

## Suggested Solutions to Problem Set 6

### Problem 1: International diversification

Because raspberries are nontradable, asset swaps or intertemporal trade cannot be used to reduce the riskiness associated with their production. Hence, differently from the example in which just tradable kiwis are produced, we cannot eliminate all the risk in the economy (unlike the example in the book, the world now is a risky place in the aggregate). So, any swap of assets (Home and foreign land) or intertemporal trade (current account surpluses or deficits) will necessarily be the consequence of the countries' willingness to share the risks associated with the productions of kiwis. On the other hand, the GNP of both Home and Foreign is now composed not only by kiwis but also by raspberries. Therefore, we can say that, relative to GDP, the international asset trade is smaller.

### Problem 2: Measuring financial integration

- (a) When there is great financial integration, capital is free to move across borders and flows to places where profitable opportunities are larger. These capital movements tend to equalize real interest rates around the world. However, real interest rates might still be different for reasons related to differences in risk or institutional differences, so the equality of real interest rates will not happen even in a fully financially integrated world.
- (b) The volume of capital flows is somewhat unsatisfactory because it gives no indication of the composition or quality of capital flows. Foreign direct investment is very different, and implies a different level of integration, than simple portfolio investment. Also, they may conceal important considerations in considering financial integration. The volume of capital flows do not tell us whether there are restrictions on the type of capital we are allowed to hold (i.e., foreign ownership of infrastructure, energy, or financial services companies is often limited) or what restrictions there are in transferring capital from one country to another.
- (c) With full financial integration and mobility of capital flows, we expect the correlation between saving rates and investment rates to be close to zero. In contrast, a coefficient close to 1 indicates that capital markets are not doing a good job in allocating capital (that there is not much mobility of capital such that financing is available wherever the return is more profitable). One might think that this occurs due to financial controls or barriers on the international movement of capital. However, this high positive correlation remains even as world financial markets become more and more integrated. This again indicates that capital flows are smaller than what we expect based on the benefits we think they would

offer. The puzzle therefore is that, given that the capital flows are low, there are foregone gains (in international risk-sharing for example) from the potential trade in assets. However, if the potential welfare gains are in fact very small, that not much is forgone by not engaging in more capital movements, then this fact is not so curious.

### **Problem 3: Capital controls**

- (a) When countries fix their exchange rate, they might want to prevent speculation (“hot capital flows”) against the peg (this applies more to the case where a devaluation is more likely after a potential fall of the peg regime, because this is the care in which capital is going to want to flow out of the country). A sudden outflow of portfolio investment or “hot” capital could be destabilizing to a developing country as it might prompt a collapse of the banking system and/or the currency.
- (b) Capital controls alone do not necessarily guarantee good economic performance and macro-economic stability. What can be more important are the reforms implemented (fiscal reforms, structural reforms or reforms of the banking system). Indeed, capital controls are best used to buy time for the government to carry out these reforms without the pressures or complications that might arise from foreign investors’ activities. In terms of their efficiency, capital controls might be inefficient because investors interested in gains can always find ways to elude them.
- (c) Chile is the most widely-discussed example of an emerging economy imposing capital inflows. After the debt crisis, Chile had a very good economic recovery and as a result enjoyed large capital inflows. These inflows however could pose several problems. Firstly, since they help domestic investments and economic expansion, they lead to increases in prices. However, in this situation the central bank is not able to control inflation for example, if it tries to increase interest rates such that inflation falls, it also makes domestic assets more attractive to foreign investors and thus attracts more inflows; also, if it tries to lower the interest rate and thus discourage capital inflows, that action also stimulates the economy and thus gives rise to more inflation. So the first reason in imposing controls on capital inflows is so that the central bank can have a better control of the economy. Secondly, this increase in prices creates a real appreciation of the currency, hurting exports and the current account. Lastly, controls on capital inflows also help restrict “hot money” from entering the country and thus help prevent a currency crisis. In effect, the capital controls imposed by Chile were more restrictive on investments of short-term maturities and less restrictive on investments with longer-term maturities. In terms of the costs of such restrictions there is the loss of external financing for domestic investments. This means that it is more costly to finance investments.

#### Problem 4: Argentina's crisis

- (a) During the 1990s, Argentina experienced a real appreciation due to initial residual inflation and increase in productivity in certain sectors of the economy. A real appreciation hurts the export sector (like the agricultural sector) and tends to benefit import substitution sectors (like the car industry). So the export sector could argue that the exchange rate parity with the dollar was preventing them from being competitive with the rest of the world. Hence, a devaluation would have helped them to have an expansion in their sector. However, a devaluation hurts consumers and firms that relied heavily on imported goods for consumption and for investment. So a devaluation shifts wealth from the import sector to the export sector of the economy.
- (b) When the peso is devalued, people who borrowed in dollars experience an increase in the value of their debt in terms of pesos. However, their income is still denominated in pesos so their ability to repay their debt decreases. Depositors know that commercial banks' balance sheets will deteriorate since their assets become non performing and hence this increases the depositors' willingness to withdraw money from the banks (which they were not able to do due to a deposit freeze). Also, in this situation credits to finance new projects are not available because banks do not have liquidity to make new loans. And hence the financial crisis is worsened. Given the information in this question, we would say that bank borrowers lose because now the value of their debt increased but their income remained constant and depositors benefit because the value of their dollar deposits increased. However, if you know what actually happened you would have given a different answer. Bank loans denominated in dollars were converted into pesos at the old parity (one-to-one) so actually bank borrowers were not hurt. On the other hand, bank deposits denominated in dollars were converted into dollars at a 1.4 to one rate while the market exchange rate was beyond that value. So actually depositors who had dollars actually lost.
- (c) A sovereign debt default usually leaves the defaulting country isolated from the rest of the world temporarily. This means that until the country restructures its debt and resume payments, capital does not flow into the country and trade becomes much smaller. Among the gains of a country from being open to the rest of the world we have intertemporal trade, risk diversification, and more efficient use of world resources. Among the risks we have that open countries are vulnerable not only to domestic shocks but also to foreign shocks like a decrease in the confidence of the country, a decrease in demand and contagion of foreign developments like crises in other countries.
- (d) If Argentina dollarizes its economy, it will buy dollars from the United States with goods, services, and assets. This is, in essence, giving the U.S. Federal Reserve assets for green paper to use as domestic currency. Since Argentina already operates a currency board holding U.S. bonds as its assets, dollarization would not be as radical as it would be for a country whose central banks hold domestic assets. Argentina can trade the U.S. bonds it holds for dollars to use as currency. When money demand increases, the currency board cannot simply

print pesos and exchange them for goods and services, it must sell pesos and buy U.S. government bonds. So in switching to dollarization, the government has not surrendered its power to tax its own people through seignorage, it already does not have that power.

Still, though, through dollarization, Argentina loses interest by holding non-interest bearing dollar bills instead of interest bearing U.S. treasury bonds. Thus, the size of the seignorage given to the United States each year would be the lost interest (the U.S. nominal interest rate times the money stock of Argentina). This comes on top of the fact that any expansion of the money supply requires sending real goods, services, or assets to the United States for dollars (just as they do with bonds under the currency board). This is not a long-run loss because Argentina could cash in those dollars (just as it could the bonds) for goods and services from the United States whenever it wants. So, what they lose is the interest they should be getting every year they hold the dollars.

- (e) After an initial depreciation the peso remained fairly stable at 3 pesos per dollar. This matches the idea of fear of floating discussed in the text. This stability is achieved the central bank's intervention in the foreign exchange market. Rapid growth in Argentina increases demand for pesos and this tends to appreciate the peso unless the central bank issues more pesos in exchange for dollars. By doing so, it allows the economy to enjoy an undervalued and stable exchange rate that promotes exports. The risks of this policy include inflation and hence real appreciation that could eventually occur if the central bank does not sterilize the foreign exchange operations.
- (f) GDP-linked government bonds may be a good idea to make debt more sustainable over time because interest payments are low in recessions and high in expansions and hence do not put extra pressure in the government's finances. Also, by having higher payments during booms it redirects government's funds outside of the country instead of exacerbating the increase in domestic demand. By the above, we can argue that crises could be prevented by using this kind of debt arrangements.

### **Problem 5**

Making the economy more open to trade is likely to enhance a developing country's ability to borrow abroad for several reasons. A higher level of exports reassures prospective lenders about the country's ability to service its debt in the future. Also, default risk is reduced because countries that trade more with the rest of the world have more to lose if they default on their trade partners. Finally, by choosing policies that international lenders consider sound, such as open markets, countries improve lenders' assessment of their credit-worthiness.

### **Problem 6 : True, False, Uncertain**

- (a) False. As discussed in the book, the debtor country must repay the bank loan regardless of its own economic circumstances. Foreign owners of FDI, on the

other hand, have a claim to a share of its return, not a claim to a fixed stream of money payments. Adverse economic events in the host country thus result in an automatic fall in the earnings of direct investments and in the dividends paid to foreigners.

- (b) False. One reason why developing countries find it difficult to issue debt in domestic currency is that foreign investors are not willing to take the currency risk associated with that transaction due to the long history of volatility of their exchange rates. However, it is too extreme to assert that it is impossible for developing countries to issue debt denominated in domestic currency. Countries with better institutions like better checks and balances in the government, independent central banks, and better rule of law may be able to accomplish this. Also, debt contracts can contain clauses that make the issuer less prone to reduce the real value of their debt by a depreciation of their currency. For example, bonds could be indexed by inflation. So a devaluation decreases the government's liabilities but interest payments increase if inflation increases.
- (c) Uncertain. Many countries that adopted currency boards managed to control inflation after markets convinced themselves that the policy was credible. However, currency boards do not last for long periods of time and hence after the country abandons the currency board it can return to its old habits of using monetary policy irresponsibly. There are other ways of reducing inflation in the long run. For example, a full dollarization in a developing country may prove to be more credible than the adoption of a currency peg. Also, institutional reforms may help to prevent the government to finance its deficit through central bank's purchases of domestic assets.