CHAPTER 2

2.1   Would you expect the Law of One Price to apply in the case of the following products and, if not, why not?

    (a)   a barrel of crude oil
    (b)   a litre of petrol
    (c)   a Real Madrid football club shirt
    (d)   a share of Microsoft stock
    (e)   a coronary bypass operation

2.2   A UK power station relies on imported coal as an input. A Chinese coal mine can supply coal for RMB266 per ton from the docks at Tianjin, while a Polish supplier is offering the same grade of coal from the docks at Gdansk (Poland) for €30.00 per ton. The power station reckons that transporting a ton of coal from Tianjin to the UKwill cost it $5.00, but from Gdanskonly $3.00.

    (a)   If the exchange rates are currently £1.00 = $1.88 = €1.47 (floating), while the Chinese exchange rate is fixed at $1.00 = RMB8.3, should the UK power station buy coal from China or Poland? If it buys from wherever is cheapest, how much does it pay in sterling?

    (b)   How would your answer change if the dollar appreciated to £1.00 = $1.60, while everything else remained unchanged?

    (c)   With the situation as in Part (a) above, suppose the UK buyer is worrying how its costs would be affected by a possible Chinese revaluation of the RMB, which is rumoured to be currently under consideration in Beijing. By how much would the RMB need to be revalued against the dollar to make the UK buyer indifferent between the two sources?

    (d)   With the situation as in Part (a) above, if the UKcompany calculates it can shift a ton of coal from the Chinese to the Polish port at a shipping cost of $4.00, is there an opportunity for it to engage in a little profitable arbitrage? If so, how much profit could it make?

    (e)   Repeat the previous question with the dollar at an exchange rate of £1.00 = $1.60? Can you explain your answer?

2.3.   A trader finds that a particular generic (i.e unbranded) antibiotic is available in Germany at a price of €0.50 per unit, compared to a minimum price of $0.80 per unit in the USA. The current exchange rate is €1.00 = $1.30, and he reckons that transport and marketing costs will amount to no more than $0.05 per unit.

    (a)   How much profit per unit can the trader make by buying in Germany and importing the drug into the USA?

(b)   Suppose the trader reckons it will take a month to handle the formalities of actually importing the goods into USA and delivering them to the US hospitals who are his customers. Assuming drug prices in local currency remain unchanged, how much of a fall in the value of the dollar over the coming month would it take to wipe out his profits and saddle him with a 10% loss on the deal? Give your answer in terms of the percentage depreciation.

2.4

Given the following data about two countries, A and B:

	Weight in index for country :		Current Index level for country	
	A	B	A	B
Food	.22	.35	84	174
Other Goods	.32	.41	77	233
Services	.46	.24	286	122
	1.00	1.00		

The base year is 1990 = 100, at which time the exchange rate was A1.00 = B2.50 (where A and B are also the names of the currencies of the two countries).

Answer each of the following questions under two alternative scenarios: including and excluding services (i.e. treating them first as relevant to PPP, then as irrelevant nontradeables).

(a)   What are the current price indices for the two countries?
(b)   What is the current PPP exchange rate?
(c)   If the exchange rate is actually A1.00 = B2.85, what is the real exchange rate?

Compare and explain your answers including and excluding services.

2.6

What problems might crop up in trying to exploit the following apparent arbitrage opportunities:

a)   an international brand of suntan lotion on sale at €3.95 in shops in Spanish holiday resorts and at Bt99.95 in Thai resorts, while the exchange rate is €1 = Bt51.00 ?

b)   laptop computers on offer at €1000 equivalent on eBay from a vendor willing to take payment in any convertible currency, while the

identical model sells for no less than €1400 at any bricks-and-mortar retail outlet in Europe?

2.7

Suppose a car in the Mercedes Benz range costs €28,000 to produce and is currently selling for €40,000 in Germany, when the exchange rate is €1.00 = $1.25.

If the car is on sale for $50,000 in the USA, and if you know that the pass-through rate for this product is 75%, what would you expect to happen to the model's US price after a fall in the value of the dollar to €1.00 = $1.40?

    a)   Other things being equal, what will have happened to the profit margin on sales in USA(in € and %) after the change in the exchange rate?

    b)   How would you expect the manufacturer to respond to the new situation?

2.9

Given the following data:

	UK		JAPAN	
YEAR (AVGE)	CPI	PPI	CPI	PPI
2000	100	100	100	100
2007	112.5	112.6	98.1	101.6

where CPI and PPI denote consumer and producer price indices respectively, and that the average exchange rate in 2000 was £1.00 = Yen163.3:

    (a) What exchange rate for the year 2007 would be consistent with PPP on a CPI basis?

Given that the average exchange rate in 2007 was actually £1.00 = Yen235.7

    (b) On a PPI basis, by how much was the Yen over orundervalued in 2007?

    (c) On the basis of the data given here, does PPP explain the CPI or PPI data better? Explain your answer.

    (d) How is PPP related to the Law of One Price?

Does PPP imply that real interest rates must be the same in everycountry?