

Problem Set 3 (revised)

Due in lecture on Wednesday, April 6.

1. Balance of payments identities. Recalling the balance of payments identity, $CA + KA + ORT \equiv 0$, answer the following questions.

1.1 If $CA > 0$ and the central bank is neither accumulating nor decumulating foreign exchange reserves, what must be true about private capital inflows?

1.2 If a country maintains a pegged exchange rate and runs a balance of payments surplus, then what must be true about ORT ? Explain what this means in words.

1.3 From the Chinese perspective, if the Chinese central bank is purchasing more U.S. securities (T-bills, corporate bonds and stocks) than the U.S. central bank is purchasing of Chinese securities, then what is the value of KA (Ignore direct investment for purposes of this question)? What is the value of ORT ?

Go to <http://www.bea.gov/bea/newsrelarchive/2005/trans404.xls> and download the table. (Note that the private portion of the “Financial Account” (portfolio flows, direct investment, bank and other investment liabilities) is equivalent to KA .)

1.4 Calculate KA for 2004, using the data in Economic Indicators, “U.S. International Transactions”.

1.5 Calculate ORT for 2004.

You may find of use the following diagram at: http://www.ssc.wisc.edu/~mchinn/p260_2004_erp.pdf

2. The foreign exchange market. Using a supply and demand diagram, and defining the US as the home country and the Euro Area as the foreign, show what happens in the following situations (assuming a flexible exchange rate regime).

2.1 American demand for Euro Area passenger aircraft increases.

2.2 Euro Area demand for American stock falls.

2.3 Remittances from East Asian individuals in the US back to East Asia increases.

Using the Table reproduced from the *Economist* (March 10th edition), answer the following questions.

Trade, exchange rates and budgets

Mar 10th 2005

From The Economist print edition

	Trade balance*, \$bn		Current-account balance				Exchange rate		Currency units					Budget balance % of GDP 2004†
	latest 12 months		\$bn latest 12 mths	The Economist poll % of GDP, forecast		trade-weighted‡ 1990=100		per \$	per £	per euro	per ¥100			
				2005	2006	Mar 9th	year ago	Mar 9th	year ago					
Australia	- 18.2	Jan	- 39.4	04	- 5.7	- 5.3	88.7	88.6	1.26	1.34	2.43	1.69	1.21	+ 0.7
Austria	nll	Dec	- 0.9	Dec	- 0.8	- 0.9	105.8 [§]	105.4	0.75	0.82	1.44	-	0.72	- 1.5
Belgium	+ 20.9	Dec	+ 11.7	Sep	+ 3.4	+ 3.5	106.3 [§]	105.7	0.75	0.82	1.44	-	0.72	- 0.1
Britain	-106.4	Jan	- 47.4	03	- 2.7	- 2.8	103.0	104.0	0.52	0.56	-	0.70	0.50	- 3.2
Canada	+ 51.6	Dec	+ 23.4	04	+ 2.1	+ 1.6	94.3	86.9	1.21	1.33	2.32	1.61	1.16	+ 1.1
Denmark	+ 9.8	Dec	+ 5.8	Dec	+ 2.4	+ 2.3	107.3	106.7	5.57	5.10	10.7	7.45	5.36	+ 0.9
France	- 9.6	Dec	- 5.3	Dec	- 0.5	- 0.4	110.1 [§]	109.4	0.75	0.82	1.44	-	0.72	- 3.7
Germany	+196.0	Jan	+103.2	Jan	+ 2.9	+ 3.0	108.0 [§]	107.2	0.75	0.82	1.44	-	0.72	- 3.9
Italy	- 0.7	Dec	- 12.6	Dec	- 1.0	- 1.1	78.3 [§]	77.8	0.75	0.82	1.44	-	0.72	- 2.9
Japan	+132.3	Dec	+171.8	Dec	+ 3.5	+ 3.4	136.1	132.5	104	111	200	139	-	- 6.5
Netherlands	+ 37.0	Dec	+ 24.1	04	+ 3.4	+ 3.3	105.8 [§]	105.2	0.75	0.82	1.44	-	0.72	- 2.9
Spain	- 75.5	Dec	- 44.5	Nov	- 4.2	- 4.2	78.4 [§]	78.1	0.75	0.82	1.44	-	0.72	- 1.1
Sweden	+ 23.1	Jan	+ 28.0	04	+ 6.8	+ 6.1	83.2	81.3	6.78	7.50	13.0	9.06	6.52	+ 0.5
Switzerland	+ 8.3	Jan	+ 44.7	03	+12.1	+11.7	113.2	110.3	1.16	1.29	2.23	1.55	1.12	- 1.6
United States	-666.2	Dec	-603.2	03	- 5.9	- 5.7	89.7	97.3	-	-	1.92	1.34	0.96	- 4.4
Euro area	+ 92.5	Dec	+ 52.1	Dec	+ 0.6	+ 0.6	94.1	91.3	0.75	0.82	1.44	-	0.72	- 2.9
MORE COUNTRIES Data for the countries below are not provided in printed editions of <i>The Economist</i>														
Finland	+ 13.9	Dec	+ 8.6	Dec	na	na	84.0 [§]	83.6	0.75	0.82	1.44	-	0.72	+ 2.3
Greece	- 31.7	Dec	- 10.0	Dec	na	na	60.8 [§]	60.6	0.75	0.82	1.44	-	0.72	- 5.3
Iceland	- 0.6	Jan	- 1.0	04	na	na	99.1 ^{**}	93.5	59.1	70.7	114	78.9	56.8	+ 0.1
Ireland	+ 42.0	Dec	- 1.6	03	na	na	99.3 [§]	98.2	0.75	0.82	1.44	-	0.72	+ 0.2
Luxembourg	- 4.5	Dec	+ 2.3	03	na	na	106.3 [§]	105.7	0.75	0.82	1.44	-	0.72	- 0.4
New Zealand	- 2.7	Jan	- 5.3	03	na	na	110.6	105.9	1.36	1.52	2.61	1.82	1.31	+ 2.9
Norway	+ 34.5	Jan	+ 34.4	Dec	na	na	99.2	93.1	6.14	7.09	11.8	8.20	5.91	+ 8.2
Portugal	- 18.5	Nov	- 13.3	Dec	na	na	93.3 ^{**}	93.4	0.75	0.82	1.44	-	0.72	- 2.9

*Nertz hardline. Australia, Britain, France, Canada, Japan and United States imports fob, exports fob. All others cif/fob. †Bank of England except §IMF, January average. ‡OECD estimate. **IMF, November average.

2.4 Has the US dollar (USD) appreciated or depreciated against the euro (EUR) over the past year? By what amount has the USD appreciated/depreciated (in percentage terms)?

2.5 How many US dollars does it take to buy a single Australian dollar (AUD) now? How many did it take a year ago? Has the US dollar appreciated or depreciated?

2.6 What is the exchange rate of Swiss francs (SFR) for Australian dollars (AUD) (i.e., how many Swiss francs does it take to purchase a single Australian dollar)?

3. Elasticities approach.

3.1 Suppose that each one percent depreciation in the US dollar induces a 0.75 percent increase in exports and a 0.25 percent decrease in imports. Starting from a position where exports equals imports, what will be the impact on the trade balance?

3.2 Suppose the US experiences the exchange rate depreciation while running a large trade deficit. What will happen to the trade balance?

3.3 Suppose that instead of the elasticities being constant, they are smaller in the short run, and larger in the long run. What is the time path of the trade balance over time (starting from initial balance)?

4. National savings identity

$$C + S + TA \equiv Y$$

$$C + I + G + EX - IM \equiv Y$$

Treat Y as being GDP.

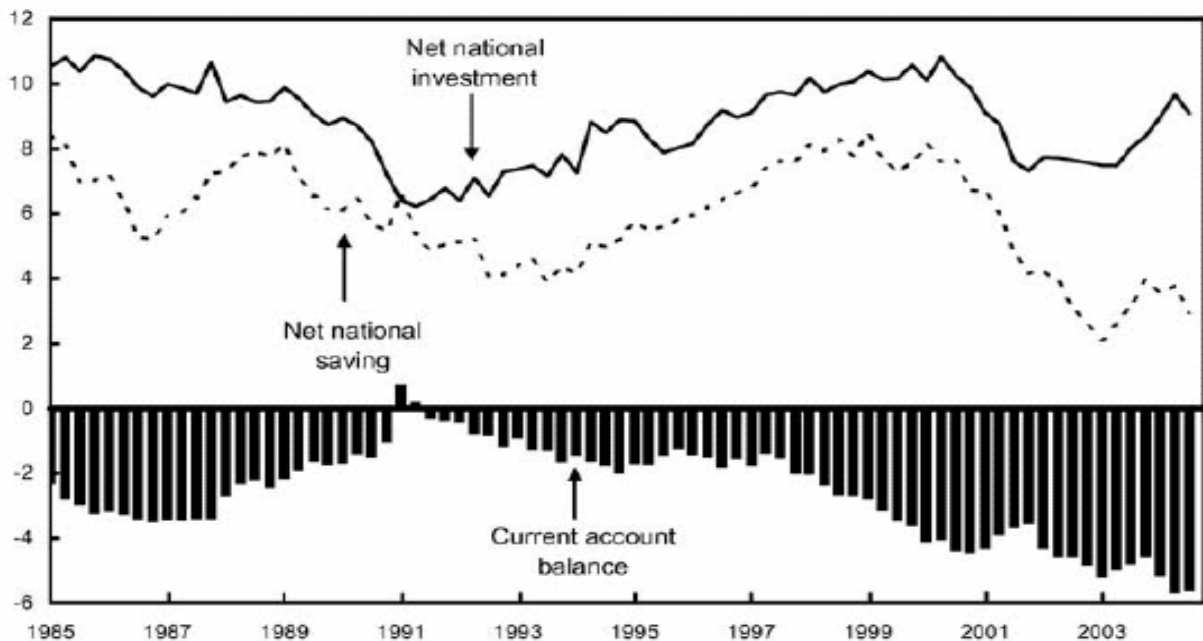
4.1 Defining $TB \equiv EX - IM$, solve for the TB as a function of the net national savings (taxes minus government spending plus private savings), and private investment.

4.2 Optional. Obtain the figures for 2003 for net domestic investment, net savings and government budget surplus, from Tables 5.1 and 3.1, respectively, of the National Income and Product Accounts of the Bureau of Economic Analysis. The website for the relevant section of the BEA website is: <http://www.bea.gov/bea/dn/nipaweb/SelectTable.asp?Selected=Y>. Hint: You have to include the “statistical discrepancy” in Table 5.1. This figure from the *Economic Report of the President, 2005* may be helpful.

Chart 1-3 **Saving, Investment, and the Current Account Balance**

Lower national saving primarily accounts for the widening of the current account deficit since 2000.

Percent of GDP



Source: Department of Commerce (Bureau of Economic Analysis).

5. **Equilibrium income and multipliers.** Consider the following model of the economy (where there are no taxes):

$$Y = AD \equiv C + I + G + EX - IM$$

$$Y = \bar{C}\bar{O} + cY + \bar{I}\bar{N} + \bar{G}\bar{O} + \bar{E}\bar{X}\bar{P} - (\bar{I}\bar{M}\bar{P} + mY)$$

5.1 Solve Y , setting $\bar{A} \equiv \bar{C}\bar{O} + \bar{I}\bar{N} + \bar{G}\bar{O}$.

5.2 Calculate the change in income for a given change in (autonomous) imports. Show your work!

5.3 Calculate the change in income for a given change in government spending. Show your work!

5.4 Calculate the change in the trade balance for a given change in autonomous imports. Hint: $TB \equiv EX - IM$, so $\Delta TB = \Delta EXP - \Delta IMP - m\Delta Y$. Show your work!

5.5 In words, explain why the change in the trade balance is not equal to the change in autonomous imports.