

ECON 3235 Fall 2018: Definitions and accounting behind Market for Dollars or Elasticities approach to External Adjustment (see also alternative Adjustment strategies here and at the end of this file).

What is the current account? What is a “normal” CA deficit? Why some countries run chronic current account imbalances? Is a normal Current Account deficit be zero? The answer is no, even in low and middle income countries (that is, all LatAm economies except Puerto Rico). Hence the relevant diagram is MFD-1 where the “tail wags the dog” that is the KAB largely determines the RER ($q = ep^*/p$). To absorb dollar inflows the RER must appreciate (fall) to generate dollar outflows the RER depreciates. This is not normal: usually supply and demand determine the “equilibrium” RER, that is when $S=D$ in the market for dollars, which is when the $CAB + KAB$ is zero.

The dollar supply curve: sources of dollars for Mexico: exports of goods and services (including what tourists spend in Mexico plus remittances send by Mexican workers abroad and earning on investments abroad (Mexico holds dollars as reserves, and very likely U.S. bonds this could be Sovereign Wealth Fund or SWF)

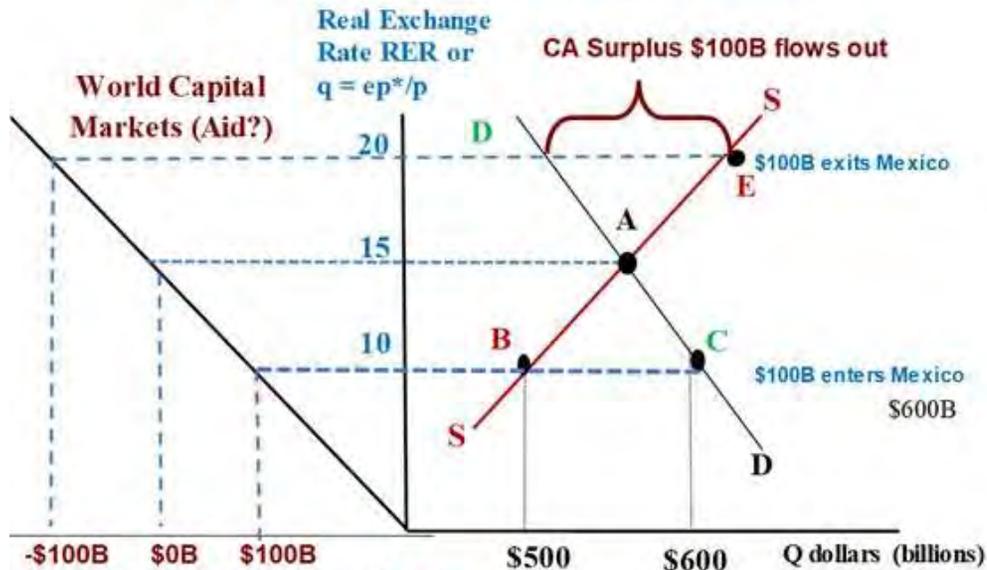
The dollar demand or DD curve in Figure MFD-1 includes dollars used to import goods and services as well as debt service for net debtor countries (hence the IB is generally negative).

The difference between the supply and demand for dollars in Figure MFD-1 is the CAB plus the capital account balance KAB (see Section B or Table 1 below). The KAB is mainly private capital inflows or outflows. Suppose the capital account balance or KAB is zero, then the gap between supply and demand for dollars is equal to the change in NFA or net foreign assets. If there are no private capital flows (as in the days before emerging market investment). The simple way to think about NFA is dollar reserves net of dollar debt held by the public sector (assuming private capital inflows are small). Hence when foreign borrowing zero the a current account deficit depletes reserves, while a CA surplus adds to reserves.

The Current Account surplus or deficit is thus the $TB + IB$ where IB is the income balance on factors deployed abroad, capital and labor. Typically in net debtor countries the IB is negative and must be offset with trade surplus, that is $TB > 0$, eventually. Thus a shorthand for the IB in net debtor countries is r^*D^* which is annual debt service. On the other hand, net creditor countries earn income on capital deployed abroad, so the IB is likely to be positive. Capital inflows may include FDI or portfolio investment by foreigners who want to buy assets in emerging markets. Argentina, Mexico, Malaysia, Brazil and India typically pay higher interest rates domestic debt and local currency assets. And since they often (but not always) grow faster than mature economies, as they catch up or converge to developed countries (meaning the G-7 for example, which the G8 minus Russia... which is doing quite well actually, but has many characteristics of emerging market countries including reliance on oil and gas exports and a very authoritarian government).

Private capital flows KAB turned out to be more important than anticipated during the pivotal 1980s. During the long interval 2008 to 2017 for example when interest rates in the G-7 and EU countries were very low, if not zero, investors turned to emerging markets to earn interest. Faster growth also led to more FDI. Finally, many commodity exporters (and China) began to use Sovereign wealth Funds to better manage volatile commodity prices (Chile and Norway for example)

Figure MFD-1 Market for dollars in Mexico



Capital/Aid Inflows/outflows \$ dollars

In a small open economy like Mexico causality runs from \$US inflows to the RER & CA balance. Unless the peso appreciates in real terms Mexico cannot invest more than it saves, if foreign investors want to invest in Mexico the peso RER must appreciate so Mexico can run a CA deficit. But what if there is a "sudden stop"?

Real Peso Exchange Rate $RER q = ep^*/p$

Figure MFD -2

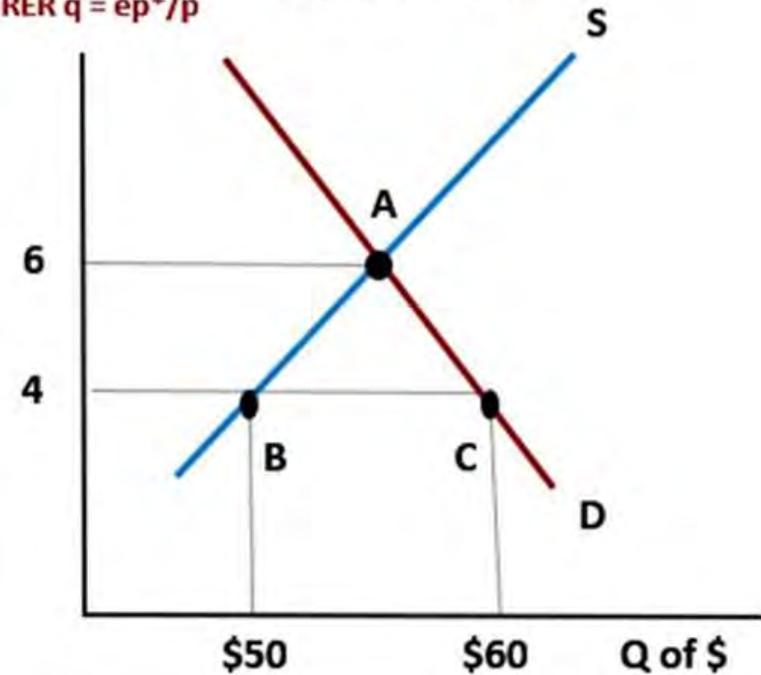


Table 1 below is from Sharmila Devadas & Norman Loayza (2018) [When is a current account Deficit bad?](#) World Bank Malaysia Hub, No, 17, October (prepared for the October WB-IMF meetings in Bali Indonesia)

Table 1. Overview of National Accounts and the Balance of Payments

| A. National Accounts | <i>of which:</i> | Domestic | External |
|---|------------------|--------------|-----------|
| Supply of goods and services ($Y = Y_D + M$) Domestic output (Y_D) and import of goods and services (M) | | Y_D | M |
| Use ($Y = IC + C + I + X$) Intermediate consumption (IC), final consumption (C), investment (I) and exports of goods and services (X) | | $IC + C + I$ | X |
| Gross Domestic Product ($GDP = Y_D - IC$) | | $C + I$ | $X - M$ |
| Gross National Disposable Income (GNDI) = $GDP +$ Income balance (IB) | | $C + I$ | $TB + IB$ |
| Saving ($S = GNDI - C$) = Investment (I) + Financial saving (CAB) | | I | $TB + IB$ |

The double-entry bookkeeping system of the balance of payments means that the sum of CAB and KAB is equal to ΔNFA

B. Balance of Payments

TB Trade balance ($X - M$)

CAB Current account balance ($TB + IB$)

KAB Capital account balance

- ΔNFA Financial account balance
(change in net foreign assets)

0 $CAB + KAB = \Delta NFA$

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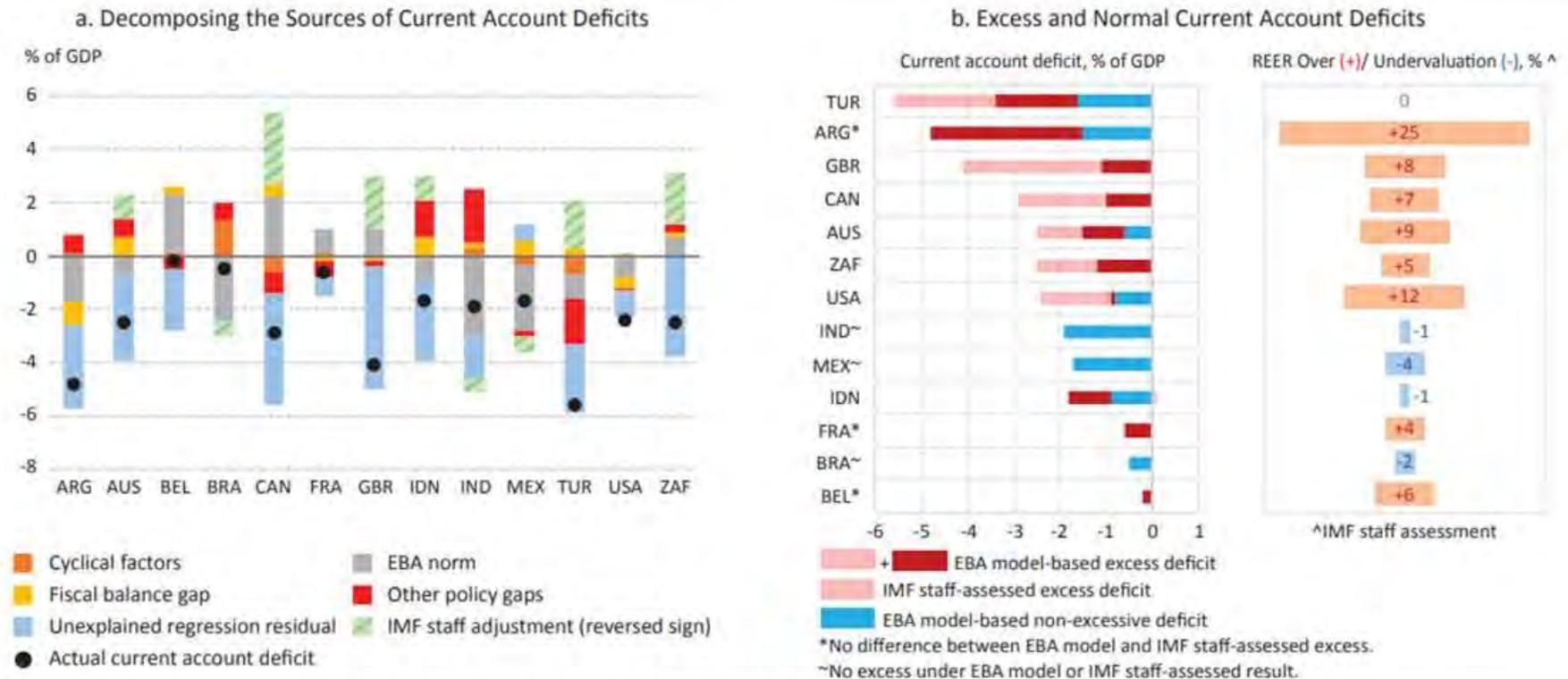
| A. National Accounts | <i>of which:</i> | Domestic | External | B. Balance of Payments | |
|---|------------------|--------------|----------|------------------------|---|
| Supply of goods and services ($Y = Y_D + M$) Domestic output (Y_D) and import of goods and services (M) | | Y_D | M | | |
| Use ($Y = IC + C + I + X$) Intermediate consumption (IC), final consumption (C), investment (I) and exports of goods and services (X) | | $IC + C + I$ | X | | |
| Gross Domestic Product ($GDP = Y_D - IC$) | | $C + I$ | $X - M$ | TB | Trade balance ($X - M$) |
| Gross National Disposable Income (GNDI) = GDP + Income balance (IB) | | $C + I$ | TB + IB | | |
| Saving ($S = GNDI - C$) = Investment (I) + Financial saving (CAB) | | I | TB + IB | CAB | Current account balance (TB + IB) |
| The double-entry bookkeeping system of the balance of payments means that the sum of CAB and KAB is equal to ΔNFA | | | | KAB | Capital account balance |
| | | | | - ΔNFA | Financial account balance (change in net foreign assets) |
| | | | | 0 | $CAB + KAB = \Delta NFA$ |

Source: Authors' design, based on IMF (2009) and Lindner (2015).

See IMF (2009) for further details of the components and compilation methodology of the balance of payments.

- The supply of goods and services refers to all available final or intermediate products, produced domestically or imported.
- The income balance (IB) includes net income receipts on net foreign financial assets; and workers' remittances.
- The capital account (KAB) reflects disposals (positive sign) and acquisitions (negative sign) of non-produced, non-financial assets (such as leases, licenses and land for embassies). The change in net foreign assets (ΔNFA) reflects increases in financial assets (negative sign/outflow), and financial liabilities (positive sign/inflow).

Figure 2. IMF Assessment of Current Account Deficits in 2017



Source: Authors' illustration based on data from IMF (2018). See IMF (2018) for further details on the current account and real effective exchange rate (REER) assessments.

Note: IMF staff-assessed excess current account deficit/surplus = EBA model-based gap - IMF staff adjustment;

where EBA model-based gap = Policy gaps + Unexplained regression residual

= Actual current account deficit - Cyclical factors - EBA norm; where EBA norm comprises fundamentals and desirable policies.

Cyclical factors = output gap and commodity terms-of-trade gap. **Fundamentals** = output per worker, expected GDP growth five years ahead, lagged NFA, oil and natural gas net exports, institutional/political environment, old-age dependency ratio (OADR), population growth, prime-age population (45-64) to working-age population ratio, life expectancy at prime age (standalone and interacted with future OADR), demeaned VIX, reserve currency status. **Policy gaps** = the differences between actual and desirable policies. **Fiscal balance gap** = the difference between current cyclically adjusted fiscal balance and one desirable in the future at full employment. **Other policy gaps** are for public expenditure on health (versus benchmark from regression on GDP per capita, demographics and income inequality), foreign exchange intervention (against 0, or non-zero if deemed necessary to reach reserves adequacy), private credit/GDP (deviation from detrended value), and capital controls (against cross-country average or own level, whichever is lower).

IMF staff adjustment = outside-the-model adjustments for example, for measurement biases or special demographic features. If negative (positive), it reduces a negative (positive) EBA model-based gap.

EBA = External Balance Assessment conducted by the International Monetary Fund (IMF); VIX = Volatility Index (Chicago Board Options Exchange).

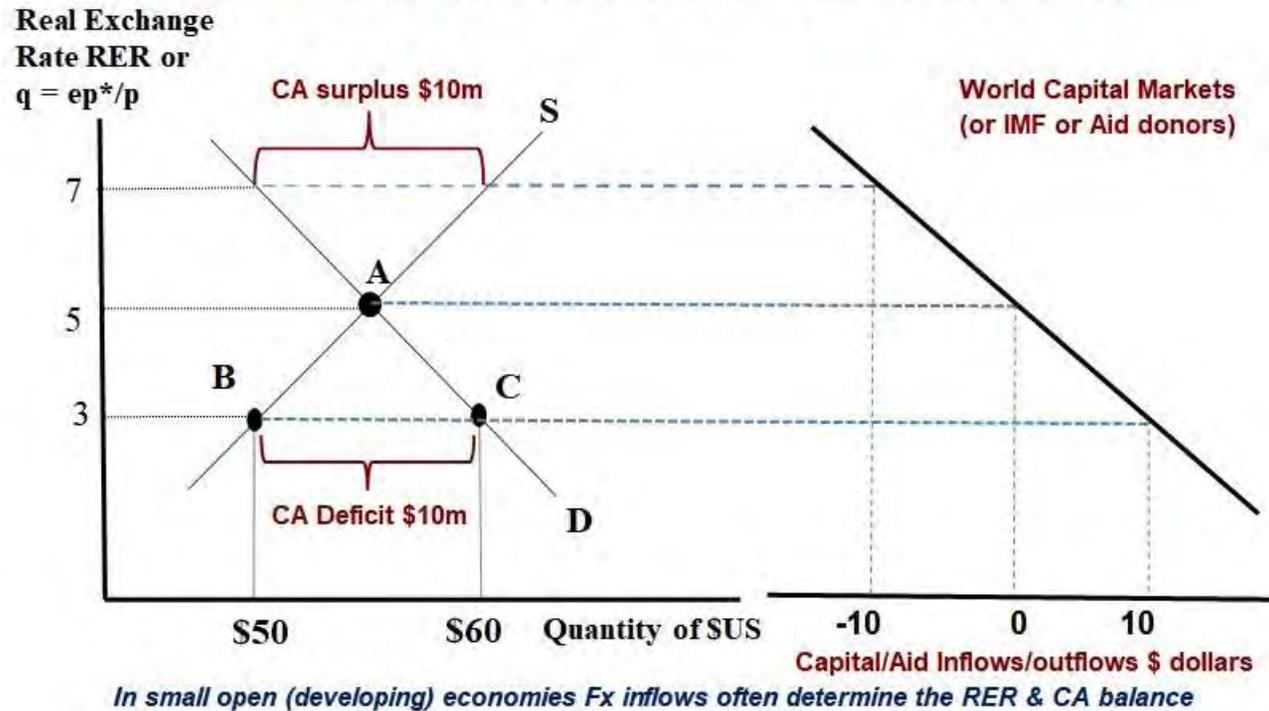
ARG = Argentina; AUS = Australia; BEL = Belgium; BRA = Brazil; CAN = Canada; FRA = France; GBR = United Kingdom; IND = India; IDN = Indonesia; MEX = Mexico; TUR = Turkey; USA = United States of America; ZAF = South Africa.

The classic elasticity approach to balance of payments adjustment can be illustrated in Figure 1, the market for dollars diagram. Suppose for the moment, $p = p^* = 1$. With $e = 3$ pesos per dollar, the economy operates at C with a current account deficit of \$10 million, which in the absence of private capital inflows ($\Delta F = 0$) is financed entirely with currency reserves, so that $\Delta R = -10 = TB - r^*D = CA$. If it becomes necessary to stop the decline in reserves or pay off external debt states have four options:

- (i) **Use stabilization policy (demand management)** to shift the demand for dollars back until it crosses the supply curve at B, by reducing public spending G , or reducing the money supply which raises interest rates: demand side stabilization policy works quickly but often leads to recession (but see the Monetary approach handout).
- (ii) **External Devaluation:** *let the currency depreciate, moving along S & D curves, reducing imports and expanding exports to point A (no shift in either curve)* Devaluation tends to be expansionary, increasing demand for exports and making imports more expensive (leading to a switch from imports to domestic substitutes, if there are any) but it can be inflationary and it takes time for exports to increase and for imports to decrease as firms and consumers to switch to local suppliers (this last process is sometimes referred to as expenditure switching).
- (iii) **Internal Devaluation** involves the same move from point C to A as in (ii) but instead of the nominal rate e depreciating from 3 to 5, a fall in domestic prices p accomplishes the same depreciation, with no shift in supply or demand for \$ the RER depreciates from 3 to 5 via a fall in domestic prices (aka deflation, or falling nominal wages). Internal devaluation rarely works without very costly high unemployment rates and lost output, as in Argentina 1998-2002 and Greece in 2008-13 (Latvia may an “internal devaluation” [success story](#).¹)
- (iv) **Structural adjustment** or *supply side reforms that over time shift the supply of exports to the right, crossing the import demand curve at point C*. Labor market reforms, investment subsidies, trade liberalization can all make the economy (export) sector more productive thereby shifting Supply curve S to the right, making an RER of 3 consistent with a current account deficit of zero.

¹ The [IMF Survey, 2012](#) reports Latvia internal devaluation adjustment as a success story, but others disagree (see [Sommers & Hudson](#), 2011)

Figure 2: capital flows and the RER in a small open economy



Small open economies often find themselves responding to capital inflows (whereas large economies such as China and the United States have enormous scope to borrow or lend on international markets). For the small open economy the world may operate as shown in Figure 2 where largely exogenous capital inflows (foreign aid?) leads to stronger or weaker currency determining the real exchange rate q and the current account surplus or deficit. A CA surplus or capital outflow (e.g., debt repayment) of \$10 million dollars for example is consistent with an RER of 7, while a capital/aid inflow \$10 million is consistent with a RER of 3 as shown in Figure 2 above.²

Helmert and Dornbusch, Chapter 2 provides a helpful review of how the RER works (with a market for dollars diagram) but also creates a little confusion regarding the role of capital flows in determining the real exchange rate or RER. This is partly because the market for dollars is a useful way of thinking about CA adjustment, but unlike a normal supply and demand diagram there may be no tendency to return to balance (0) current account surplus. In fact, capital inflows determine various levels of q and a corresponding CA balance. As we will see later, growing economies can run current account deficits forever. In these cases there is no tendency for q to end up where the S & D lines cross in Figure 1 or 2. On the other hand, we can think of some “automatic adjustment” mechanisms which do tend to balance current accounts over time (the gold standard is one, a pure floating rate system is another, as it happens neither system exists today, or ever existed—countries almost break the rules as

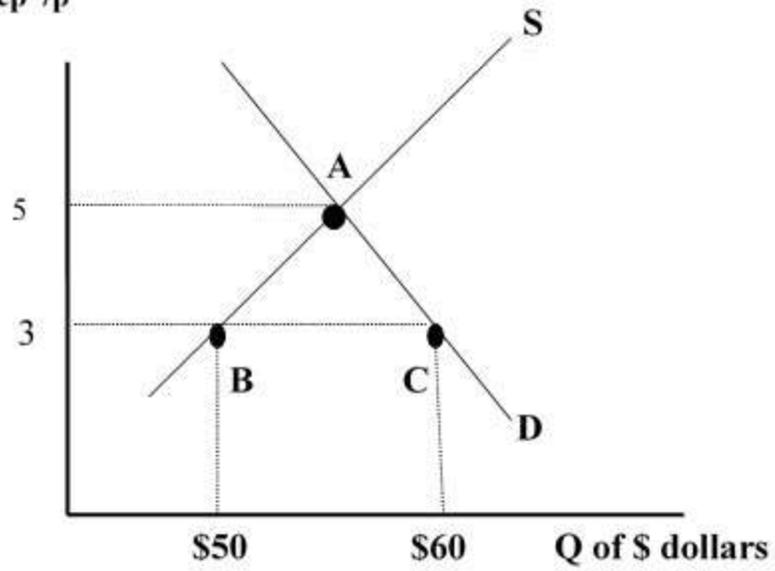
² Krugman, 1991 develops a similar model in an Mundell Fleming, ISLM large economy framework, see Krugman, P. R. (1991). *Has the adjustment process worked?* Institute for International Economics. October, Washington D.C.

sovereigns do, this is why the Euro system is so interesting, and problematic, countries are trying to follow the rules and stick with the Euro, though without a lot of help and intervention, they would probably exit the Euro). De Vries emphasizes in the post IMF era balance of payments adjustment is not “automatic” (if it ever was) **it is a policy choice government’s make but now with the helpful supervision and advice (and credit lines) of the IMF. Adjustment to external imbalances is not automatic, but there are some rules. Perhaps the main rule

A note on automatic adjustment: with no government and no IMF the world of external adjustment is apparently a simpler problem, gold flows or the nominal exchange rate automatically take care of the adjustment problem.... Market forces or exogenous shocks may shift the supply and demand for dollars all about, but the real exchange rate takes care of everything... there is nothing for governments or the IMF to do except get out of the way... with a gold standard, a CA deficit leads to an outflow of gold (taking the place of dollars or reserves in this case, this always leads to a contraction in the money supply which leads to a fall in p (e by the official price of gold, e.g. 1 oz is 32 dollars). Internal devaluation leads to adjustment via internal devaluation, only. For surplus countries the story is reversed, a gold inflow leads to faster inflation (rising p) and the real exchange rates falls, ending the CA surplus and the gold inflow... Though deflation is extremely difficult (high unemployment, sharp recessions) it was the surplus countries (the UK mainly) who refused to let automatic adjustment take place (see [De Vries](#)). The UK would sterilize gold inflows by issuing bonds to reduce the money supply, reducing inflation, but also undermining automatic adjustment... similarly China is doing this today, they sterilize dollar inflows cause by CA surpluses thereby keeping their exchange rate weak... both countries had their own reason (mainly manufacturing exports) for doing this. Pure floating did not work either, mainly because of competitive devaluation, a very common form of contagion (there are other forms of contagion...).

Real Exchange
Rate RER or
 $q = ep^*/p$

Figure 1



Other readings on the Elasticity approach

Returning to Helmers Chapter 2 [“Real Exchange Rate” of Tools for Policymakers in an Open Economy](#), he provides a useful discussion of the real exchange rate and “production vs. expenditure switching” but then seems to mix up the current account (the annual flow of goods and services and income) and the capital account (a net inflow or outflow that raises or lowers a nations’ stock of net assets of debt). Note that in our notation his E on page 12 is our RER or q where E_n is our e (the nominal exchange rate) P_w is our p^* so that in our notation

$$(1) \quad E \equiv q = (e/P_d)/(1/p^*) = ep^*/P_d$$

His Figure 2.1 on p. 13 is identical to the one we put on the board during the first class. The supply curve of dollars includes exports, remittances and earnings on investments abroad. The import demand curve includes imports of goods and services (including payments of wages to foreign citizens) and debt services. The difference between these two curves is then capital inflows or outflows. Helmers shows a \$100M capital inflow financed by a loan. His breakdown of the spending into importables, nontradables and exportables is interesting but a bit arbitrary. His expenditure and production switching is helpful (this idea of adjustment as switching the output mix reappears later in the tradables/nontradables or TNT model). In both cases the RER plays a key role. But not that currency inflows and outflows can change the RER— unlike the standard supply and demand diagram, there may be not tendency for the q to return to where the S and D lines (that is where the CA balance is zero). In Helmers Figure 2.3 the supply of dollars seems to include capital inflows. It is best to think of capital inflows as creating a CA deficit, moving down the supply and demand curve to create a stronger currency (RER) in this case the rupiah appreciates to 5, creating a yield a CA deficit equal to the capital inflow. In using this diagram to discuss stabilization policy you need a bit more structure, which we can get using the model from the Mundell-Fleming handout, but dropping the interest rate (i) from the balance of payments equation. This makes capital inflows and therefore the trade balance exogenous,

$$(1) \quad TB(Y, Y^*, q) = \Delta R + \Delta F - r^*D = X(Y^*, q) - Z(Y, q)$$

where $q = ep^*/p$ is the real exchange rate (RER), ΔF is the change in private foreign assets, ΔR is the change in official reserves. A fall in foreign GDP, Y^* shifts the export supply curve to the left as does a devaluation by a competitor country (this is one form of contagion). A reduction domestic demand Y , reduces imports Z at every q , thereby shifting the dollar demand curve to the left. Since domestic demand depends on domestic absorption $A = C(i) + I(i) + G$, tighter fiscal or monetary policy reduces Y and shifts the dollar demand to the left. As shown in equations (2) and (3) from the Mundell-Fleming handout.

$$(2) \quad \underset{-}{M/P} = \underset{+}{L(i, Y)} \quad \text{or} \quad \underset{-}{M/P} = \underset{+}{Y/v(i)} \qquad (3) \quad \underset{+-}{Y} = \underset{+-}{A(Y, i)} + \underset{-}{TB(Y, Y^*, q)}$$

Coping with Financial Crises: what makes developing countries different?

September 2, 2009: Anyone following the current financial crisis in New York knows (a) the current crisis started in the financial sector, a housing-debt boom that went bust among other things (Bears Sterns and Lehman Brothers demise, bears mention) and (b) the Federal Reserve and the Federal government have undertaken radical stimulus plans, lowering interest rates to almost zero and embarking on a massive fiscal stimulus plan (on the heels of a costly TARP or bank bailout program costing close to a trillion dollars). As of September 2nd 2009 these measures seem to be working, knock on wood, though unemployment is still rising and there many potential stumbling block ahead. Inflation is moderate, in fact the world is experience modest deflation even as many fear loose monetary policy and large deficits mean higher inflation in the future. Along with fear of inflation there is also a fear that the dollar may weaken, adding to inflationary pressures especially if China and other exporters decide to hold fewer dollars (Treasury Bills) as reserves. The initial response of the dollar to crisis was however, an appreciation against the Euro and most other world currencies: U.S. financial markets were on life support but still viewed as a “safe haven” for international investors, even with essentially zero nominal interest rates on short term Treasuries.

LDCs have Fewer Policy Options:

Table 1 summarizes the different policy options open to OECD vs. developing countries. The current crisis has also hit most developing countries, many with already low incomes and high poverty rates. The options for coping with crisis in developing countries are different however and this is what this course is about. Apart from the largest economies (perhaps the BRICs, Brazil, Russia, India and China) fiscal stimulus loose monetary policy not an option. Instead the hardest hit countries end up with very weak currencies and higher interest rates (to restore confidence). Weaker currencies make it harder to borrow abroad and private capital inflows shrink as companies earn less in dollar terms. A key difference between OECD countries and the rest of the world is that developing companies cannot borrow in their own currencies, they must finance balance of payments deficits with dollars. Hence dollars become scarce and the key barometer of successful monetary in policy in developing countries is a stable exchange rate and a manageable inflation rate (as the cost of imports rise).

Table 1: Differences Response to Financial Crisis

| OECD Countries (U.S.) | Developing Countries |
|---|--|
| Massive borrowing for fiscal stimulus | Only largest LDCs (BRICs) can run fiscal deficits |
| Looser Monetary policy low interests | Monetary policy often tightens to prevent collapse of currency |
| Larger rates of fiscal and external borrowing "flight to quality" | Can only borrow in foreign not domestic currency "original sin": "sudden stops" in capital inflows |
| Unemployment is key focus and consumer spending | Balance of payments and currency stability key focus |
| Safety net programs ramped up to protect poorest | Safety net programs limited, hard to scale up w/o external aid |
| Looser credit drives recovery | Phoenix recoveries with no growth in private credit (see Calvo and Talvi) |