Replies to one-minute memos, 09/17/03

Dear Students,

Thanks for asking these great questions! They really make me think hard to answer them. As to my question, you all answered it correctly: exchange rate pass-through is the change in prices of imported goods & services due to changes in the exchange rate.

Here are the answers to your questions.

Does pass-through work in the reverse? (i.e. if the euro depreciated, would BMW pass on the savings to customers or would German car companies keep the profits for themselves?)

Yes, pass-through works in reverse, too. So, using the example from class, let Euro depreciates by 20%, from 1 US$/Euro to 0.80 $/Euro. Theoretically that would imply a price of: 35,000 Euro x 0.80 $/Euro = $ 28,000. However, if the price of the imported BMW is $ 30,000, this would imply a partial pass-through:

$ 30,000/ $ 35,000 = 0.86, or 16 % decrease.

So, the degree of pass-through is 16%/20% = 80 %.

Interest rates and exchange rates should be correlated, but we know that exchange rates change much quicker than interest rates. The percentage change in exchange rates is much greater. Why?

Great question. First, let me say that this is generally true for the floating exchange rate systems. I also assume you refer to the interest rate on Government T-bills, i.e. a rate without premium for risk (as would be the case for a private debtor).

So, the reason why interest rates are less volatile than forex in floating regimes, is that oftentimes Central banks use (i.e. set themselves) interest rates as a tool of their monetary policy, while exchange rates are allowed some freedom of floating (i.e. determined by the market forces in the forex exchanges).

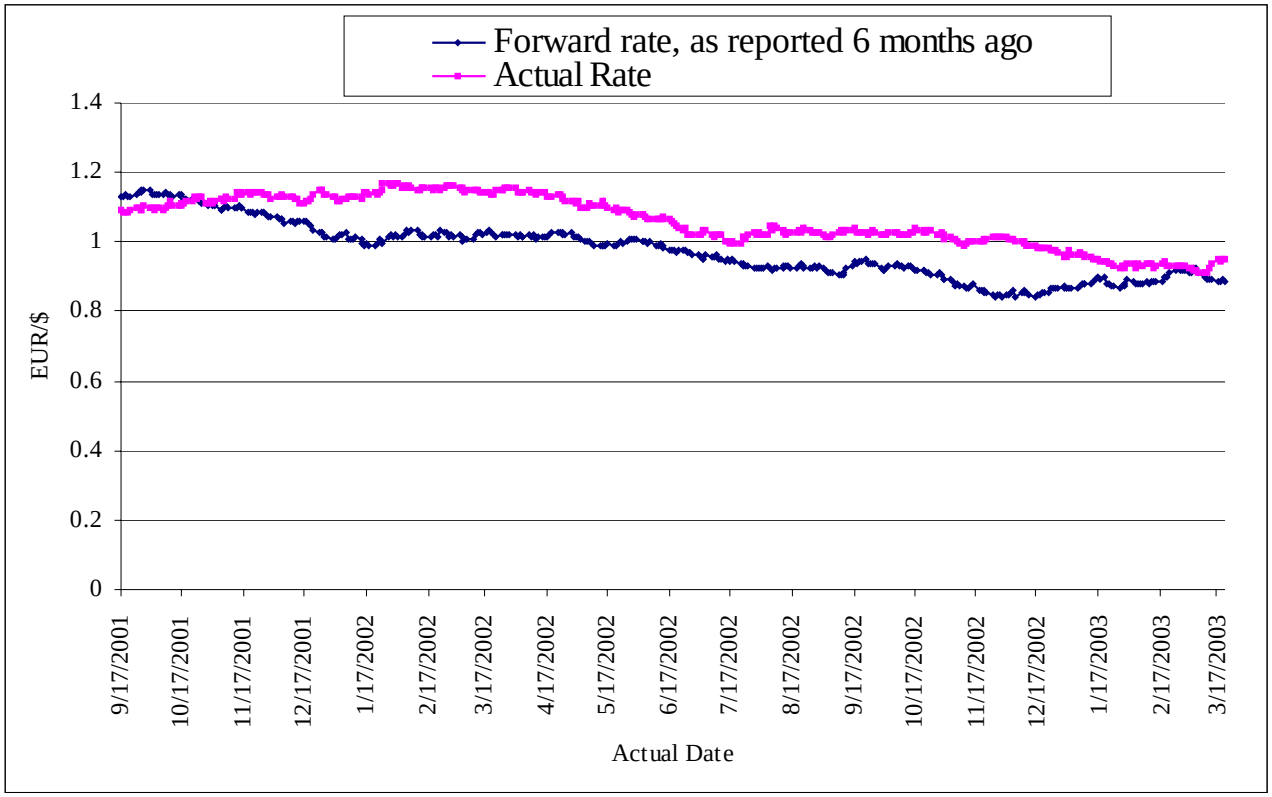
Why are we having the same questions on the memo?

Sorry, I transferred it from the last time, since I could not talk about pass-through then, and I thought it is an important concept. Won't happen again ☺.

Do you think the appreciation of the Euro against the US$ in the next six months is feasible?

Great question, we'll try to answer it in class. Notice that as of today 9/17, the spot exchange rate is EUR .895/ $. However, as of today, the 6-month forward is EUR .886/ $. Do you believe the forward is an accurate predictor of the future exchange rate?

Also, take a look at the following graph, it plots the actual spot rate and the 6-month forward on EUR/ $ six months earlier. This will give you an idea how accurate the 6month-forward rate was.



Source: Datastream.

Why is Fisher-open not precise in the short-run, I didn't follow the argument made in class. Could you please explain?

Fisher-open requires no arbitrage @ all times, which is not the case if there are transaction costs involved. Over short periods of time, arbitrage may exits. However, over longer periods of time any riskless profits will be arbitraged away.

What are your thoughts on the extremely undervalues Chinese currency?

Liberalization will eventually let this currency gain some of its strength, i.e. appreciate. BUT, there is a question. You liberalize the foreign exchange market. What happens next? If I am a Chinese citizen, and I have a lot of yuan cash, what shall I do? Are there any good investment opportunities in China??? If not, I will just turn the cash in US$ & put it somewhere else, e.g. NYSE stocks. So, actually, in the short run, 2-3 years, liberalization can actually lower the value of yuan!!!! Think about it, real estate in China is booming. Why? Because there are no good investment opportunities…

Is there any benefit to having an overvalued currency?

It depends on how much business your country does with countries overseas. If your economy relies much on other economies in the world (like US), you benefit from the higher purchasing power the overvalued currency gives you – you can buy foreign goods & services cheaply.

However, if you are not so well integrated, and your currency is overvalued, this is not good news – eventually, when you open up to the world economies, this overvaluation will be arbitraged away and leave you poorer.

So how comes countries like US can be integrated w/ world economies & sustain overvalued currency? Well, they specialize in production of goods & services that are very highly valued, & no one else offers – that way they can sustain very high value added for their exports (which supports the strong $), and still have quite cheap imports.

Could you go over the effect on BOP if PPP holds and there is inflation in one country?

Think of PPP holding – then a basket of goods in US will cost same in India, after translating $ prices in Ruppee prices. Inflation in one country, say US, brings the price of goods locally up. If the exchange rate does not adjust, this will make the goods more expensive, so now, when you translate their prices in Ruppees @ the ongoing exchange rate, you will have higher prices. Thus, US will be less competitive in exporting goods. As a result exports decrease. At the same time, the same basket of goods will be cheaper in India. So, US can import these same goods, and as a result imports in US increase. The net effect is a deficit in the Current Account of BOP.

Can you repeat the intuition as to why an undervalued currency leads to a surplus in the current account?

Undervalued currency is lowering price of exports, while increasing the price of imports. Low-price-exports will make foreigners demand more exports (think of Chinese exports), while high-price-imports will induce domestic businesses to source domestically goods that they were importing before @ a lower price. The result? Surplus in the current account.

With inelastic demand, wouldn't it be better to ever charge a higher price than only the change in the exchange rates?

Sure, profit maximization would ask for that. But that comes @ a cost – your business may lose customers in the long run (you develop reputation for being expensive brand). Oftentimes, the price is regulated when demand is inelastic. Just like the price of AIDS treatment cocktails in Africa – even though you may wish to charge more than $150 per treatment (compare to $8,000 in US!) you can't, b/c government won't allow it.

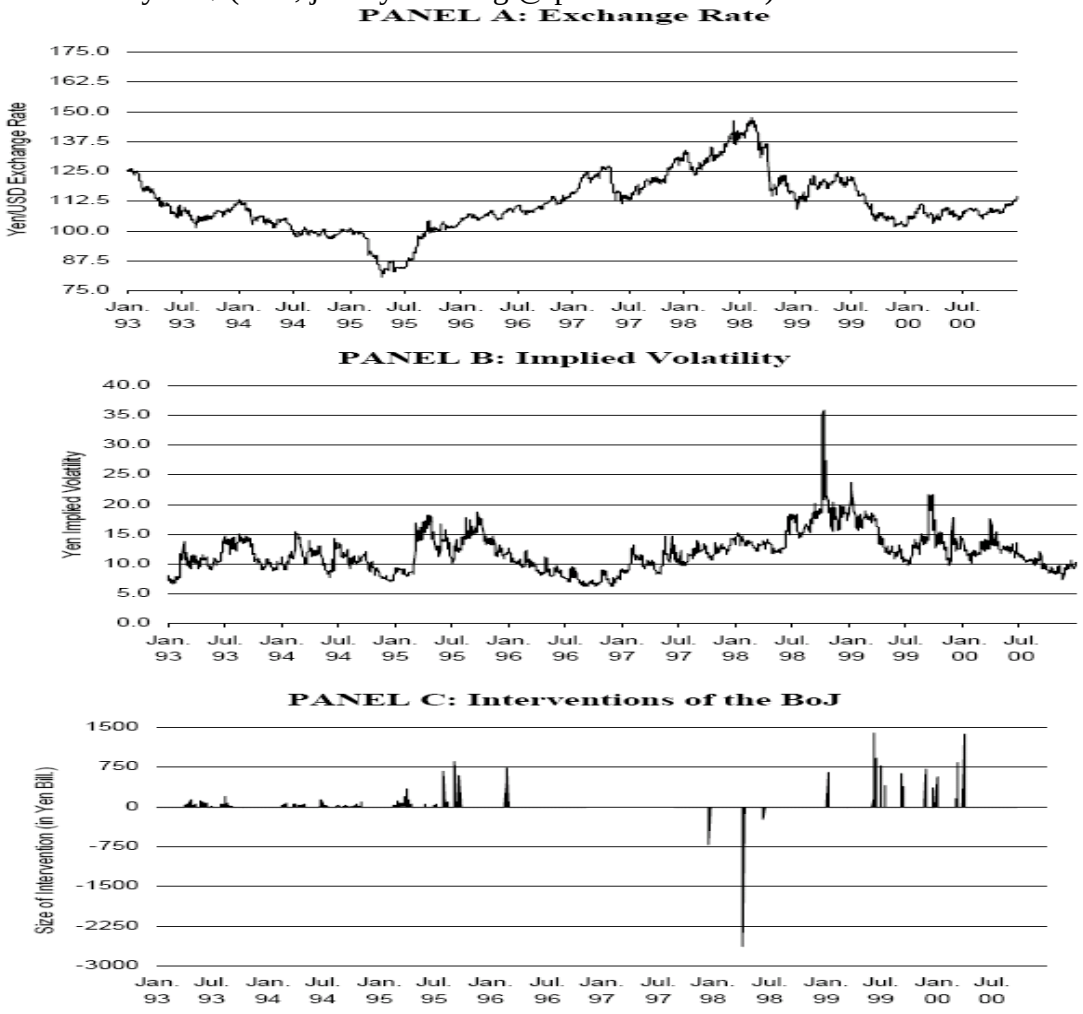
When would you use the Absolute PPP formula? Why do you use relative PPP to calculate spot rate instead of the absolute PPP?

One can use the absolute PPP formula for determining the exchange rates of countries that have several main exporting goods, that are highly homogenous, like oil, coffee, copper. Why? Because then it is more likely that the price of that good world-wide would satisfy the law of one price, an assumption in the absolute theory of PPP.

For example, OPEC countries spot exchange rate to US$ could be well tracked-down by the ratio of prices of the main exporting good they have – oil.

In terms of undervalued East Asian currencies, isn't the Yen artificially kept down by the interventions of the Bank of Japan, i.e. it is very recognizably undervalued relative to the US$, but is not allowed to float freely?

Yes, here is some evidence on that. As you see whenever there were interventions by Bank of Japan there was a significant correction of the Yen/$ rate to some sort of a mean @ 110 – 115 yen/ $ (well, just eye-balling @ panels A & C ☺).



Source: Frenkel, Pierdzioch, Stadtmann (2003), "The Effects of Japanese Foreign Exchange Market Interventions".

If exchange rate indices are weighted relative to a certain time (i.e. 1995=100) then isn't it really arbitrary for us to say that one currency is under-/over-valued? It's only under/overvalued relative to that base year and who's to say that the base year represents normality.

Super, that's exactly right. But, the idea is, that you can compare the real effective exchange rate indices for two countries, like we did in class for US & Japan, if they have the same base year. That was actually the purpose of the class graph (also textbook graph ☺). Clearly, the choice of the base year should be based on some criteria. Usually that is the convenience of the base year for other indices for the same country, or for other countries.

During the mid-to-late 1990s, Japan tried to institute market liberalization reform (Big-Bang reforms). I don't recall the exact year, but this may have caused the reversion to being undervalued, is that right?

Indeed, Japan started a series of financial reforms at the end of 90s, especially after the failure of one of its biggest domestic banks – Dai Ichi Kangio Bank (bankruptcy in 1998). However, overall the choice of the base year for the graph in class seems to be somewhat random. Now, why did the Japanese yen become undervalued around mid-1990s? The bank of Japan might have decided to boost the performance of its exporters by providing them with more competitive currency.

Why did real effective exchange rate indices in Japan & US diverge again after being equal (in 1995)?

Well, you see, actually the choice of 1995 was somewhat arbitrary as a base year for both indices.

Can you explain the significance of the Fisher formula…how is it relevant in comparison to PPP?

Great. The PPP states that the change in spot exchange rate should be equal but w/ opposite sign to the difference b/n expected inflations in two countries. Suppose inflation is expected @ 5% in US, and @ 1% in Japan. Then the expected depreciation of the spot Yen/Dollar rate will be approximately 1 – 5 = - 4 % (well, if you have to be precise, as in the quiz or problem set ☺, the answer shall be depreciation by $\frac{1+\pi^{JAPAN}}{1+\pi^{US}}-1=\frac{1+0.01}{1+0.05}-1=-0.0381$, 3.81 %, which is quite close to the shortcut of 4%).

Now, the international Fisher effect says that the real interest rates in US & Japan shall be the same. BUT, if real interest rates are the same, then the difference between nominal

interest rates equals the difference between inflation rates, because for each country the nominal interest = inflation + real interest (make sure you get this, once you get it, you will understand the Fisher effect). So, Fisher basicly says the same thinks as the PPP: the change in spot exchange rates shall be equal but with opposite sign to the difference between the nominal interest rates (which, as we know, is equal to the difference between inflation rates). So, if one-year nominal interest rate in US is @ 8%, & in Japan @ 4%, then the expected change in the spot rate is approximately -4 %, i.e. depreciation of the US$ by 4 %. Well, if you have to be precise, use the formula from class, $\frac{S_1^{INDIRET,Yen/\$} - S_2^{INDIRECT}}{S_2^{INDIRECT}} x100 = i^{Yen} - i^{\$} = -4\%$, or there will be a depreciation of US$by 4%.

Is the Fisher effect only good for short-maturity government bonds? Or private bonds as well?

Usually it is computed for government bonds w/ shorter maturity, because if you were to apply to the private bonds w/ longer maturity, you would have to add to the interest rate spread also credit risk premium (that is premium that the private debtor may fail to deliver payment @ maturity) and premium for the time (longer time implies higher likelihood that the long-term interest rate differential might change).

Can we go over the Chilean peso example from class?

Here is the slide from class:

- Spot rate Chilean peso/ US$, end 2001, was PS 500/US$.
- PS lost 25% value to US$ in 2002.
- Inflation in Chile, 2002, was 25%, in US 3%.

–Spot exchange rate today, 2002?

First, since we are to compute the loss in value of the Chilean Peso (CP), we use obtain the direct quotation, $/CP: if spot rate indirect quotation is CP 500/ $, then the direct quotation is

$$\frac{1}{CP500/\$} = \$0.002/CP$$

Now the CP lost 25 % of its value, i.e. it is worth now only 75 % of its value,

0.75 x $ 0.002/CP = $0.0015/ CP

Okey, that is the current (2002) value of CP. Let us invert it back to indirect quotation.

$$\frac{1}{\$0.0015} = CP667/\$$$

–Expected Spot exchange based on PPP?

To obtain the PPP expected exchange rate, we use the PPP formula

$$S_2^{CP/\$} = \frac{1+\pi^{CHILE}}{1+\pi^{US}} S_1^{CHILE/\$} = \frac{1+0.25}{1+0.03} 500 = CP607/\$.$$

–PS overvalued/ undervalued?

Is the currency undervalued? Yes. Why? Look @ 607 CP/$. That is a fair rate based on the PPP. However the market requires more peso per $. So CP is undervalued. By how much?

$$\left(\frac{PS607/\$}{PS667/\$} - 1\right) x100 = -9\%.$$

Are we allowed to bring study sheet to the quiz on next Tuesday?
No, because the questions will be easy, you do not need a study sheet. Besides, we will have several quizzes, each on separate group of topics.

However, making study sheet will be very helpful (at least that is the way I learned ☺). To stimulate you make your own sheet, I will let you have one two-page study sheet for the final. So, why not start working on it in pieces, from today?

Now that the US$ is losing value compared to the Euro, can we expect that the trade deficit in the current account of the US BOP to close and possible show a surplus due to a price advantage of exports?

Yes. Deficit will go down, it remains to be seen how far down.