

Section Exercise for April 25/26 with answers: International Economics

Recall our “neutral” interest rate interpretation that the Federal Reserve should raise and lower the short-term safe interest rate i that it controls, in order to try to set the long-term real risky interest rate r equal to the “neutral” interest rate r^* consistent with full employment, and GDP equal to potential output. This neutral interest rate is defined as:

$$r^* = [Y^*/\mu - (c_o + I_o + NX)]/I_r + G/I_r$$

with:

- Y^* — potential output, the economy’s full-employment productive potential
- μ — the Keynesian multiplier, equal to $1/(1-c_y)$, the inverse of one minus the marginal propensity to consume
- c_o — consumer confidence
- I_o — business-bank “animal spirits”
- NX — net exports, determined by foreigners’ desire to spend their earnings from selling us imports on our exports
- I_r — the sensitivity of business investment speeding
- C — consumption spending, determined by households
- I — the sensitivity of business investment spending to the interest rate

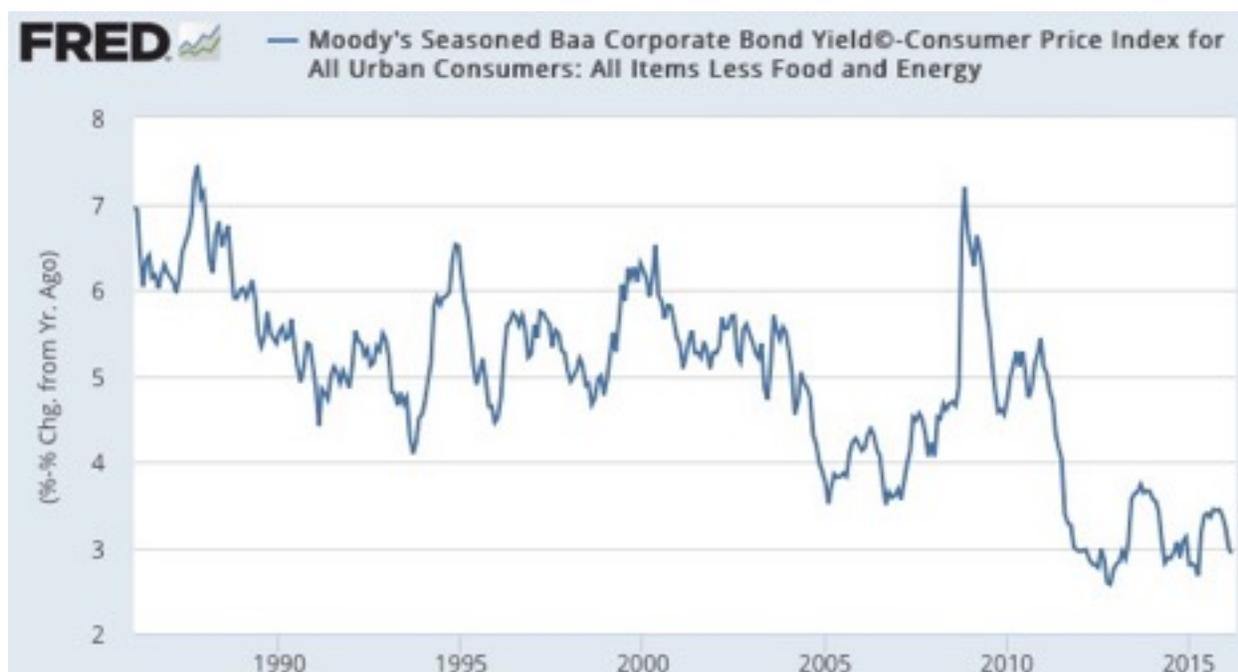
We have talked about G , our indicator of the effect of the government budget on the economy, as “government purchases”. But in more complicated (and realistic) models it is best interpreted as something closer to the government’s overall budget deficit.

In 1985 there was a widespread bipartisan judgment that serious mistakes in economic policy during the first half of the Reagan administration had led to the emergence of an outsized federal budget deficit, and that this deficit had pushed the Wicksellian neutral interest rate r^* up to a level incompatible with rapid long-run growth in U.S. productivity and incompatible with a healthy manufacturing and export sector.

As a result of this judgment, between 1986 and 1994 a bipartisan coalition headed at first by Vice President George H.W. Bush, then by President George H.W. Bush, and then by President Bill Clinton took major steps to reduce the U.S. budget deficit in an attempt to reduce the r^* to a healthier level more compatible with long-run growth and a healthy manufacturing and export sector.

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Fluctuations in the long-term real risky market interest rate r since 1986 are given in the graph below:



1) The market interest rate r at the start of 1986 was equal to r^* , and the market interest rate between the start of 1995 and the start of 2000 was on average equal to r^* . Assuming all of the decline in r^* was due to the 1986-1994 deficit-reduction effort, by how much did r^* fall as a result of this policy shift?

Foreigners move their wealth into and out of the United States. When the market interest rate r is high, it is attractive for foreign investors to move their money into the United States in order to capture the high rate of return that investments in the U.S. pay—and so demand for dollars goes up, and the dollar tends to become worth more vis-a-vis other currencies. Thus the level of the market interest rate r is one of the two principal determinants of the exchange rate—the value of the dollar vis-a-vis other currencies. (Confidence in the U.S. economy is the other principal determinant.)

The rule-of-thumb is that the average foreigner doing this intends to keep their wealth in the United States for a decade. Thus the percentage-point shift in the U.S. exchange rate—in the

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value of the dollar vis-a-vis other currencies—is ten times the percentage-point shift in the market interest rate r .

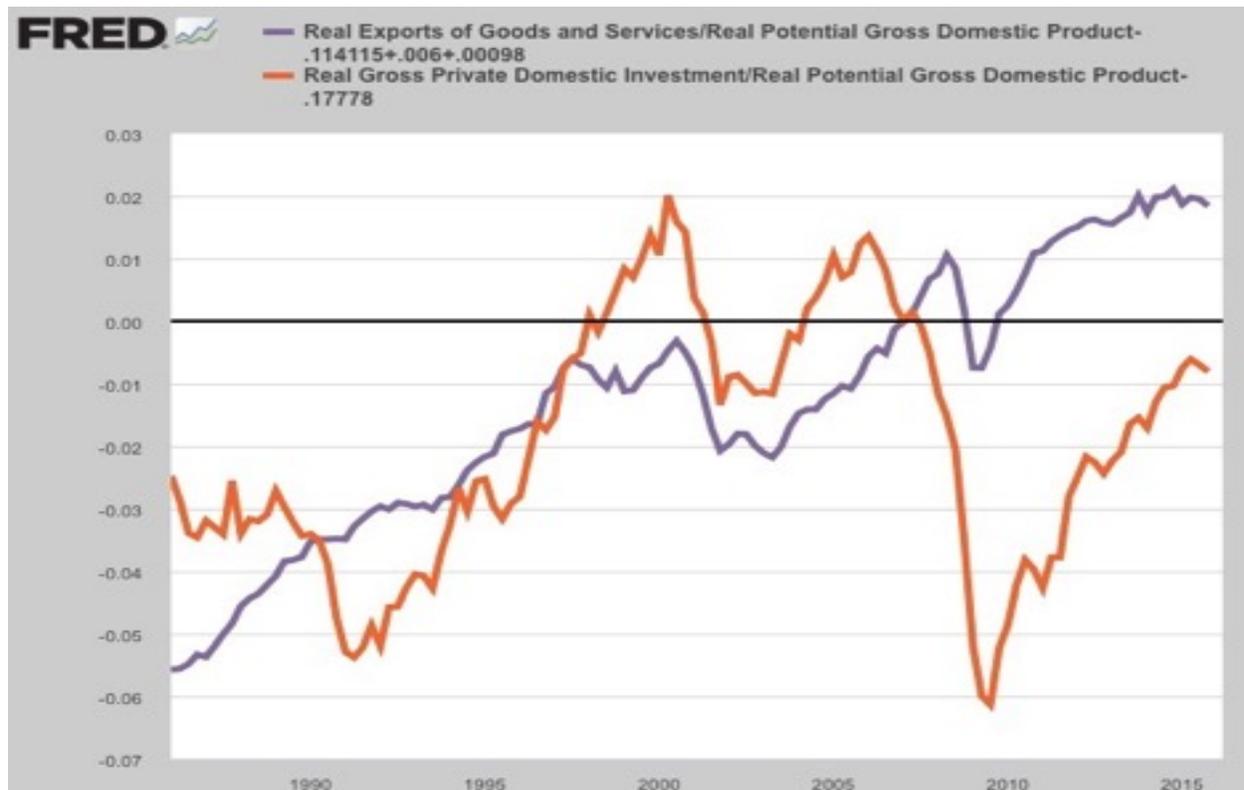
Fluctuations in the exchange rate—in the inflation-adjusted value of the dollar vis-a-vis other currencies— since 1986 are given in the graph below:



2) How much in percentage terms did the exchange rate—the value of the dollar vis-a-vis other currencies—decline between the start of 1986 and its average value between the start of 1995 and the start of 2000?

3) Do the magnitudes of the shift in the Wicksellian neutral interest rate and the shift in the exchange rate between the mid-1980s and the late-1990s correspond closely enough to make it not implausible that the reduction in the value of the dollar was due to the deficit-reduction policy aggressively pursued by George H.W. Bush and Bill Clinton?

When the value of the dollar declines vis-a-vis other currencies, imports become more expensive to American consumers and exports more attractive to foreign purchasers. The figure below charts U.S. exports and investment in the form of deviations as shares of potential GDP from the



values they attained at the 2007 business cycle peak:

4) By how much, as a share of potential GDP, did exports increase between the start of 1986 and the 1995-1999 period? If the rule-of-thumb is that a 1%-point shift in the exchange rate should have an 0.1%-point effect on exports as a share of potential GDP, how much of this export increase can be traced to the movement in the exchange rate?

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5) The rule of thumb is that a 1%-point reduction in r generates a 1.5%-point increase in investment spending. How much of the increase in the investment spending share between the start of 1986 and the second half of the 1990s can be attributed to the GHWB-Bill Clinton budget policy?

Consider our national income identity:

$$Y = C + I + NX + G$$

- Y — real GDP
- NX — net exports, determined by foreigners' desire to spend their earnings from selling us imports on our exports
- C — consumption spending, determined by households
- I — business investment spending, determined by businesses and banks
- G — government purchases

If the marginal propensity to consume c_y is constant, if there are no shocks to consumer confidence c_0 , if imports are a constant share of GDP, and if the Federal Reserve is successful at keeping real GDP at potential output Y^* , then, writing X for total exports:

$I + X + G =$ a constant share of potential output Y^* . The figure below plots, over the past two decades, I , X , and G as shares of potential output Y and as deviations from the values those shares attained in 2007:

In 1990, $I + X + G$ were in total 1.3%-points lower than their 2007 share of potential GDP...

In 1995, $I + X + G$ were in total 2.1%-points lower than their 2007 share of potential GDP...

In 2000, $I + X + G$ were in total 1.3%-points higher than their 2007 share of potential GDP...

In 2005, $I + X + G$ were in total 0.2%-points higher than their 2007 share of potential GDP...

In 2010, $I + X + G$ were in total 4.3%-points lower than their 2007 shares of potential GDP...

And in 2015, $I + X + G$ were in total 0.9%-points lower than their 2007 shares of potential GDP...

The “Neutral” Interest Rate II

- Can think of the Fed’s job as being to shift the money stock around in order to make the actual real interest rate equal to this r^*
- And you will often see, if you read Paul Krugman, a figure like this one here ($S=I$ is where $Y=E$, where income = expenditure \rightarrow)

