

College of Social Studies

Junior Economics Tutorial Elements of Latin American Economic Development

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Week III: The exchange rate, relative prices and structural adjustment

Readings

W. Marx Corden (1994), *Economic policy, exchange rates, and the international system*, Ch. 2
Krugman, Paul and Maurice Obstfeld, (2003), *International Economics*, 6th edition, Ch. 12
Perkins et al. (2001), *Economics of Development*, 5th edition, Ch. 18 (pp. 695-700 only)
World Bank (1990), "The design of adjustment lending for industry"
Your introductory economics textbook: theory of the firm (AC and price & output determination)

Discussion

In our analysis of comparative advantage we were concerned with the real foundations of international trade. We now turn to its financial aspects. The most important regulator maintaining a balance between the inflow and outflow of goods and services is the exchange rate. An imbalance of imports in excess of exports leads to a rise in the price of foreign exchange (a devaluation); this in turn raises the *internal* prices of all imports and exports.

These within-country price changes affect both the quantity of imports demanded and the profitability to firms that produce exports and as well as to those that produce import-substitutes. Thus a permanent devaluation of the exchange rate results not only in a movement toward external balance but also in important changes in a country's consumption patterns and in the relative size of its productive sectors. The latter is known as *structural adjustment*.

To focus on the case most relevant for developing countries, we assume that a country's imports and exports of any commodity are but a small fraction of total world trade in those products and its actions never affect world prices. Our assignment this week is to learn all the steps in this interconnected process. Our method for this task is that of the "problem set."

Assignment (prepared by Professor Kilby)

1. Foreign exchange is the medium of economic transactions between nations. There are only two types of international transactions. The first is transactions for the purchase and sale of *goods & services* (recorded in the "Current Account"). The second is transactions related to the international flow *of savings* in the form of financial assets (recorded in what used to be called the "Capital Account", which more recently has been renamed as the "Financial Account").

1a. Give an example of three different services that might be exported by the US. Give an example of one service that might be imported by Brazil.

1b. Give two examples of transactions in financial assets.

2. Derivative from these international flows of commodities and savings, in any country the price of foreign exchange (the "dollar") is determined by its Supply and the local Demand. Thus in Brazil the exchange rate is the equilibrium price of the dollar, ie the number of reals required to purchase one dollar.

The *Supply* of dollars offered by foreigners in the Brazilian "Forex" market shifts out (i) when there is a large increase in the world price of one of Brazil's exports, (ii) when the world demand for all Brazil's products shifts out in the boom phase of the business cycle in industrialized countries (growth in foreign disposable income), and (iii) when foreign investors or lenders or donors direct a capital inflow into the Brazilian economy.

2a. What three causes would result in an inward shift of the foreign exchange Supply schedule?

2b. The *Demand* for dollars by Brazilians is the mirror image of the foreigners desire to supply dollars. What are those three determinants of Brazil's demand for dollars?

2c. We now have an equilibrium exchange rate, the local currency price of a dollar in Brazil. What will determine the approximate *quantity of dollars* bought and sold at that exchange rate?

3. Draw the Supply and Demand in the forex market. The price of the dollar is three reals and the quantity of dollar transactions is 150 million. After each of the following events below, indicate whether it represents a *devaluation* or an *appreciation*.

3a. Show what happens in the forex market when there is a major recession in Europe and America. Show plausible values for the new exchange rate and volume of dollar transactions.

3b. Return to the original equilibrium. A left-wing candidate is about to win the elections, and Brazilians shift their local savings from Brazilian banks to banks in America. ("No capital controls.") Show what happens to the exchange rate and the volume of dollar transactions.

3c. Return to the original equilibrium. The world price of coffee (which constitutes 10% of Brazil's exports) rises from \$100 to \$200 dollars per 60 kg bag. Show what happens to supply and demand, and plausible new numeric values for the exchange rate and the new volume of transactions.

3d. Assume that the full amount of the new foreign exchange earnings is collected by the Government through a tax. How much is that? In the next period the Government spends the full amount on new development projects. Of this spending half is for imported goods and half goes to labor and other nontradable items. Show what happens to the exchange rate relative to 3c?

3e. In the next period the newly employed workers on Government projects spend their new income, half on imports and half on non-tradable goods. Show what happens relative to 3d.

4. We now turn to firms or farmers who produce tradable goods. We want to see how are they affected by movements in the exchange rate. We assume they are perfect competitors and earning only a normal rate of profit. Show a representative average cost curve, marginal cost curve, demand schedule, marginal revenue, price and quantity. This tradable good sells for 20 reals, and the firm produces a quantity of 100 units.

4a. The exchange rate moves from 3 to 4 reals to the dollar. What happens to the price of the good the firm is producing? What happens to its demand curve?

4b. Now, let us assume that the import-content of production cost is 50%. How does this effect the AC and MC curves?

4c. Given the situation in 4b, do you anticipate that the tradable sector will be stable, expanding or contracting?

5. Now consider what is happening in the nontradable sector. First, what are the characteristics of a good that renders it "nontradable"? Second, map out in a similar fashion to 4 the cost and demand schedules facing a barbershop shop and a contractor in building construction, both of whom we classify as producers of nontradables. Show them before and after the increase in the price of foreign exchange. Assume the same initial price and quantity as given in 4. Condition 4b applies to contractors, but not to barbers. Finally, what do you think will be happening to the overall nontradable sector, analogous to the question in 4c.

6. Up to this point we have focused on the switching effect caused by a change in the exchange rate. We now take note of the "absorption effect". Indeed the devaluation was caused by an excess of imports over exports, which means we were "absorbing" more than we were "producing". We can define absorption as our expenditures on $C + I + G + M$ and our production as $C + I + G + X$. Only when $X = M$ are the two the same. This is precisely the phenomenon that Corden explores.

Draw a PPF with GDP partitioned into tradables and nontradables just as Corden on p. 27. We will substitute numbers for his letters -the two intercept terms T and T' should be 100 and 150 respectively. Set his D equal to 100 tradables and 120 nontradables, with B equal to 80 tradables and 120 nontradables. What is the size of our Current Account Deficit?

Our absorption expenditures is his HH' . To reestablish external balance we must shift it inward and alter its slope. What policy instruments do we have to shift it inward? Using nontradables as your numeraire, what has to be the size of that reduction?

To change its slope to JJ' , our policy instrument is the exchange rate. (The slope of the national expenditure line is Pnt/Pt , the reciprocal of the "Real Exchange Rate".) A 25% devaluation had the effect of raising the price of all tradables by 25%. If we assume the initial slope is one tradable to one nontradable, the new slope will be one nontradable to 1.25 tradables, so $Pnt/Pt = 0.8$. Show the new tangency point on the PPF with numeric values. Will further devaluation seem necessary? If there is contractionary monetary policy, will it affect the price of tradables? Of nontradables? How can monetary policy neutralize or wipe out the effects of a devaluation?

7. If we assume that the devaluation is effective and that relative prices are altered, will producers respond? Will some sectors contract and others expand as predicted by the model? Drawing on the World Bank paper, what are the various supporting actions that must occur for the economy to respond as the model predicts?