

Section 3 International economics: Answers to Test your understanding quantitative questions (Chapters 13–15)

Answers have been provided for all quantitative Test your understanding questions throughout the textbook.

Chapter 13 International trade

Test your understanding 13.2 (pages 362–3)

4 (a)

Coffenia:

$$\text{opportunity cost of coffee: } \frac{4 \text{ robots}}{8 \text{ units of coffee}} = \frac{1}{2}$$

$$\text{opportunity cost of robots: } \frac{8 \text{ units of coffee}}{4 \text{ robots}} = 2$$

Robotia:

$$\text{opportunity cost of coffee: } \frac{6 \text{ robots}}{3 \text{ units of coffee}} = 2$$

$$\text{opportunity cost of robots: } \frac{3 \text{ units of coffee}}{6 \text{ robots}} = \frac{1}{2}$$

- (b) The results show that Coffenia has a comparative advantage in coffee and Robotia a comparative advantage in robots. At the same time, each country has an absolute advantage in the same two goods. However, this in no way affects the conclusion that each country should specialise in the production of the good in which it has a comparative advantage.

7 (a)

	Country A	Country B
Good X	8	2
Good Y	2	4
Opportunity cost of X	$\frac{2}{8} = \frac{1}{4}$	$\frac{4}{2} = 2$
Opportunity cost of Y	$\frac{8}{2} = 4$	$\frac{2}{4} = \frac{1}{2}$

Country A had a comparative advantage in good X and country B in good Y.

	Country A	Country B
Good X	8	2
Good Y	6	4
Opportunity cost of X	$\frac{6}{8} = \frac{3}{4}$	$\frac{4}{2} = 2$
Opportunity cost of Y	$\frac{8}{6} = 1\frac{1}{3}$	$\frac{2}{4} = \frac{1}{2}$

Country A has a comparative advantage in good X and country B in good Y.

	Country A	Country B
Good X	1	4
Good Y	2	2
Opportunity cost of X	$\frac{2}{1} = 2$	$\frac{2}{4} = \frac{1}{2}$
Opportunity cost of Y	$\frac{1}{2}$	$\frac{4}{2} = 2$

Country A has a comparative advantage in good Y and country B in good X.

	Country A	Country B
Good X	6	3
Good Y	3	1
Opportunity cost of X	$\frac{3}{6} = \frac{1}{2}$	$\frac{1}{3}$
Opportunity cost of Y	$\frac{6}{3} = 2$	$\frac{3}{1} = 3$

Country A has a comparative advantage in good Y and country B in good X.

	Country A	Country B
Good X	1	2
Good Y	2	4
Opportunity cost of X	$\frac{2}{1} = 2$	$\frac{4}{2} = 2$
Opportunity cost of Y	$\frac{1}{2}$	$\frac{2}{4} = \frac{1}{2}$

Opportunity costs are the same in country A and country B; no country has a comparative advantage in good X or good Y.

Test your understanding 13.5 (page 368)

To answer questions 1 and 2, draw a diagram as in Figure 13.7(a) (textbook, page 366) and label $P_w = \$300$, $Q_1 = 100\,000$ units and $Q_2 = 200\,000$ units, as given in question 1. (The diagram does not have to be drawn to scale.)

- 1
 - (a) The new price paid by consumers is the world price plus the tariff = $\$300 + \$50 = \$350$
 - (b) The new price received by domestic producers is the same as that paid by consumers, i.e. $\$350$.
 - (c) Computer sales before the tariff = domestic production + number of units imported = $100\,000 + 250\,000 = 350\,000$ units (Q_4 , as in Figure 13.7(a)).
 - (d) Computer sales after the tariff = domestic production + quantity of imports = $200\,000 + 70\,000 = 270\,000$ units (Q_3 as in Figure 13.7(a)).
- 2
 - (a) Consumer expenditure before the tariff = $\$300 \times 350\,000 = \$105\,000\,000$ (= \$105 million).

Consumer expenditure after the tariff = $\$350 \times 270\,000 = \$94\,500\,000$ (= \$94.5 million).

Therefore consumer expenditure decreased by \$10.5 million after the imposition of the tariff.

- (b) Producer revenue before the tariff = $\$300 \times 100\,000 = \$30\,000\,000$ (= \$30 million).

Producer revenue after the tariff = $\$350 \times 200\,000 = \$70\,000\,000$ (\$70 million).

Therefore producer revenue increased by \$40 million after the imposition of the tariff.

- (c) Budget revenues increased by $\$50 \times 70\,000$ units of imports = $\$3\,500\,000$ (\$3.5 million).

- (d) Before the tariff, foreign producers exported 250 000 units to Lakeland; after the tariff they exported 70 000 units.

Therefore their exports fell by 180 000 units.

- (e) Before the tariff, foreigners' computer export revenues were $\$300 \times 250\,000$ units = $\$75\,000\,000$ (= \$75 million). After the tariff, these export revenues fell to $\$300 \times 70\,000$ units = $\$21\,000\,000$ (= \$21 million).

Therefore their export revenues fell by \$54 million.

Test your understanding 13.7 (pages 371–2)

To answer questions 1 and 2, draw a diagram as in Figure 13.9(a) (textbook, page 369) (it does not have to be drawn to scale) where $P_w = €100$, $Q_4 = 700\,000$, and $Q_3 = 500\,000$ units.

- 1 **Important note:** There is an error in this question. The second sentence should say, 'Following the imposition of an import quota of 200 000 units per year, domestic sales fall to 500 000 units per year...' (i.e. 400 000 units should be 500 000 units).

- (a) Quantity of mobile phones produced domestically before the quota = domestic sales – quantity of imports = $700\,000 - 500\,000 = 200\,000$ units (Q_1 in the diagram).
- (b) Quantity of mobile phones produced domestically after the quota = domestic sales – quantity of imports = $500\,000 - 200\,000 = 300\,000$ (Q_2 in the diagram).
- (c) The quantity of imports is that specified by the quota = $200\,000$ units.
- 2** (a) Consumer expenditure before the quota = $\text{€}100 \times 700\,000 = \text{€}70\,000\,000$ (= €70 million).
Consumer expenditure after the quota = $\text{€}120 \times 500\,000 = \text{€}60\,000\,000$ (= €60 million).
Therefore consumer expenditure decreased by €10 million after the imposition of the quota.
- (b) Producer revenue before the quota = $\text{€}100 \times 200\,000 = \text{€}20\,000\,000$ (= €20 million).
Producer revenue after the quota = $\text{€}120 \times 300\,000 = \text{€}36\,000\,000$ (= €36 million).
Therefore producer revenue increased by €16 million after the imposition of the quota.
- (c) Quota revenue = increase in price due to the quota \times number of units of imports
= $\text{€}20 \times 200\,000 = \text{€}4\,000\,000$ (= €4 million).
- (d) The change in foreign producers quantity of exports is equal to the fall in the quantity of imports = $500\,000 - 200\,000 = 300\,000$ units.
- (e) Foreign producers export revenues fall by $\text{€}100 \times 300\,000 = \text{€}30\,000\,000$ (= €30 million).
- 3** (a) There is no effect on the government's budget.
- (b) Foreign producers lose €30 million due to lower export revenues less and they gain €4 million from the quota revenues. Therefore they lose by $\text{€}30\,000\,000 - \text{€}4\,000\,000 = \text{€}26\,000\,000$.

Test your understanding 13.9 (page 375)

To answer questions 1 and 2, draw a diagram as in Figure 13.11(a) (textbook, page 372) (it does not have to be drawn to scale), where $P_w = \text{£}200$, $Q_1 = 300\,000$, $Q_2 = 900\,000$ and $Q_3 = 550\,000$ units.

- 1** (a) The price paid by consumers does not change; it remains at $\text{£}200$ ($=P_w$ in the diagram).
- (b) The price received by producers is $\text{£}200 + \text{£}50 = \text{£}250$ ($=P_s$ in the diagram)
- (c) The quantity of imports before the subsidy = $900\,000 - 300\,000 = 600\,000$ units
- (d) The quantity of imports after the subsidy = $900\,000 - 550\,000 = 350\,000$ units
- (e) The total television sales in the domestic economy do not change, and remain constant at $900\,000$ units.

- 2** **Important note:** There is an error in this question. The first sentence should say, 'Using your results in question 1...'.
- (a) Consumer expenditure before and after the subsidy = $£200 \times 900\,000 = £180\,000\,000$ (= £180 million). This does not change.
- (b) Producer revenue before the subsidy = $£200 \times 300\,000 = £60\,000\,000$ (= £60 million)
 Producer revenue after the subsidy = $£250 \times 550\,000 = £137\,500\,000$ (= £137.5 million)
 Therefore producer revenue increased by £77.5 million after the granting of the subsidy.
- (c) The government must pay the subsidy, which is $£50 \times 550\,000 = £27\,500\,000$ (= £27.5 million). Therefore the government budget is worse off by this amount.
- (d) Foreign producers quantity of exports to the country fall by the same amount as the quantity of imports, i.e. $600\,000 - 350\,000 = 250\,000$ units
- (e) Foreign producer export revenues fall by $£200 \times 250\,000 = £50\,000\,000$ (= £50 million)

Chapter 14 Exchange rates and the balance of payments

Test your understanding 14.6 (page 394)

- 1** (a) $1 \text{ US dollar} = \frac{1}{0.99} = 1.01 \text{ Canadian dollar}$
- (b) $1 \text{ Japanese yen} = \frac{1}{1.84} = 0.54 \text{ Indian rupee}$
- (c) $1 \text{ Sri Lankan rupee} = \frac{1}{1.34} = 0.75 \text{ yen}$
- (d) $1 \text{ Canadian dollar} = \frac{1}{1.62} = 0.62 \text{ British pound}$
- 2** (a) $1 \text{ Indian rupee} = 1.84 \text{ Japanese yen}$
 $50 \text{ Indian rupees} = 50 \times 1.84 = 92.00 \text{ Japanese yen}$
- (b) You must first find the value of Indian rupees in terms of Sri Lankan rupees:
 $1 \text{ Indian rupee} = 1.84 \text{ Japanese yen}$
 $1 \text{ Japanese yen} = 1.34 \text{ Sri Lankan rupees}$
 Therefore $1 \text{ Indian rupee} = 1.84 \times 1.34 \text{ Sri Lankan rupees} = 2.46 \text{ Sri Lankan rupees}$, and
 $50 \text{ Indian rupees} = 50 \times 2.46 = 123.00 \text{ Sri Lankan rupees}$



(c) *Japanese imports:*

You found above (question 2 (a)) that the price of 1 unit of X =

92.00 Japanese yen

Therefore the cost of 1000 units of X = $1000 \times 92 = 92\,000$ Japanese yen

Sri Lankan imports:

You found above (question 2 (b)) that the price of 1 unit of X = 123.00 Sri Lankan rupees

Therefore the cost of 1000 units of X = $1000 \times 123.00 = 123\,000$ Sri Lankan rupees

3 (a) You were given above (question 1(a)) that 1 Canadian dollar = 0.99 US dollar

Therefore 75 Canadian dollars = $75 \times 0.99 = 74.25$ US dollars

(b) You found above (question 1(b)) that 1 Canadian dollar = 0.62 British pound

Therefore 75 Canadian dollars = $75 \times 0.62 = 46.50$ British pounds

(c) *US dollars:*

From question 3(a) above, you know that the price of 1 unit of Y = 74.25 US dollars.

Therefore the cost of 5000 units of Y = $5000 \times 74.25 = 371\,250$ US dollars.

British pounds:

From question 3(b), you know that the price of 1 unit of Y = 46.50 British pounds.

Therefore the cost of 5000 units of Y = $5000 \times 46.50 = 232\,500$ British pounds.

4 (a) The British pound appreciated; the US dollar depreciated.

(b) $\frac{1.60 - 1.46}{1.46} \times 100 = 9.59\%$. The British pound appreciated by 9.59% relative to the US dollar.

(c) First find the value of the US dollar relative to the British pound:

1 June 2010: $1 \text{ US dollar} = \frac{1}{1.46} = 0.68 \text{ British pound}$

1 November 2010: $1 \text{ US dollar} = \frac{1}{1.60} = 0.62 \text{ British pound}$

$\frac{0.62 - 0.68}{0.68} \times 100 = -8.82\%$. The US dollar depreciated by 8.82% (−8.82%) relative to the British pound.



5 Use the same method as in question 4.

The US dollar appreciated by 6.33% relative to the euro; the euro depreciated by 6.41% (–6.41%) relative to the dollar.

6 (a) $7 - 3P = -5 + 3P \Rightarrow 12 = 6P \Rightarrow P = 2$, i.e. the equilibrium value of the \$ is €2, i.e. $1\$ = €2$

(b) When plotting \$ demand and supply curves, make sure you label the axes correctly:

vertical axis: € per \$

horizontal axis: millions of \$ per day

Your two curves should intersect at the point where

$$P = €2$$

$$Q = 1 \text{ million } \$ \text{ per day}$$

Chapter 15 Economic integration and the terms of trade

Test your understanding 15.4 (page 425)

3 (a) The terms of trade improved.

(b) The terms of trade deteriorated.

4 (a) The base year is 2007.

(b) 2007: 100

$$2008: \frac{103.2}{104.7} \times 100 = 98.6$$

$$2009: \frac{109.8}{105.3} \times 100 = 104.3$$

$$2010: \frac{110.5}{107.5} \times 100 = 102.8$$

(c) Improvement in 2009 and 2010 relative to 2008 because the terms of trade value is greater than 100; deterioration in 2008 because the terms of trade value is less than 100.

(d) Improvement in 2009, because the terms of trade value is greater than the value of the previous year; deterioration in 2008 and 2010, because the terms of trade value is lower than the value of the previous year.