The Twin Deficits

The IS-LM model of the previous lectures endogenised the interest rate while assuming that the portion (NX_0) of net exports not dependent on income was exogenously fixed. Now we endogenise the exchange rate by explaining the effects domestic interest rates have on the demand for dollars, which endogenises NX_0. Finally, we analyse the impact of fiscal and monetary policy on interest rates and the exchange rate, showing how the exchange rate serves as a channel of transmission of the "international crowding-out effect".

1. Their Importance

Still holding prices constant, we introduce the *foreign exchange rate* (the amount of another nation's money that residents of a country can obtain in exchange for a unit of their own money), which with income determines net exports. We continue to hold monetary and fiscal policy variables — the real money supply, real government expenditures, and tax rates — as exogenous parameters.

2. The Government Budget

The *government budget deficit (surplus)* is the excess of government spending on goods and services over net tax revenue (the reverse).

2.1 Crowding out of net exports

Roughly, expansionary fiscal policy leads to higher interest rates, which leads in turn to a higher exchange rate, which meant a shrinkage ("crowding out") of net exports, with a shrinkage of domestic output and employment. A "strong" currency hurts farmers and miners, because goods sold overseas yield a smaller profit (in local currency).

In such a situation, *protectionist* measures, which raise tariffs or quotas on foreign goods in an attempt to reduce imports, are often lobbied for.

To reduce these calls, the budget deficit could be reduced, and so reduce the pressures maintaining a strong currency. The high U.S. dollar as a result of high U.S. government deficits was a boon to foreigners, who exported more, but the high U.S.interest rates were exported and so indirectly depressed some foreign economies, and imposed a high burden on LDCs with heavy debts.

2.2 Why a falling US dollar didn't cure the foreign trade deficit

Good question: after 1985 the US dollar fell dramatically, but the foreign trade deficit didn't reflect this reversal, remaining high, perhaps because the US government budget deficit remained high. What are the relationships among

the government budget deficit, interest rates, the exchange rate, and the foreign trade deficit?

3. The Government Budget and Policy

What is the impact of discretionary fiscal actions — such as Japan's fiscal stimulus of $60 billion — on the interest rate? The "normal" effects of a fiscal stimulus (§ 4-10) are higher interest rates and crowding out; in turn, the crowding-out effect reduces the fiscal policy multiplier compared to that with a constant interest rate. But this analysis: **assumed that the real money supply remained constant**.

There are two other possibilities:

- if the main objective of the RBA is to fix the interest rate, then fiscal policy-makers gain indirect control of the money supply, and
- if monetary and fiscal policies are coordinated, there emerges a menu of alternative interest rates compatible with maintaining actual output at the level of natural output (Y^N).

3.1 Accommodating money supply

As we saw above, with no change in the money supply and the price level, a fiscal stimulus will shift the IS curve to the right while the LM curve remains unchanged. This will increase interest rate (r) as well as increasing real income (Y) (for lines sloped as in the figure).[1] But if the RBA's

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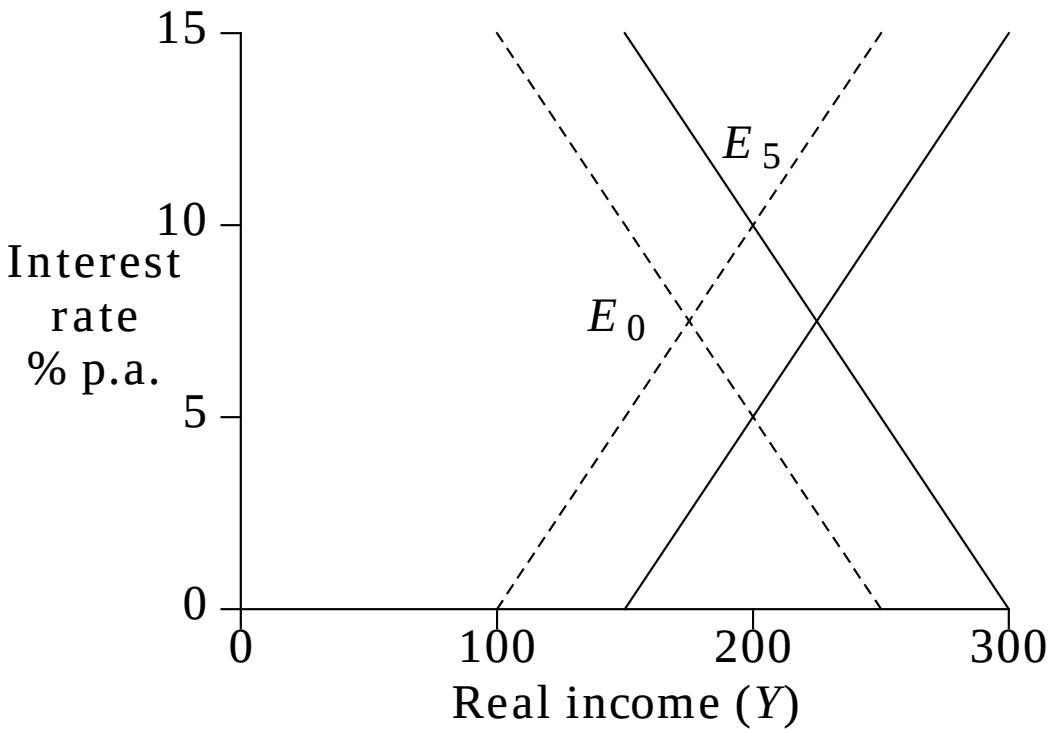
1. Remember from last lecture how changes in the slopes of the IS and LM lines affect the extent to which monetary or fiscal policy must be altered to achieve a specific goal.

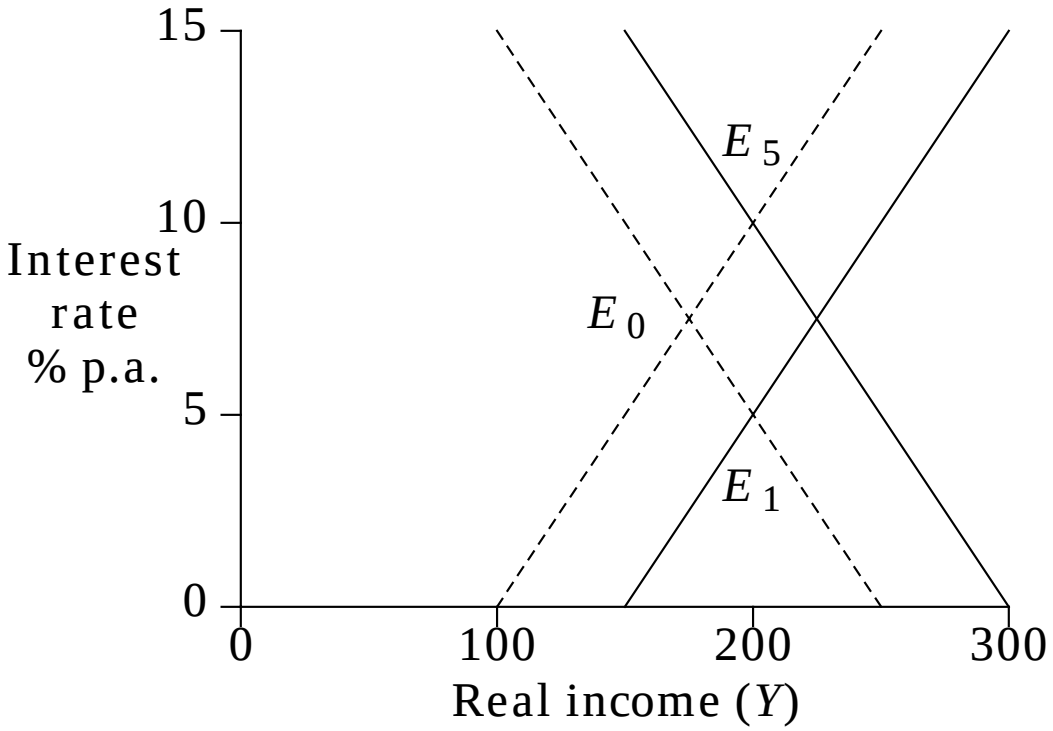


goal is to keep the interest rate rather than the money supply fixed, then the money supply must be allowed to change whenever there is shift in the IS curve (because of government fiscal stimulus or an increase in investment I_p or in autonomous consumption a or some combination of these). This is shown in the figure.

The result of any fiscal change when the RBA stabilises the interest rate is exactly the same as the result of the same fiscal change when the interest rate responsiveness is infinite (as in the Keynesian cross): there is no crowding out because there is no increase in the interest rate. The economy's equilibrium moves horizontally to the right and the multiplier is the simple multiplier of the Keynesian cross chapter, $k = 4$.

3.2 The monetary-fiscal policy mix

The primary aim of government stabilisation policy is to dampen business cycles by maintaining the level of actual GDP (real income) close to natural real GDP, for us $200 billion p.a. The original equilibrium was at $175 billion p.a. and 7.5% p.a.



Both fiscal and monetary policy can raise real income (Y) from $175 billion to $200 billion p.a:

- an increase in government spending by $12.5 billion shifted the equilibrium from E_0 at $175 billion to E_5 at $200 billion,
- an increase in the real money supply of $25 billion shifted the equilibrium point from E_0 to E_1 at $200 billion.

If government policy has these two options for creating an economic expansion sufficient to push

equilibrium real income up to the level of natural real GDP, then which option is preferable?

The figure compares points E_1 and E_5: if equilibrium real income (and hence employment and unemployment) are the same, then what is different?

- Point E_5 has a lower real money supply and a higher interest rate (in order to dampen the demand for money equal to supply): *tight money, easy fiscal* position.
- Point E_1 has a higher real money supply and a lower interest rate to stimulate the demand for money equal to the supply: *easy money, tight fiscal* position.

The higher interest rate at E_5 cuts planned autonomous spending (both investment I_p and consumption a) below that at E_1 to make room for government spending. Induced consumption (cY) is the same at both points.

Which to prefer?

- At E_1 investment is higher (because interest rates are lower), so the economy's rate of productivity growth is likely to be higher, a future benefit.
- At E_5 government spending is higher: both investment (infrastructure such as sewerage works, roads, schools, hospitals, etc.) and consumption (defence, police, health care, education, etc.)

Whether society prefers faster output growth (E_1)

to a higher level of public services (E_5) depends partly on society's preference for public v. private goods and partly on its impatience (its preference for goods today v. goods tomorrow).

Note that E_5 could also be reached by a tax rate reduction (another version of fiscal stimulus) that could, together with tight monetary policy, achieve the high interest rate. Such a policy, with tax cuts and tight money, would stimulate private consumption (as higher disposable income after the tax cuts stimulates consumption) but would cut private investment (the crowding-out effect).

4. The Exchange Rate and Net Exports

If expansionary fiscal policy (with large budget deficits as government expenditures exceed revenues) and tight money raise interest rates but crowd out not domestic investment but net exports, then we see *international crowding out*. This can occur when an economy is open and operates under a system of flexible exchange rates. We now expand the IS-LM model with a foreign sector.

4.1 Flexible exchange rates

The exchange rate of the dollar is one of the major determinants of the foreign trade deficit. A higher (or *appreciated*) dollar hurts exports by making domestically produced goods more expensive in terms of foreign currencies and encourages imports by making foreign goods cheaper in dollar terms; it cuts net exports. A lower (or *depreciated*) dollar does the opposite and boosts net exports.

Between 1945 and 1971 the world's exchange rates were largely fixed, under the Bretton Woods system, but US inflation caused by government policies during the Viet Nam War ("guns *and* butter") led to persistent US trade deficits and the supply of US dollars came to greatly exceed their demand. To avoid a collapse in the US dollar and the whole system of fixed exchange rates required the Japanese and German central banks (the Bank of Japan and the Bundesbank) to buy massive amounts of US dollars.

The Germans in particular (remembering the hyperinflation of the Weimar Republic in the

1920s) were unhappy at the inflated Deutschemark that resulted from this influx of US dollars (so-called "Euro-dollars"). Speculators assumed that the value of the dollar would not hold, and by selling them for and DM, put further pressure on the central banks, who finally capitulated. In March 1973 a *flexible exchange rate system* (where the exchange rate is free — more (a free float) or less (a dirty float) — to change day by day was established.

4.2 The trade surplus and deficit

Net exports (NX) equals exports minus imports, and (em together with consumption (C), investment (I), and government spending (G) — is a component of total expenditure on GDP:

$$E = C + I + G + NX$$

A $5 billion increase in NX provides as much of a stimulus to income and employment as does a $5 billion increase in C, in I, or in G. Moreover, a $5 billion *fall* in net exports can offset much of the stimulus to expenditures from expansionary fiscal and monetary policy.

A positive quantity of net exports is a *trade surplus*, a negative quantity a *trade deficit*. Although the A dollar was high until the mid-1980s, it has fallen dramatically since then, but there has not been a quick response in terms of an expansion of net exports.

The trade balance is a component of the *current account*, a record of the transactions between domestic residents and non-residents in

merchandise, services, income and "unrequited transfers". The current account comprises:

- the balance on goods and services (the trade balance): equals the balance on merchandise trade (the relationship between the total f.o.b.[2] value of exports to that of imports) plus "net services" (freight and insurance abroad net of foreigners' expenditure here, plus the cost of international passenger fares)
- net "income": interest, dividends, and royalties paid to foreign residents less those we receive from abroad
- net "unrequited transfers": non-reciprocated transfers, such as immigrants' assets, our foreign aid payments, pensions to foreign residents, tax payments from foreigners, etc.

4.3 Net exports and the exchange rate

Net exports affect the equilibrium level of real income and expenditures (Y). There are two determinants: real income (Y) and the exchange rate (e).

4.3.1 The effect of real income: Previously we wrote:

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2. *f.o.b. = free-on-board*, i.e., the value of exports and imports does not include the cost of transport and insurance.

$$NX = NX_0 - n_0 Y,$$

where NX_0 is the autonomous (non-income affected) component of net exports (determined by foreigners' income), n_0 is the marginal propensity to import, and Y is real income. Absent changes in exchange rate e, this would adequately explain net exports: during booms (high Y), net exports would be low, and during recessions (low Y), net exports would be high, for a given NX_0.

4.3.2 The effect of the exchange rate: When the dollar appreciates, net exports fall as imports become more attractive to us and our exports become less attractive to foreigners; when the dollar depreciates, net exports rise.

The *real exchange rate* (e) is equal to the average nominal exchange rate between a country and its trading partners adjusted for the difference in inflation rate between the country and its trading partners.[3]

To reflect the negative effect of the exchange rate on net exports:

$$NX = NX_0 - n_0 Y - ue$$

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3. Or $e = e'(P/P^f)$, where e' is the nominal exchange rate, P is the domestic price level, and P^f is the average foreign price level: If the nominal exchange rate doubled, but foreign prices doubled while domestic prices remained the same, then the real exchange rate would remain the same.

where the parameter u is the response of net exports to a change in the exchange rate (Gordon uses u=2).

5. The Exchange Rate and the Interest Rate

The value of the dollar is determined in a market for "FX" (foreign exchange) which is world-wide. As well as importers buying foreign currency to pay their foreign suppliers and exporters selling their foreign currency earnings to buy domestic currency and speculators and hedgers buying and selling, it includes the central banks, such as the RBA in Sydney, the Fed in New York, the Bank of England in Threadneedle Street, etc. They will from time to time "enter the market" (buy and sell) in order to maintain currencies' values against market pressures, at least for short periods, such as July 1, 1992, when the RBA supported the Aussie dollar against market expectations of lower Australian interests rates.

5.1 Dollar demand and the "fundamentals"

The demand for dollars stems from two sources:

- the demand for Australian products, such as coal, minerals, farm products (wool, wheat), wines, manufactureds, and services (such as an Australian holiday for foreign tourists). The demand for these tends to change relatively slowly in response to changing tastes ("throw another shrimp (sic) on the barbie") and changing substitutes (oil, synthetic materials, South African minerals, other tourist destinations) — "fundamental" factors.
- the demand for securities denominated in Aussie dollars, such as Australian government bonds, and Australian corporate debt and equity — bonds and shares. It is this demand

which can explain rapid changes in the Australian exchange rate as foreigners' demand for our securities changes: as Aussie securities become more (less) attractive the Aussie dollar is bid up (down).

The relative attractiveness of Aussie and foreign securities depends on the *interest rate differential* (the average Aussie rate minus the average foreign interest rate). As Aussie rates fall and foreign rates remain the same (or even rise), Aussie securities become less attractive, and foreigners sell securities (in Aussie dollars) and then sell Aussie dollars in order to repatriate their money. The effect is a lower Aussie dollar exchange rate.

5.2 The real exchange rate and the monetary-fiscal policy mix

We have now established a connection between the domestic interest rate and the real exchange value of the dollar which establishes in turn a link between fiscal policy and the value of the dollar:

- when the RBA holds real money supply constant, a fiscal stimulus raises both real income and the interest rate. The dollar appreciates.
- another factor resulting in a higher dollar would be a tight money policy that shifts the LM curve to the left as the RBA reduces the real money supply. A particularly sharp appreciation of the dollar would accompany a shift in the policy mix from tight fiscal, easy money (point E_1) to easy fiscal, tight money

(E_5).

Gordon (p.128) demonstrates that the real exchange rate of the US dollar has been closely correlated with the level of the US real corporate bond rate from 1970 to 1992. (And see the *SMH* of 2/7/92: "bonds rally as exchange rate falls".)

5.3 Exchange rate expectations

What about *expectations* about future exchange rate movements? Imagine a situation in which an easy fiscal/tight money policy in the USA boosts the US interest rate to 6% p.a. while the German rate remains at 3% p.a. If previously both rates were 3% and no immediate changes in the US dollar–DM exchange rate were expected, then before the change in US policy, investors would have been happy with either US or DM securities.

After the announcement of policy change, why would anyone continue to hold DM securities? *Only if the $–DM rate were expected to fall by 3% a year*, so that a German investor in $ securities would earn 6% less 3% (because of the fall in the $) = 3% p.a.

6. International Crowding Out in the IS-LM Model

So we have established that:

- expansionary fiscal policy raises the interest rate,
- an increase in the interest rate raises the real exchange rate, and
- an increase in the real exchange rate causes a fall in net exports

How can the IS-LM model illustrate this effect of fiscal policy?

Two questions:

- How will the effects of a (monetary or) fiscal stimulus vary depending on the degree of openness of the economy?
- Does the answer depend on whether the exchange rate is fixed or flexible?