Scott Pearson is Professor of Agricultural Economics at the Food Research Institute, Stanford University. He has participated in projects that combined field research, intensive teaching, and policy analysis in Indonesia, Portugal, Italy, and Kenya. These projects were concerned with studying the impacts of commodity and macroeconomic policies on food and agricultural systems. This effort culminated in a dozen co-authored books. These research endeavors have been part of Pearson’s longstanding interest in understanding better the relationships between a country’s policies affecting its food economy and the underlying efficiency of its agricultural systems.

Pearson received his B.S. in American Institutions (1961) from the University of Wisconsin, his M.A. in International Relations (1965) from Johns Hopkins University, and his Ph.D. in Economics (1969) from Harvard University. He joined the Stanford faculty in 1968.

A foreign exchange rate is a ratio that converts a country’s domestic currency (e.g., Indonesian Rupiah) into foreign currency (e.g., US dollars). The exchange rate typically is quoted in units of domestic currency needed to trade for one unit of foreign currency (e.g., Rupiah 10,000/US$ 1). In PAM analysis, a foreign exchange rate is required to convert world prices of tradable outputs and inputs into domestic currency prices (for entries E and F in the social price (second) row of the matrix).

The foreign exchange rate is a central macroeconomic price in a developing economy. By influencing the domestic currency prices of imports and exports and the flows of capital into or out of a country, the exchange rate directly affects the inflows and the outflows of foreign exchange and hence the ability of an economy to balance its international payments.

The exchange rate also determines the relationship between the prices of goods and services that are traded internationally (tradables, including importables and exportables) and the prices of goods and services that are not exchanged internationally (nontradables and potentially tradables). (Nontradable, potentially tradable, and tradable goods and services are discussed in lecture 4.) A change in the exchange rate thus alters the ratio between the prices of tradables (which are linked directly to the exchange rate) and the prices of nontradables (which are not linked directly to the exchange rate).

The foreign exchange rate, therefore, is a key instrument of macroeconomic policy. The government can choose to allow its country’s exchange rate to be determined by market forces. In that case, the exchange rate is termed “floating” or “fluctuating”. Alternatively, the government can intervene in the foreign exchange market and influence its exchange rate through government sales and purchases of foreign exchange and protective trade policies (lectures 5 and 6). In that instance, the exchange rate is termed “pegged” or “fixed.”
The foreign exchange rate is linked directly to the rate of inflation (the rate of increase in an index of consumer or wholesale prices for the economy). The exchange rate is a safety valve to offset the effects of inflation on international competitiveness. If the exchange rate is set by market forces (“floating”), it will change automatically to offset inflation. But if the exchange rate is determined by policy (“pegged”), the government needs to change the rate to correct for the impacts of inflation.

Inflation is caused mostly by expansionary macro policy – fiscal deficits (government spending in excess of taxation) and rapid growth of the money supply (often caused by decisions to cover fiscal deficits) – and to a lesser extent by international price rises (that increase the prices of tradables – importables and exportables). Expansionary macro policy causes the prices of nontradables to rise. The prices of tradables rise only if the exchange rate changes or if world prices change. For convenience, in this discussion of inflation and exchange rates it is assumed that world prices do not change so that all inflation is caused by expansionary macro policy.

Inflation increases the domestic costs of production (and causes supply schedules to shift upward) because the costs of some production inputs rise. The costs of all nontradable and potentially tradable inputs rise at about the rate of inflation. The domestic currency costs of tradable inputs rise only if the exchange rate depreciates (requiring more domestic currency per unit of foreign currency). (For example, a 10 percent depreciation of the Indonesian Rupiah occurs if the exchange rate changes from Rp 10,000/US$ 1 to Rp 11,000/US$ 1.)

Inflation caused by expansionary macro policy also increases the purchasing power of consumers (and causes demand schedules to shift rightward) because consumers receive more domestic currency and thus can spend more. Consumers demand more tradable, potentially tradable, and nontradable goods and services, and thus the demand schedules for all types of goods and services shift rightward.
Effects of Inflation on Nontradable Product Prices

- inflation increases costs of production – supply schedule shifts upward
- inflation increases consumer spending – demand schedule shifts rightward
- price of nontradable – rises with inflation

The price of a nontradable commodity is determined entirely by domestic supply and demand (slides 5 and 6, lecture 4). Because there is no international market for this type of commodity, there also is no world price. Hence, the foreign exchange rate is irrelevant for a nontradable. The price of a potentially tradable commodity also is set entirely by domestic supply and demand (slides 7 and 8, lecture 4). Although there is an international market and hence a world price for a potentially tradable commodity, neither is relevant because the country does not import or export the commodity. Therefore, the exchange rate also is irrelevant for a potentially tradable.

As noted in the previous slide, inflationary pressures raise the costs of nontradable and potentially tradable production inputs and thus shift supply schedules upward. The supply schedule is a measure of the marginal costs of production (slides 2 and 3, lecture 4). Each unit costs more to produce after the domestic currency costs of inputs rise. If the government allows the exchange rate to depreciate, the domestic currency prices of tradable inputs also will rise and shift supply schedules further upward.

As further noted in the previous slide, expansionary macro policy enhances aggregate expenditures. This increase in the ability of consumers to purchase shifts demand schedules rightward. At each price, consumers are willing to purchase a greater quantity.

Together these two effects of expansionary macro policy – an increase in input costs and a rise in consumer expenditures – cause the prices of nontradables to rise. The result is identical for potentially tradables. If the government has a pegged exchange rate policy and chooses not to change the exchange rate, all of the measured inflation results from increases in the prices of nontradable and potentially tradable goods and services.
The diagram in this slide illustrates the impact of expansionary macro policy on the price of a nontradable commodity. The initial conditions, existing before the expansion of the money supply, are denoted by subscripts zero, whereas the new conditions, occurring after the macro expansion, are denoted by subscripts one.

The initial equilibrium price, $P_{D0}$, is set by the intersection of supply, $S_0$, and demand, $D_0$, because the market is in balance at that price (both supply and demand equal $QD_0$). Since the commodity is nontradable, there is no opportunity to buy or sell on international markets and thus there are no import or export prices.

Expansionary macro policy causes input prices to rise so that $S_0$ shifts upward to $S_1$ and purchasing power to increase so that $D_0$ shifts rightward to $D_1$. The new equilibrium price, $P_{D1}$, is set by the intersection of the new supply, $S_1$, and the new demand, $D_1$. The market clears at that price because the amount supplied and the amount demanded both equal $QD_1$.

Expansionary macro policy thus creates inflation by increasing the prices of nontradables (from $P_{D0}$ to $P_{D1}$ in the diagram). The same argument holds for potentially tradables because their prices also are determined wholly by domestic supply and demand conditions.

Slide 6
Effects of Inflation on Tradable Product Prices

- Tradable goods – importables, exportables
- Domestic currency price of tradable – equals world price of tradable times exchange rate
- Domestic price of tradable is unchanged – if neither world price of tradable nor exchange rate changes
- Expansionary macro policy creates overvaluation
  - Domestic expenditures on importables increase
  - Foreign earnings from exportables decrease

Price determination for tradable goods and services – importables (slides 9 and 10, lecture 4) and exportables (slides 13 and 14, lecture 4) – depends on domestic supply and demand and on world prices. **In the absence of policy, the domestic price of a tradable will be set at the comparable world price** (cif import price for an importable and fob export price for an exportable).

The domestic currency price of a tradable equals the world price of the tradable times the foreign exchange rate. For an importable commodity, the cif price in domestic currency equals the cif price in foreign currency times the foreign exchange rate, e.g., Rupiah/ton = US$/ton x Rupiah/US$. For an exportable commodity, the fob price in domestic currency equals the fob price in foreign currency times the foreign exchange rate.

Expansionary macro policy, therefore, has no direct impact on the prices of tradables in domestic currency. The domestic currency price of a tradable is unchanged unless either the world price of that tradable or the exchange rate is changed. In this discussion, it is assumed that the world prices do not change. Hence, the domestic currency price of a tradable can change only if the exchange rate changes.

If the government has a pegged (fixed) exchange rate policy and chooses not to change the exchange rate, expansionary macro policy leads to overvaluation of the exchange rate. **Overvaluation means that the exchange rate determined by policy results in an unsustainable excess demand for imports** (where expenditures on imports exceed earnings from exports and the difference cannot be covered by foreign borrowing).

As with nontradables, expansionary macro policy causes input prices for tradable commodities to rise and purchasing power to increase. The consequent shifts in domestic supply and demand expand domestic expenditures on importables as well as exportables, increasing the demand for foreign exchange to purchase imports and reducing the supply of foreign exchange earned by exports (since more exportables are consumed domestically). **Expansionary macro policy and**
a fixed exchange rate, therefore, together result in overvaluation and a shortage of foreign exchange.

Slide 7

The diagram in this slide illustrates the impact of expansionary macro policy on importable and exportable commodities. The initial conditions, existing before the expansion of the money supply, are denoted by subscripts zero, whereas the new conditions, occurring after the macro expansion, are denoted by subscripts one.

For an importable, the equilibrium price is set by the cif import price since the country is a net importer (slides 9 and 10, lecture 4). Initially, the country’s expenditures on imports are shown by the shaded box denoted $M$. Similarly, for an exportable, the equilibrium price is set by the fob export price since the country is a net exporter (slides 13 and 14, lecture 4). The country’s earnings from exports are shown by the shaded box denoted $X$. Initially, it is assumed that import expenditures equal export earnings and there is no overvaluation of the exchange rate.

For both types of tradables (as well as for nontradables), expansionary macro policy causes input prices to rise so that $S_0$ shifts upward to $S_1$ and purchasing power to increase so that $D_0$ shifts rightward to $D_1$. If the government chooses to maintain a fixed exchange rate (and world prices do not change), the domestic price of the importable remains unchanged at the cif price (in diagram a) and the domestic price of the exportable remains unchanged at the fob price (in diagram b).

Expansionary macro policy thus increases the expenditures of foreign exchange on importables because production is decreased with higher nontradable input costs and consumers demand more with greater purchasing power. Concurrently, expansionary macro policy decreases the earnings of foreign exchange from exportables because higher nontradable input costs result in less production and domestic consumers increase their purchases of exportables. Expansionary macro policy (which shifts the supply and demand schedules) and the government’s refusal
to alter the pegged exchange rate (which keeps prices of tradables unchanged) together cause overvaluation of the exchange rate and an unsustainable shortage of foreign exchange.

Slide 8

Foreign Exchange Market

- demand for foreign exchange
  - import expenditures
  - capital outflows
  - downward slope

- supply of foreign exchange
  - export earnings
  - capital inflows
  - upward slope

The demand for foreign exchange and the supply of foreign exchange come together in a national market for foreign exchange (which occurs in the country’s financial institutions, mostly the government and commercial banks). A floating (fluctuating) exchange rate is determined in the foreign exchange market.

The demand for foreign exchange is generated by import expenditures (area M in the diagram for the importable in the previous slide) and by capital outflows (which are ignored here for the moment). In the foreign exchange market, the demand for foreign exchange slopes downward because fewer imports are demanded as the exchange rate appreciates (appreciation means fewer units of domestic currency per unit of foreign currency, e.g., a movement from Rp 10,000/US$ 1 to Rp 9,000/US$ 1).

The supply of foreign exchange is generated by export earnings (area X in the diagram for the exportable in the previous slide) and by capital inflows (which are put aside for the moment). In the foreign exchange market, the supply of foreign exchange slopes upward because more exports are supplied as the exchange rate depreciates (depreciation means more units of domestic currency per unit of foreign currency e.g., a movement from Rp 10,000/US$ 1 to Rp 11,000/US$ 1).

Slide 9
The diagram in this slide illustrates the impact of expansionary macro policy on the market for foreign exchange. The initial conditions, existing before the expansion of the money supply, are denoted by subscripts zero, whereas the new conditions, occurring after the macro expansion, are denoted by subscripts one.

The diagram for the market for foreign exchange relates the price of foreign exchange (the foreign exchange rate in domestic currency units per unit of foreign exchange, DCU/FE) to the quantity of foreign exchange, \( Q_{FE} \). **Before the expansionary macro policy, the foreign exchange market is in equilibrium at exchange rate \( e_{r0} \) because the supply of foreign exchange equals the demand for foreign exchange at that rate.**

Expansionary macro policy then increases the expenditures of foreign exchange on importables and decreases the earnings of foreign exchange from exportables (slides 6 and 7). Expansionary macro policy thus shifts the supply and demand schedules for foreign exchange. \( SFE_0 \) shifts leftward to \( SFE_1 \), and \( DFE_0 \) shifts rightward to \( DFE_1 \). If the government does not control the exchange rate, market forces depreciate the exchange rate from \( e_{r0} \) to \( e_{r1} \). At the new depreciated exchange rate, the foreign exchange market regains equilibrium since the supply and demand for foreign exchange are equal.

If the government instead has a pegged exchange rate policy and refuses to devalue (i.e., to change the rate to cause it to depreciate), the exchange rate continues to be set at \( e_{r0} \). At that rate, an excess demand for foreign exchange arises because the demand for foreign exchange greatly exceeds its supply. This excess demand reflects the excess of demand for import expenditures over the supply of export earnings (slides 6 and 7). The government’s refusal to alter the pegged exchange rate (which keeps prices of tradables unchanged) causes overvaluation of the exchange rate. **The government then comes under pressure to devalue the exchange rate, from \( e_{r0} \) to \( e_{r1} \), to offset the effects of the expansionary macro policy and return the market for foreign exchange to equilibrium.** Because the expansionary macro policy and the pegged exchange rate together cause the overvaluation and consequent need for devaluation, macroeconomic balance is achieved only by stopping the expansionary macro policy together with devaluing the exchange rate.
A devaluation is a government policy action. If the government’s foreign exchange rate regime is pegged (fixed), central bank officials and other leading macroeconomic policy-makers need to make a decision to change the exchange rate. A devaluation deprecates the currency (so that more units of domestic currency trade for each unit of foreign currency). The opposite exchange rate policy is a revaluation (so that fewer units of domestic currency trade for each unit of foreign currency), which causes the domestic currency to appreciate.

The purpose of a devaluation is to remove the two types of distortions introduced by expansionary macro policy with a pegged exchange rate. Expansionary macro policy causes increases in the prices of nontradables, but a pegged exchange rate policy holds the prices of tradables constant. One correction is to depreciate the exchange rate to remove the distorting effects of inflation by allowing the prices of tradables to rise relative to the prices of nontradables. Inflationary pressures and a fixed exchange rate also cause a deterioration in the balance of international trade because import expenditures rise and export earnings fall. The other correction achieved by the devaluation is to restore the balance of trade so that import expenditures are met by export earnings.

A successful devaluation needs to be accompanied by fiscal and monetary restraint to remove the central cause of the problem – the expansionary macro policy. If instead the government continues to expand its money supply after a devaluation, the disequilibria between the prices of tradables and nontradables and between import expenditures and export earnings will recur at the newly depreciated exchange rate.
A simplified PAM example illustrates the sequence of first creating and then resolving disequilibria in the foreign exchange market. The example proceeds in three phases – the initial equilibrium, a disequilibrium caused by expansionary macro policy leading to overvaluation, and a devaluation restoring equilibrium.

To focus the illustration solely on problems related to the foreign exchange rate, it is assumed that there are no other divergences (market failures or policy distortions) in the agricultural system. Initially the system is assumed to be in equilibrium (phase one). In the absence of divergences, all entries in the private price (top) row of the PAM are identical to those in the social price (second) row of the PAM. Hence, private and social profits are equal.

In the example given in the slide, all effects of divergences are zero and private profits and social profits are both 10. Commodity production in this agricultural system is both competitive (profitable in private prices) and efficient (profitable in social prices) at an equilibrium exchange rate.
In phase two of the PAM example, the agricultural system is assumed to be subject to a disequilibrium exchange rate. For a year, the country carries out an expansionary macro policy that leads to a 30 percent overvaluation of the pegged (fixed) exchange rate.

The overvaluation causes private prices of tradable outputs and inputs to be too low by 30 percent. Private prices of domestic factors rise by the annual inflation rate of 30 percent and thus increase from 60 (in the initial equilibrium) to 78 (in the disequilibrium shown in this slide). But adjustments in private prices of tradable outputs and inputs are suppressed by the pegged and unchanged exchange rate. Therefore, private revenues remain unchanged at 100 and private tradable input costs are constant at 30. This system thus suffers from a profit squeeze. The costs of its domestic factors rise with inflation by 30 percent, but its revenues are held constant by the refusal of the government to devalue the exchange rate.

In social prices, revenues rise with inflation by 30 percent from 100 to 130 (i.e., revenues remain constant in real, inflation-adjusted terms). Similarly, tradable input costs in social prices rise by 30 percent from 30 to 39 (to remain constant in real terms). The net negative transfer from overvaluation, −21, results from a loss of 30 in revenue and a gain of 9 in tradable input costs. This system, which was efficient and competitive at world prices before overvaluation, is no longer able to compete in actual market (private) prices. The disequilibrium in the exchange rate would drive this efficient system out of business (since it would incur a loss of 8 in market prices).
Calculation of Social Prices

- calculation of new social prices – before and after 30 percent overvaluation

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<tr>
<th></th>
<th>Pw</th>
<th>ER</th>
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<tr>
<td>($/q)</td>
<td>(DCU/$)</td>
<td>(DCU/q)</td>
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<tr>
<td>output, before</td>
<td>10</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>output, after</td>
<td>10</td>
<td>13</td>
<td>130</td>
</tr>
<tr>
<td>input, before</td>
<td>3</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>input, after</td>
<td>3</td>
<td>13</td>
<td>39</td>
</tr>
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</table>

Prices for internationally tradable commodities on world markets rarely are quoted in the domestic currency of a developing country. Therefore, as shown in slide 6, the social price of a tradable output or input (i.e., the world price in domestic currency) is found by multiplying the world price of the tradable commodity in foreign currency by the foreign exchange rate.

In phase one (initial equilibrium) of the PAM example, the world price of output is 10 dollars per unit ($10/q) and the equilibrium foreign exchange rate is 10 Domestic Currency Units per dollar (DCU 10/$ 1). The social price of output (entry E in the PAM matrix) is thus DCU 100 per unit (DCU 100/q) – the world price in foreign currency ($10/q) times the equilibrium exchange rate (DCU 10/$ 1).

In phase two (disequilibrium and overvaluation) of the example, the world price of output is unchanged at 10 dollars per unit ($10/q). The private foreign exchange rate continues to be fixed by policy at 10 Domestic Currency Units per dollar (DCU 10/$ 1). But the social exchange rate is estimated at 13 Domestic Currency Units per dollar (DCU 13/$ 1) because the rate of overvaluation (the extent to which domestic inflation exceeds the average rate of inflation in the country’s trading partners) is estimated at 30 percent. (If the exchange rate were determined by supply and demand in the foreign exchange market, it would have depreciated by 30 percent.) The adjusted social price of output (new entry E in the PAM matrix) is thus DCU 130 per unit (DCU 130/q) – the world price in foreign currency ($10/q) times the social exchange rate (DCU 13/$ 1).

Also in phase one (initial equilibrium), the world price of the tradable input is 3 dollars per unit ($3/q) and the equilibrium foreign exchange rate is 10 Domestic Currency Units per dollar (DCU 10/$ 1). The social price of the tradable input (entry F in the PAM matrix) is thus DCU 30 per unit (DCU 30/q) – the world price in foreign currency ($3/q) times the equilibrium exchange rate (DCU 10/$ 1).
Also in phase two (disequilibrium and overvaluation), the world price of the tradable input is unchanged at 3 dollars per unit ($3/q). As above, the social exchange rate is estimated at 13 Domestic Currency Units per dollar (DCU 13/$ 1). The adjusted social price of the tradable input (new entry F in the PAM matrix) is thus DCU 39 per unit (DCU 39/q) – the world price in foreign currency ($3/q) times the social exchange rate (DCU 13/$ 1).

Slide 14

<table>
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<th>Overvaluation, Devaluation, and PAM – New Equilibrium</th>
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<tbody>
<tr>
<td>regained equilibrium, after 30% devaluation</td>
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<tr>
<td>Revenue TIC DFC Profit</td>
</tr>
<tr>
<td>Private 130 39 78 13</td>
</tr>
<tr>
<td>Social 130 39 78 13</td>
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<tr>
<td>Effects 0 0 0 0</td>
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</tbody>
</table>

In phase three of the PAM example, the government takes action to correct the disequilibrium and thus to regain equilibrium in the foreign exchange market. Corrective policy includes a devaluation of 30 percent, to remove the 30 percent overvaluation of the exchange rate, and fiscal and monetary restraint, to remove the underlying problem – the expansionary macro policy.

The 30 percent devaluation depreciates the private exchange rate from 10 Domestic Currency Units per dollar (DCU 10/$ 1) to 13 Domestic Currency Units per dollar (DCU 13/$ 1). Because the 30 percent rate of overvaluation is exactly offset, the private and social exchange rates are equivalent. As a result of the 30 percent devaluation, private revenues from tradable output (A) increase by 30 (from 100 to 130) and private tradable input costs (B) increase by 9 (from 30 to 39). Domestic factor costs are unchanged at 78, since they are not linked directly to the exchange rate. Private profits thus increase by 21 (from –8 to +13). Because of the macro policy corrections, the efficient agricultural system (social profit = 13) regains its private profitability (also equal 13) and is no longer threatened with bankruptcy.
Social revenues (E) and costs (F, G) are unchanged since the social exchange rate, the world prices in foreign currency, and the social prices of factors of production are not changed. The devaluation, instead, sets the private exchange rate equal to the social exchange rate and thereby removes the exchange rate distortion.

**Divergences return to zero in the new equilibrium.** The sole source of divergences in this example is an exchange rate distortion, and the policy changes remove that distortion.

It is of interest to compare the PAM entries in the new equilibrium (phase three) with those in the initial equilibrium (phase one). All entries in the new equilibrium are 30 percent higher than their counterparts in the initial equilibrium. Private and social profits both increase from 10 to 13, for example. These 30 percent increases are the result of the expansionary macro policy that created inflation of 30 percent. The devaluation permitted the prices of tradables to catch up to those of nontradables. **If the analysis were done in real (inflation-adjusted) prices, the entries in the PAM matrix for the new equilibrium would be identical to those for the initial equilibrium.** To adjust for a 30 percent rate of inflation, each of the entries in the new equilibrium is divided by 1.3 (one plus the rate of inflation). Empirical applications of the PAM typically are done in real (inflation-adjusted) prices.

Slide 15

<table>
<thead>
<tr>
<th>Overvaluation, Devaluation, and PAM (Summary)</th>
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<tbody>
<tr>
<td>- before overvaluation – divergences are zero</td>
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<td>- after overvaluation</td>
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<tr>
<td>- prices of tradables – suppressed by refusal to change exchange rate</td>
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<tr>
<td>- exchange rate distortion – negative private profits</td>
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<tr>
<td>- after devaluation</td>
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<tr>
<td>- prices of tradables – catch up with prices of factors</td>
</tr>
<tr>
<td>- exchange rate distortion is removed</td>
</tr>
<tr>
<td>- divergences return to zero</td>
</tr>
</tbody>
</table>

In phase one of the example (initial equilibrium), there are no divergences, the exchange rate is in equilibrium, and the agricultural system is competitive (private profit = 10) and efficient (social profit = 10).

In phase two of the example (overvaluation and disequilibrium), the government has followed expansionary macro policy for a year and refused to change its pegged exchange rate, resulting in a 30 percent overvaluation of the exchange rate. Domestic factor costs rise by 30 percent, but the prices of tradables are effectively fixed by the government’s refusal to change the exchange rate. **The exchange rate distortion creates a profit squeeze resulting in**
negative private profits (-8). An efficient agricultural system faces bankruptcy because of the exchange rate distortion.

In phase three of the example (regained equilibrium), the government corrects its macro policy. It devalues the exchange rate by 30 percent and restrains fiscal and monetary policy to stop the excessive expansion of the money supply. The devaluation corrects the exchange rate distortion, and the macro restraint removes the source of the problem and ensures that disequilibrium will not recur. The devaluation allows the prices of tradables (outputs and inputs) to increase by 30 percent and thereby catch up with the increases in the prices of factors. The exchange rate distortion is removed, and all divergences return to zero. All entries in the new equilibrium (phase three) are 30 percent higher than those in the initial equilibrium (phase one) because the expansionary macro policy created inflation of 30 percent. In real (inflation-adjusted) terms, the entries in the initial and new equilibria are identical.

Slide 16

**Recent Importance of Foreign Capital Movements**

- formerly – small influence on exchange rate
- mid-1997 – investor confidence and capital flight
  - weak loan portfolios in banks
  - large, unhedged corporate foreign debt
  - much corruption, nepotism, cronyism
- capital flight and depreciation
  - short-term capital – interest rate differentials
  - long-term capital – private investments

Until recently, the principal influences on the foreign exchange markets and on foreign exchange rate policies in developing countries arose from expansionary macro policies and pegged exchange rates. These central features continue to be important. But in the mid-1990s, uncertainties associated with foreign capital movements in emerging economies led to a new type of foreign exchange crisis. Movements of foreign capital into and out of developing economies have always been important for their development. But they were not typically a primary source of exchange rate difficulties for most developing countries.

Beginning in mid-1997, many countries in Southeast and East Asia, including Indonesia, experienced macroeconomic crises. Several problems, which investors had overlooked when these countries enjoyed rapid economic growth, contributed to those crises. Government and commercial banks suffered from very weak loan portfolios, and many became insolvent as property bubbles burst. Private and state-owned corporations borrowed abroad excessively, and much of their corporate foreign debt was short-term and not hedged (protected against changes in the exchange rate). These banking and debt problems were made worse by widespread corruption, nepotism, and cronyism by government officials at all levels.
Investors, both foreign and domestic, quickly lost confidence in the ability of the governments to solve these problems. As investor confidence waned, capital flight ensued. Investors transferred abroad their short-term capital quickly and their long-term capital as soon as they could liquidate their assets. Foreign investors had moved short-term funds into these countries to take advantage of higher interest rates relative to those in capital markets of developed countries. When the macroeconomic weaknesses became known, short-term capital flight was rampant. Much long-term capital flight from the afflicted countries soon followed. These capital outflows increased the demand for foreign exchange and shifted rightward the demand schedule in the foreign exchange market. Capital inflows dried up and shifted leftward the supply schedule in the foreign exchange market.

Capital flight thus caused depreciation of the foreign exchange rate in countries that permitted their exchange rates to float (i.e., be determined by market forces rather than by policy). The few countries that retained fixed exchange rate policies were forced to devalue their exchange rates to permit depreciation of their currencies. Uncertainties about macroeconomic management – and in some instances about the abilities of governments to survive – resulted in wild swings of exchange rates in some countries. In Indonesia, for example, the Rupiah/US dollar exchange rate depreciated from about 2,500 to 16,000 between July 1997 and July 1998 and then fluctuated in a broad range between 8,000 and 12,000 thereafter.

Because of the uncertainty introduced by investor confidence and capital flight and the complexities of making estimates of macroeconomic variables, PAM analysts typically rely on macro specialists for estimates of the social exchange rate. Analysts in central banks, planning agencies, and donor agencies regularly estimate the degree of overvaluation of a country’s exchange rate. As a practical matter in PAM analysis, researchers employ sensitivity analysis to test their results within a range of estimates of the social exchange rate.