J2 June Intensive Revision

**CSQ – Lesson 2 – Market Failures Q1**

**Flooding: the problem that will not go away**

**Table 1: Commodity Prices, 2005 – 2014**

The table below shows an index of the world commodity prices over the period 2005-2014.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
| Index | 70.2 | 75.7 | 85.0 | 99.4 | 92.6 | 100 | 111.6 | 106.4 | 100.2 | 97.0 |

Source: World Bank, 2016

**Extract 1: U.S. grain prices soar as floods shut waterways, threaten crops**

U.S. grain farmers scrambled to find shelter for their crops and handlers hunted for alternative transportation routes, as widespread floods shut waterways from Illinois to Missouri and spurred a surge in physical prices of corn and soybeans.

Cash premiums for soybeans in the U.S. market, jumped to as high as 70 cents per bushel, their loftiest since mid-November as the rapidly rising waters forced the Coast Guard to shut a five-mile section of the Mississippi River. Surcharges for corn hit 49 cents on Wednesday, up almost a third from 37 cents a week ago and the highest in nearly three weeks.

Source: Reuters, 31 December 2015

**Figure 1: Government spending on UK infrastructure (2013) presented by Statistics Authority**



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Adapted from *The Times,* 08 February 2014

**Extract 2: Budget 2014 – Key climate and energy announcements**

Chancellor George Osborne today delivered his fifth budget. Among a few pre-election treats for voters were some important changes to the government’s energy and climate policies.

The chancellor was widely expected to freeze the UK’s carbon tax imposed on firms at £18 per tonne of carbon dioxide emitted until the end of the decade. He hopes that will cut industry energy costs, and help the UK’s manufacturing sector.

Energy intensive industries will not have to pay the costs of two policies designed to support renewable energy generation. This could save companies £50,000 per year on their energy bills, the chancellor claimed. The chancellor hopes that the measures are enough to stop companies moving abroad, where operation costs are lower – which would be bad for the economy overall, he argues. In doing so, Osborne prioritised the UK’s short term “economic security” over curbing the manufacturing industries’ considerable greenhouse gas emissions – with the latter potentially providing economic benefits in the long run.

Osborne today announced £140 million of new funding to go towards flood repairs and maintaining existing flood defences. The announcement comes months after Prime Minister David Cameron told parliament that the UK could expect more of the same in coming years.

Source: Carbonbrief.org, 19 March 2014

**Extract 3: Does flood defence merit government intervention?**

Annual flood damage in the UK costs around £1.1 billion, and could rise to £27 billion by 2080. In 2014, the Balkans saw the worst floods in 120 years, with over 4 months rainfall in one day, and flood water rising to over 7 metres. Over 40% of Bosnia and Herzegovina was flooded causing huge landslides (raising fears of old landmines being triggered). Over a quarter of the population in the country were displaced, with at least 100,000 homes now uninhabitable. In 2005, Hurricane Katrina in the United States caused the flood system to be breached at more than 50 places in New Orleans, killing more than 1,800 people; others stranded for days without food.

Livelihoods are destroyed as agricultural land is abandoned. 80% of New Orleans was underwater for weeks. The areas hit by floods in the UK in 2013/14 accounted for 13% of the UK’s economic output, hitting key economic heartlands, wiping up to £14 billion off GDP. Disruption to transport links harms productivity. There is a danger that the Balkan floods will risk power shortages and rising electricity prices.

Flooding causes more payouts by insurance firms, which lowers profits, and thus raises insurance premiums for everyone. In 2012, flooding caused damage worth £4 billion. The loss of property value for those living in flooded areas has knock-on effects on banks who have offered mortgages. As the value of their collateral plummets, negative equity issues arise with the wealth of households being wiped out.

Adapted from *Economics Today,* September 2014

**Extract 4: The cost of inaction vs. the cost of action**

In 2009 the Environment Agency (EA) published a study warning £20 billion of investment was required over the next 25 years to address rising flood risks. However, the UK government has been prioritising fiscal austerity.

Government provision of public goods is but one solution. Government provision has its dilemmas – even if we agree that out of all the market failures, public goods is the biggest, we still have to decide whether flood defences are the most important public good to finance, and even then every decision has an opportunity cost. The Chairman of the EA, Lord Smith, stated: “Flood defences cost money; and how much should the taxpayer be prepared to spend? There’s no bottomless purse, and we need to make difficult choices about where and what we try to protect.”

It has been estimated that maintaining existing levels of flood defences would require flood defence spending to increase to £1 billion per year by 2035. Is this a good use of the government’s scarce money and resources? The benefits of providing the flood defences must exceed the costs of provision.

A cost-benefit analysis (CoBA) is important in this regard. CoBA allows different flood defence projects to be ranked according to those that provide the highest expected net gains in social welfare. But CoBA assume that the correct costs and benefits have been identified, as well as what discount rates to use for future uncertain costs and benefits. The distribution of them must be taken into account too. Flood defences by their nature are only a pure public good on a localised level, whilst on a national level, the benefits and costs are unequally distributed. And it’s not as simple as just building flood defences – what type of flood defence system should the government use? Flood defences or flood water storage areas: In the Netherlands, water management is incorporated into urban planning, taking into account parks and wetlands that could function as safety reservoirs.

Crucially, government provision is not the only solution. There are cost savings from large scale state provision but a subsidy to the private sector is another approach. However some areas could get more subsidies if their members of parliament are more aligned with the EA (some scope for political lobbying). The conclusion that free markets fail to provide public goods stems from the key assumption that people adhere to *homo economicus* or self-interested individualistic behaviour. But there is evidence that in small communities people can agree to split the cost of public goods. It is not inconceivable that if the government decides to commit to not providing flood defences, local communities will contribute to their own flood defences. The fact that the government is often willing to provide these for free at the point of consumption at least, encourages irresponsible behaviour and an unwillingness to fund it collectively. But, when the public good becomes more national, the coordination problem becomes much harder.

Adapted from *Economics Today,* September 2014

**Questions**

|  |  |  |
| --- | --- | --- |
| **(a)** | Using Table 1, compare the overall change in world commodity prices between 2005 and 2010 with that of 2010 and 2014. | [2] |
| **(b)** | With the help of a diagram, explain how floods caused the prices of grains like corns and soybeans to soar in Extract 1.  | [4] |
| **(c)** | Explain how the freeze on the carbon tax and more savings for polluting industries might benefit the UK economy in Extract 2. | [6] |
| **(d)** | Comment on how the climate and energy initiatives highlighted in Extract 2 could affect the UK’s budget position. | [4] |
| **(e)** | **(i)** | With reference to the data, to what extent do you agree with the statement that “out of all the market failures, public goods is the biggest”?  | [6] |
|  | **(ii)** | Flood defence should be directly provided by the government. Discuss. | [8] |

[Total: 30]

**Suggested Answers**

**(a) Using Table 1, compare the overall change in world commodity prices between 2005 and 2010 with that of 2010 and 2014. [2]**

(Similarity and difference – general trend and pattern of trend)

World commodity prices between 2005 and 2010 generally increased while that of 2010 and 2014 fell.

The rate of change during 2005-10 was greater than the rate of change in prices for 2010-14, suggesting that prices were relatively stable in the later period.

(b) With the help of a diagram, explain how floods caused the prices of grains like corns and soybeans to soar in Extract 1. [4]

An increase in the price of grains is likely to be due to a fall in supply, while the soaring of prices, which implies a huge increase in price, can be explained by elasticity concepts, in particular, the price elasticity of demand.

Qs Q2 Q1

S1

P2

P1

0

Price

Quantity of grains

S2

Dinelastic

In Extract 1, floods will cause waterways to be shut, threatening crops and lead to a **significant** fall in the supply of grains. Diagrammatically, the supply curve will shift leftwards from S1 to S2.

As seen from the diagram, at the initial equilibrium price P1, there is a shortage as quantity demanded, Q1, is lesser than quantity supplied Qs. The shortage of QsQ1 units will put an upward pressure on price, causing prices to increase to P2.

As grain is considered a staple food, a necessity with no close substitutes, the demand for grains will likely be price inelastic. The fall in supply, ceteris paribus, will result in quantity demanded falling less then proportionate to the rise in price. Hence prices will ‘soar’ and increase to a larger extent as compared to the fall in quantity.

**(c) Explain how the freeze on the carbon tax and more savings for polluting industries might benefit the UK economy in Extract 2. [6]**

Question interpretation

* What is a carbon tax? What is the implication of a freeze?
* What is the implication of more savings for polluting industries?
* How do they affect cost of production? Profits? And survival of firms? Attractiveness to stay in UK?
* How do we measure the impacts (benefits) on an economy?

Introduction

The announcements of the 2 measures might impact the UK economy in terms of the macroeconomic goals of low unemployment, price stability, economic growth and a sound balance of payments.

Explain the effects of freeze in carbon tax

Carbon tax is a tax on fossil fuels, intended to reduce the emission of carbon dioxide. The freeze in carbon tax and more savings for polluting industries imply that it is cheaper to produce using cheap fossil fuel, and thus more savings for firms, leading to a decrease in cost of production. In turn, firms’ expected profits increase. As Chancellor Osborne had hoped – “industry energy costs could be cut and this would help UK’s manufacturing sector”. (Extract 2).

Explain the impact on output and employment

With lower cost, profits may also increase and firms may be able to re-invest or spend on R & D, either to be ‘greener’ or to develop new and better technology and products, increasing AD in the short run and AS in the long run. Respectively, actual growth could be realised in the short run if there is excess capacity in the economy, and potential growth.

These 2 measures may also provide a lifeline to industries which would have had to close down due to higher cost (higher carbon tax), and workers would have had to be retrenched leading to structural unemployment. As highlighted in Extract 2, workers in the manufacturing industry, which is likely to rely more on fossil fuel, is likely to benefit more.

Explain the impact on price stability

Firms may even pass on the lower cost to consumers in terms of lower prices or keeping prices stable. The freeze on the carbon tax will help to prevent the cost of production from rising and this will prevent the cost-push inflation. As a result, cost of living will be kept low and the UK industry will be able sustain their price competitiveness and their cost competitiveness in attracting FDI.

Explain the impact on BOP

Extract 2 highlighted that the measures could also prevent firms from leaving the UK due “lower costs” elsewhere (Extract 2) or even attract new foreign direct investments worthwhile. This reduces capital outflow, thereby improving UK’s BOP position. The lower cost of production may also make UK exports more price competitive and this might increase exports, thereby improving UK’s BOP. These are short term policies to lift the UK economy; at the expense of the environment which could have provided economic benefits in the long run.

**(d) Comment on how the climate and energy initiatives highlighted in Extract 2 could affect the UK’s budget position. [4]**

Question interpretation

* What does a budget position mean? What are the components? G & T (govt. revenue) G > T – budget deficit, G<T – budget surplus
* What are the initiatives?
* Would they impact on G? or T?
* Would budget position worsen?
* Would budget position improve?

The UK budget position is the overall difference between government revenue and spending.

Explain the likely immediate change in budget position

The initiatives will result in a saving for industries and a cost to the government as the tax collected will be less than expected.

At the same time, the government will have to spend more especially for flood repairs as mentioned in the Extract 2, ‘£140 million in new funding’.

Evaluation - comment

However, given the new initiatives, if firms are able to thrive and be profitable, the government could collect more corporate taxes and if more people are employed, more income taxes will also be collected. Together with less spending on unemployment benefits, the budget position will improve the in the long run.

However, with greater pollution in the long run, the government may have to spend more on health care. This will increase the government expenditure and put stress on budget position\

The position on the budget depends on how the carbon tax will affect the economic activities of the industry and the expenditure by government. If it brings about more economic activities which will raise the tax revenue, the budget position will improve. On the other hand, if there is more government spending, there will be worsening of the budget position.

Conclusion

Thus, the budget position may worsen initially but whether it will eventually improve is hard to predict.

**(e) (i) With reference to the data, to what extent do you agree with the statement that “out of all the market failures, public goods is the biggest”? [6]**

Question interpretation

* What is market failure? What are public goods? How does the market fail for public goods?
* How are public goods the biggest market failure?
* How are public goods not the biggest market failure?
* To what extent does the case context suggests flood defence being a public goods with the biggest market failure?

Define Market Failure

Market failure occurs when the market fails to produce most efficient and equitable outcome. i.e. socially optimum output and price where societal welfare is maximised.

**1) Explain why public goods are significant sources of market failure**

* Explain Public Goods
* Explain non-excludability and non-rivalry, and how it would lead to the good not being produced at all by the free market – i.e. a missing market. 🡪 Therefore, public goods are arguably a very significant source of market failure.
* Explain the significance of flood defence as source of market failure
	+ Scale of problem: If flood defence is not provided, size of damage due to flood is significant. GBP 1.1 billion worth of damage, 13% of UK GDP in 2013 (Extract 3).
	+ UK Prepared to spend GBP 140 million towards flood defence (Extract 2).

**2) Explain why public goods are not the only source of market failure. There are other sources of market failures that are significant.**

* Extract 2 suggests that market failure also occurs due to negative externalities in production. Therefore, there is a need to impose carbon tax.
* Explain market failure due to negative externalities in production (carbon emission).
* Scale of problem in other sources of market failure
	+ Scale is significant, given that carbon tax is imposed on firms at GBP 18 per tonne of CO2 emitted (Extract 2). Policies designed to support renewable energy generation.

In Figure 2, government spending on flood issues within total spending on infrastructure seems to be small in proportion relative to other sectors e.g. transport, water and energy. This suggests that these other markets could have even larger market failures, requiring large scale government intervention.

Conclusion

From data, it seems like while flood defence is a significant source of market failure, it may not be the biggest.

**(e) (ii) Flood defence should be directly provided by the government. Discuss. [8] (reasons for and against government in the provision of public goods)**

Explain flood defence and direct provision.

Direct provision of flood defence requires the use of the government’s budget and are not the best way to spend scarce government resources if it does not help to alleviate inequity and increase society’s welfare. There are opportunity cost involve.

**1) Explain why flood defence should be directly provided by the government**.

Characteristics of flood defence:

* Non-excludability
* Non-rivalrous

Explain why government should provide

* Missing Market – making flood control/defence available to everyone. This is the most effective way to correct a missing market situation.
* Direct provision of flood defence is the best way to spend scarce govt resources because welfare is maximised and ‘there are cost savings from large scale state provision”.
	+ (Extract 3: The areas hit by floods in the UK in 2013/14 accounted for 13% of the UK’s economic output, hitting key economic heartlands, wiping up to £14bn off GDP. Disruption to transport links harms productivity)
* Wider economic benefits and the hundreds of thousands of employment opportunities (cite evidence of damage)
* Multiplier from government spending, stimulating further economic growth

Limitations: Adds pressure to government budget.

other reasons:

Evaluation: (Cost-Benefit Analysis: The benefits of providing the flood defences must exceed the costs of provision.**)**

**2) Explain why flood defence should not be directly provided by the government**

* Flood defence can be provided by the private sector or subsidised by govt.
	+ In small communities: entrepreneur can provide collective goods by consensual community agreements – ‘in small communities people can agree to split the cost of public goods.’
	+ Govt. provision encourages moral hazard behaviour and an unwillingness to fund it collectively’.
	+ subsidy to the private sector is another approach - explain
	+ Risk of information failure for govt - leading to a sub-optimal outcome
* Opportunity cost of spending govt resource on flood defence
	+ Expenditure on education; healthcare; infrastructure which may require more govt. support
	+ ‘Flood defences by their nature are only a pure public good on a localised level, whilst on a national level, the benefits and costs are unequally distributed’ and thus should not be priority and this may then not be the best way to spend scarce govt resources

Conclusion

Direct provision by govt. can help correct the market failure due to provision of flood control and the positive externalities generated; increase employment opportunities and a boost of the national economy of England. Hence the spending of such scarce government resources is justified.

However, direct provision, expenditure of govt funds incur trade-offs which can take the form of increased tax burden or less spending on other areas, it is imperative to do a cost-benefit analysis on the amount of spending on flood defence and for example, public education.