollars ($E = \$/FX$).

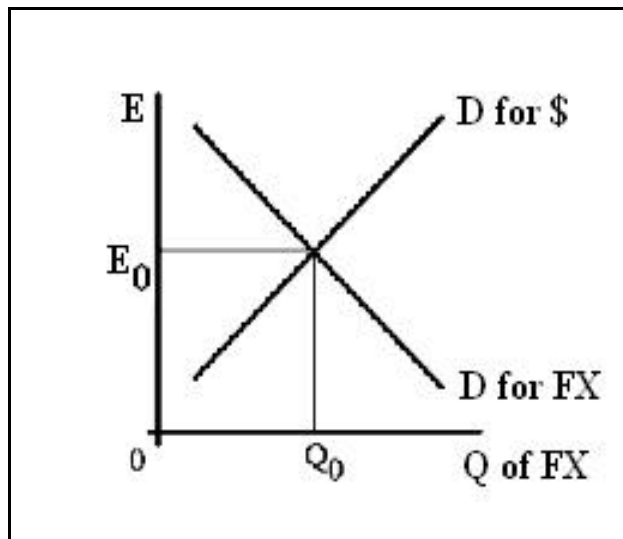


Figure 4.3: Complete \$-FX market ($E = \$/FX$).

So far this tells us relatively little that is novel about the market for currency. As would be true in any market, a rise in the demand for the product (FX) will cause a rise in its equilibrium price and quantity; and a rise in supply depresses price and raises quantity. However, there is more occurring than first appears. To see this requires that we break the demand for the currencies into distinct market segments. The key is to separate currency demands derived from goods and services trade (imports and exports) from that derived from capital flows (direct foreign investment and portfolio foreign investment). Under this scheme, the total demand for foreign currency would be equal to those demanded in order to purchase foreign goods and services plus those demanded to purchase foreign assets (for both ownership and capital gain). This can be expressed,

$$D \text{ for FX} = D \text{ for FX} (M_{us} + K_{us}^o) = D \text{ for FX} (M_{us}) + D \text{ for FX} (K_{us}^o) \quad 4.1$$

where $D \text{ for FX} (M_{us})$ is US import demand (i.e., US demand for foreign goods and services) and

D for FX (K_{us}^o) is US capital outflow (i.e., US demand for foreign assets). Equation 4.2 shows the other side of the market (recall that D for \$ = S for FX):

$$D \text{ for } \$ = D \text{ for } \$ (X_{us} + K_{us}^i) = D \text{ for } \$ (X_{us}) + D \text{ for } \$ (K_{us}^i) \quad 4.2$$

where D for \$ (X_{us}) is US export demand (i.e., foreign demand for US goods and services) and D for \$ (K_{us}^i) is US capital inflow demand (i.e., foreign demand for US assets).

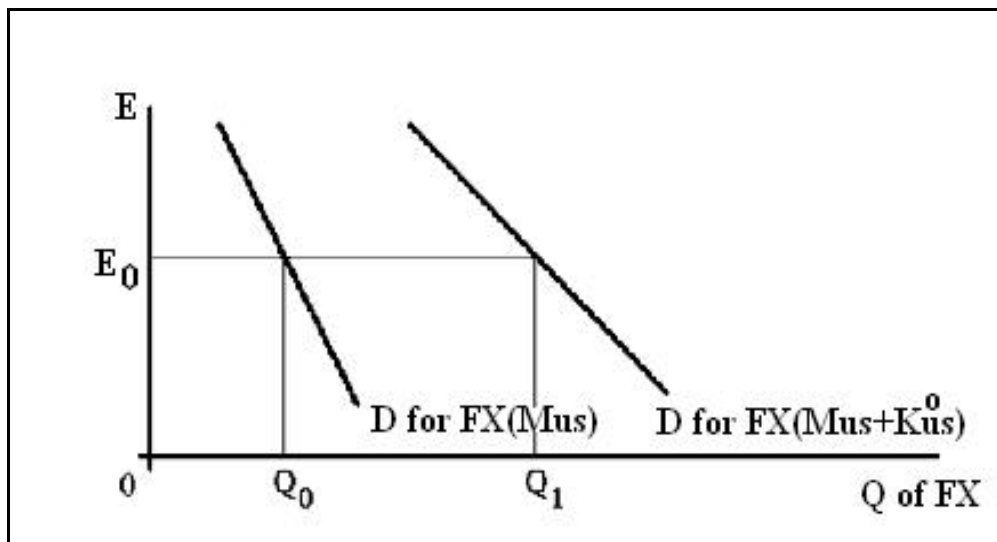


Figure 4.4: Demand for foreign exchange decomposed ($E = \$/FX$).

Equation 4.1 is represented in Figure 4.4. The outermost function is the total demand for foreign currency: ($M_{us} + K_{us}^o$). The innermost represents only the foreign currency desired by US citizens to purchase foreign goods and services: (M_{us}). It is not necessary to illustrate D for FX (K_{us}^o) separately as it is simply the difference between D for FX ($M_{us} + K_{us}^o$) and D for FX (M_{us}) (in fact, the reason that the rightmost function is flatter than the leftmost is because the negative slope of D for FX (K_{us}^o) has been added to it). If the exchange rate were E_0 , the total quantity of FX

demanded would be Q_1 , the quantity demanded by US importers wishing purchase foreign goods and services would be Q_0 , and the quantity demanded by US investors wishing purchase foreign capital assets (direct and indirect foreign investment) would be $Q_1 - Q_0$.

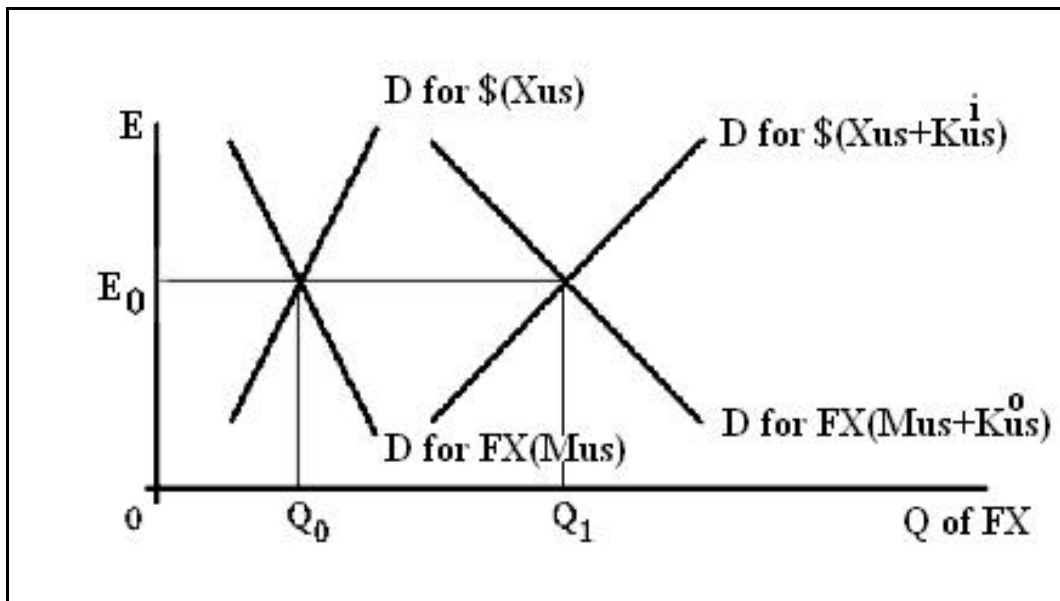


Figure 4.5: Complete market, balanced trade ($E = \$/FX$).

This same decomposition can be done for the D for $\$$ as well, and then combined with what is shown on Figure 4.4 to illustrate a number of interesting facts regarding exchange rates and the balance of payments. In Figure 4.5, D for $\$(X_{us}+K_{us}^i)$ and D for $\$(X_{us})$ show the total demand for dollars by foreigners and the demand for dollars by foreigners wishing to purchase US goods and services (with the D for $\$(K_{us}^i)$ as the difference between the two). The intersection of the curves representing the total demands for foreign currency and for dollars— D for $FX(M_{us}+K_{us}^o)$ and D for $\$(X_{us}+K_{us}^i)$ —shows the equilibrium exchange rate. Calculating the various components of the

balance of payments is now a matter of cross referencing the equilibrium exchange rate with the various demand functions. US imports, for example, are found by determining where E_0 crosses D for FX (M_{us}): Q_0 . US capital outflows are found by taking the difference between D for FX ($M_{us}+K_{us}^o$) and D for FX (M_{us}) at the prevailing exchange rate. This yields $Q_1 - Q_0$. Following the same logic, US exports are Q_0 and US capital inflows are $Q_1 - Q_0$. Notice that in this instance we have balanced trade (and, of course, a balanced capital account).

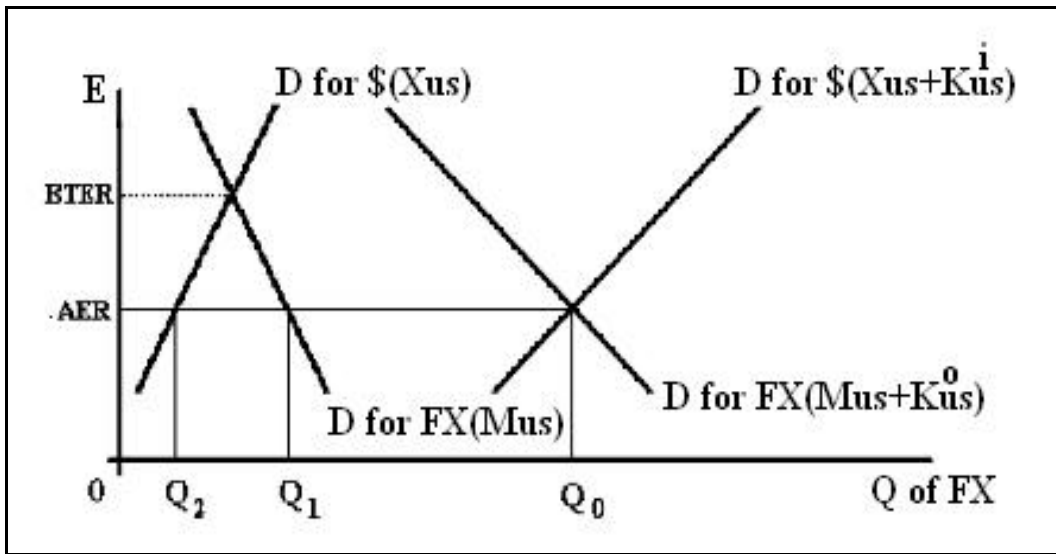


Figure 4.6: US trade deficit, capital account surplus ($E = \$/FX$).

Figure 4.6 gives a more interesting situation, one in which trade is imbalanced. Note first the exchange rate labeled BTER, or balanced trade exchange rate. As the label suggests, this shows the price of FX at which trade between the US and its trading partners would be balanced. At prices higher than this, the US would enjoy a trade surplus; at prices lower, a trade deficit. The intersection of the two curves representing the total demands for currency, D for $\$(X_{us}+K_{us}^i)$ and D for $FX(M_{us}+K_{us}^o)$, gives the actual exchange rate, AER. As this is the price at which all

transactions actually take place, US exports, imports, capital inflows, and capital outflows are calculated at that rate. US exports in Figure 4.6 (found at the intersection of D for \$ (X_{us}) and AER) are Q_2 and US imports (the intersection of D for \$ (M_{us}) and AER) are Q_1 ; US capital inflows (the difference between D for \$ ($X_{us}+K_{us}^i$) and D for \$ (X_{us}) at AER) will be $(Q_0 - Q_2)$, while US capital outflows (the difference between D for FX ($M_{us}+K_{us}^o$) and D for FX (M_{us}) at AER) are $(Q_0 - Q_1)$. Note that just as one would expect with BTER price of foreign currency exceeding actual, AER, the US has a trade deficit. Note further that this graphical approach shows very clearly the fact that the trade and capital account imbalances must be of the same size (though opposite sign) as each is represented by the identical line segment, $(Q_1 - Q_2)$.

This simple framework gives insight into the effect of the composition of foreign currency demand on the balance of payments and on the role (or lack thereof) of currency prices in supporting full employment. First off, it is clear that, on the surface of it, there is no obvious reason to assume that trade imbalances self correct. For such a tendency to exist, it would be necessary for AER to be automatically attracted to the level represented by BTER. In the extreme case, if no capital flows existed then D for \$ (X_{us}) and D for FX (M_{us}) would comprise the total demand for currency and thus AER would *always* be equal to BTER. This is, as argued in chapter two, basically what Neoclassical economics assumes (at least over the long run). In the absence of capital flows, exchange rates are a function of trade balances and they will, indeed, adjust so that those balances come to rest at zero. In this way, a nation whose economic prosperity is threatened by a current account deficit is rescued.

By extension, a world in which capital flows are very small as compared to trade flows may also tend to produce something close to balanced trade. Figure 4.7 illustrates such a situation. If the sizes of D for FX (K_{us}^0) and D for \$ (K_{us}^i) are limited to being no larger than as shown on Figure 4.7, then AER and BTER can never stray far apart. Were the demand for US capital assets to collapse to zero (and that for foreign ones be unchanged), AER would move to point A and create a trade surplus for the US (the size of which would correspond to the horizontal line segment between D for \$ (X_{us}) and D for FX (M_{us}) and across from point A). In the event that the demand for foreign capital assets fell to zero (and that for US stayed unchanged), AER would move to point B and create a trade deficit for the US (the size of which would correspond to the horizontal line segment between D for \$ (X_{us}) and D for FX (M_{us}) and across from point B). In any case, AER can never stray any further away from BTER than A or B; furthermore, the smaller one assumes capital flows to be, the closer A and B must be to BTER. Note further that this would create a strong incentive for those undertaking portfolio investments to pay close

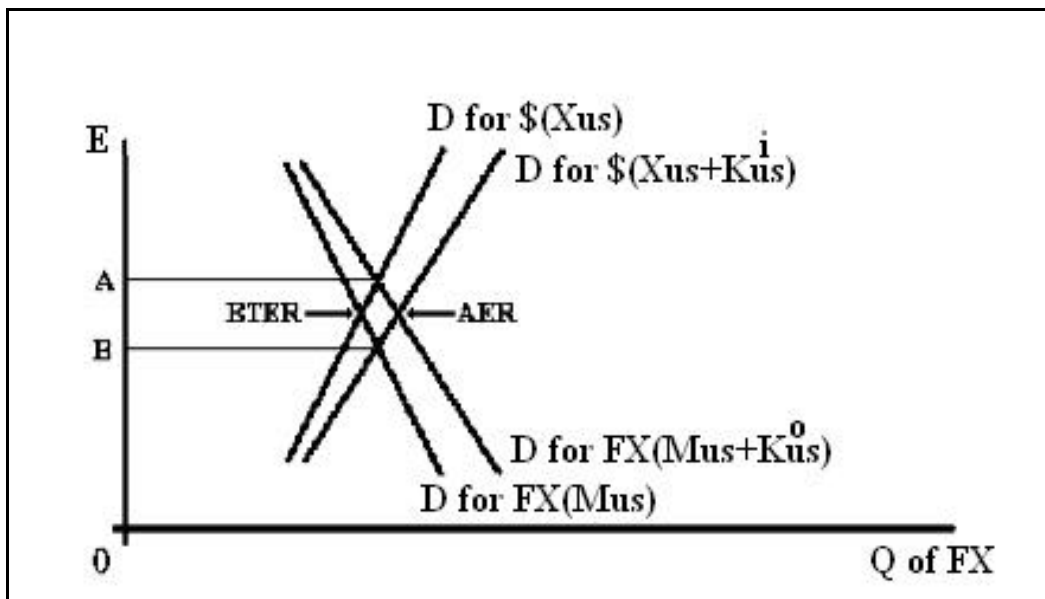


Figure 4.7: The case of small capital flows ($E = \$/FX$).

attention to factors driving trade flows and adjust their portfolios (and hence move the price of currency) accordingly.

As capital flows grow larger and larger, however, AER and BTER may settle further apart .

Figure 4.8, for example, shows a situation in which capital flows dominate exchange rate determination (at the AER shown, capital flows are roughly four times the size of trade flows—ten times would be closer to reality). Though the figure shows the two currency prices directly across from one another, this clearly need not be the case. Capital flows here are so large that the points that would correspond to A and B in Figure 4.7 are out of view. Imbalances can be quite large when capital flows predominate, and there is little reason for portfolio capital investors to care about factors driving imports and exports. Trade is imbalanced in equilibrium and only by coincidence would it be otherwise. This is not unlike the structure of today’s currency market, and under these circumstances exchange rates do not automatically act to generate sufficient demand to maintain full employment.

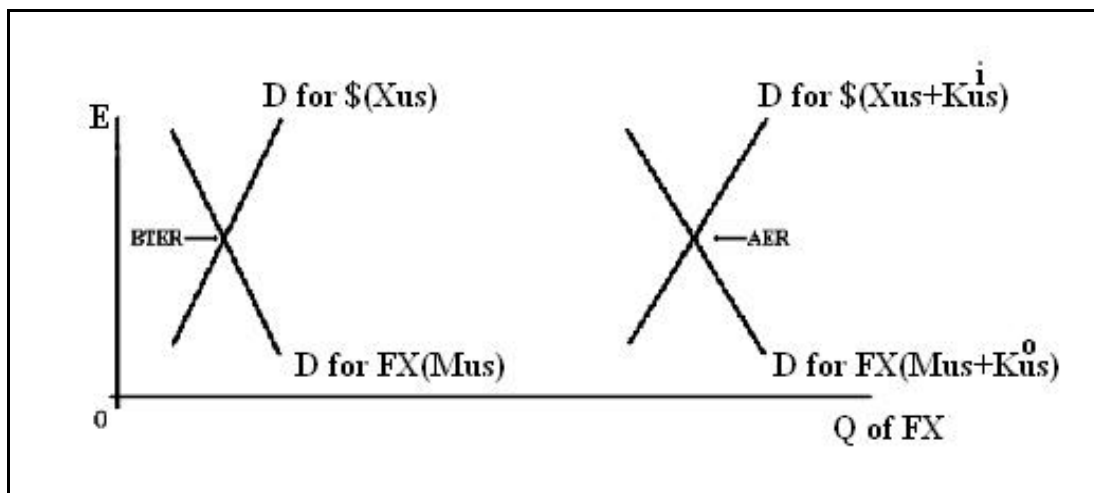


Figure 4.8: The case of large capital flows ($E = \$/FX$).

EXCHANGE RATES AND THE BALANCE-OF-PAYMENTS CONSTRAINT

All this is consistent with arguments made under Thirlwall's Law, or Balance-of-Payments-Constrained Growth (see for example Arestis, McCombie, and Vickerman 2007). Their central argument is that, just as a domestic macroeconomy must maintain a particular level of investment to offset savings if they are to achieve full employment, so must they achieve a particular balance of payments. A key assumption of Thirlwall's Law is that balanced trade will not automatically prevail because "the rate of exchange is ineffective in determining the growth of exports and imports," just as was described earlier (McCombie 2003: 16). Extensive empirical research has lent strong support to Thirlwall's contention that the balance-of-payments constraint is real and significant, particularly in developing nations (McCombie 2003).

The more important driving force behind trade flows, Thirlwall's Law supporters say, is that set of variables comprising the non-price factors affecting imports and exports. They further fear that if a nation experiences long periods during which they are forced to finance a trade imbalance with short-term capital inflows that this will ultimately lead to a "collapse in the exchange rate and the risk of a resulting depreciation/inflation spiral" (McCombie 2003: 15). Such a scenario is easily illustrated using the framework developed in this chapter.

Figure 4.9 takes Mexico as a small, developing nation, and substitutes pesos for dollars on the graph. Note the very steep D for peso (X_{mx}), representing extreme price inelasticity for Mexican goods and services. D for FX (M_{mx}) is likewise very steep for the same reasons, but assumed to lie

to the right of D for peso (X_{mx}) at all levels of peso/FX shown. The latter is based on the assumption that the world demand for goods and services produced in Mexico is rather limited, while Mexico is dependent on the rest of the world for some set of imported products (perhaps manufactured goods, technology, food, or vital minerals). Important here is the fact that no matter how cheap the peso gets, the rest of the world has a finite interest in Mexican products. There is therefore a limit in terms to how large X_{mx} can be in the short run. Meanwhile, if economic crisis is to be avoided, critically important imports (for which there is no domestic substitute) must continue to flow into Mexico.⁵

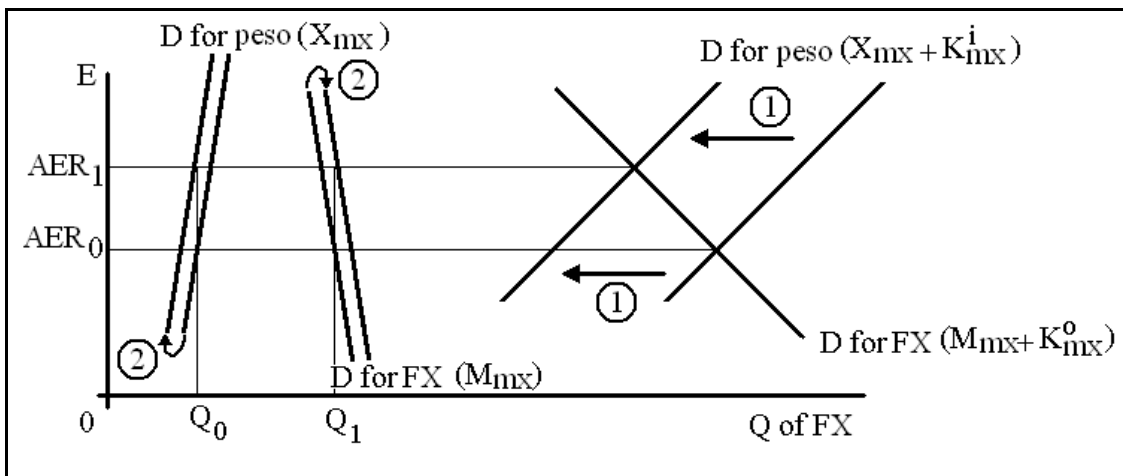


Figure 4.9: Balance-of-Payments Growth Constraint and the Depreciation/Inflation Spiral (E = pesos/FX).

The starting points on Figure 4.9 are the far right D for peso ($X_{mx} + K_{mx}^i$) and the innermost D for peso (X_{mx}) and D for FX (M_{mx}). As drawn, the BTER is out of range of realistically achievable exchange rates. It does not matter where D for peso ($X_{mx} + K_{mx}^i$) and D for FX ($M_{mx} + K_{mx}^o$) are placed, Mexico will experience a trade deficit of largely the same size. The only factors that have

a noticeable impact on the trade balance would be shifts in D for peso (X_{mx}) and D for FX (M_{mx}).

Now notice what will happen as the rising level of short-term debt in Mexico causes agents to begin to shy away from Mexican financial assets: D for peso ($X_{mx}+K_{mx}^i$) will shift left because K_{mx}^i falls (shown as \leftarrow). This creates a peso depreciation and a movement of AER towards the currently unobservable BTER (there might also be a rise in K_{mx}^o as domestic agents shift their money to more secure accounts; this would magnify the depreciation). As the peso depreciates, the peso-price of the vital imports rise and domestic inflation is thereby fueled. The rise in the Mexican price level can then be expected to shift D for FX (M_{mx}) to the right and D for peso (X_{mx}) to the left (shown as \leftarrow), leaving the trade deficit largely unaffected, meaning that debt may continue to accumulate and another round of depreciation can be expected. This is the depreciation/inflation spiral predicted by Thirlwall and this shows that even when exchange rates do fall in response to a trade deficit, this does not guarantee a reduction in the currency account imbalance.

CONCLUSIONS

There is no reason to believe that there is any automatic tendency for AER to be attracted to BTER. In a market where exchange rates are dominated by portfolio capital flows, only if agents' forecasting efforts focused on national trade balances would there be a tangible link between AER and BTER. For example, if market participants believed that nations with trade deficits represented greater default risks than those without, then the financial assets of such economies

might become less popular among portfolio investors and the deficit nations' currencies would depreciate. This may bring AER closer to BTER. So long as a depreciation/inflation spiral is not triggered.

But surely, one might interject, a nation cannot accumulate debt indefinitely? There is no question that it creates a burden and that under some circumstances a limiting point may be reached. But, it is possible to carry even increasing levels of debt for a very long time. Anwar Shaik has argued that a common state of affairs is for the deficit nation to be offered special financing or a chance to refinance (Shaik 1980 and 1996 and Shaikh and Antonopoulos 1998). If this is true and private investors are not ignorant of this, it is yet another means by which the link between AER and BTER is weakened.

Meanwhile, the impact of trade balances on currency forecasts is already dampened among large, developed economies. While one can identify periods during which deficit nations experienced sustained depreciations (take for example the market's focus on trade balances immediately following the collapse of Bretton Woods), these have been the exception rather than the rule. These periods have occurred and we should not ignore them, but nor should we imagine that trade flows play the central role assumed by Neoclassical approaches. The simple fact is that the determinants of the market for foreign goods and services (driving BTER) are distinct from those determining the demand for foreign assets (which, for all intents and purposes, drives AER). There is no reason we should expect one price to clear two markets. When there has been a link, it has been because portfolio investors have decided that there should be. In general, portfolio

capital flows determine exchange rates.