

SERANGOON JUNIOR COLLEGE
2016 JC2 H2 ECONOMICS PRELIMINARY EXAMINATION
PAPER 2 SUGGESTED ANSWERS

QUESTION 1

- (a) (i) **Identify the relationship between Saudi Arabia oil production and world oil price in Figure 1.** [1]

Direct relationship between Saudi Arabia oil production and world oil price.

- (ii) **With reference to the data and using demand and supply analysis, suggest a possible reason for the above relationship.** [2]

- The above relationship states that Saudi Arabia production level and prices are directly related, for example a fall in prices could lead to a fall in production in Saudi Arabia.
- A possible reason could be due to a fall in demand. As seen in *Extract 1*, *there is sputtering demand from Europe and China* due to slower economic activity → Derived demand for oil as an important factor of production for industrial activity fall
- This leads to a fall in price of oil which leads to a fall in quantity supplied as profit-maximising producers have less incentive to produce, hence leading to a fall in production.

- (b) **Saudi Arabia, one of the biggest oil producers, has 'cut prices for its customers'. Using Extract 1, explain the economic rationale for Saudi Arabia's action.** [4]

The economic rationale for Saudi Arabia's action is to maintain their market share in the face of the shale oil production boom in the US and maximise profits.

Operating in an oligopolistic market structure, other major oil producers like Iraq and Iran will follow suit any cuts in price. Hence, Saudi Arabia's cut in price will lead to only a less than proportionate rise in quantity demanded, c.p. this will lead to a fall in total revenue in short run

However, as seen in Extract 1, 'oil is relatively cheap to extract so crude production can remain highly profitable at lower prices', it means that cost of production for Saudi Arabia is very low and in face of 'new drilling techniques' that Saudi Arabia has, they are expecting cost to fall even further, hence even with fall in TR will lead to TR still exceeding TC to be making supernormal profits

By cutting price of oil in Saudi Arabia, the demand for shale oil in US falls as people switch their purchase from US to Saudi Arabia as it is relatively cheaper, thus quantity demanded for Saudi Arabia's oil will rise → output sold ↑ → higher market share.

- (c) **With reference to Extract 2 and using a relevant diagram, explain why the Russian ruble has tumbled to record low in 2016.** [3]

The value of the Russian ruble in the flexible exchange rate system is determined by demand for and supply of the Russian ruble in the foreign exchange market. In figure 1, The market equilibrium is determined at point E_0 when the demand is equal to the

supply of Russian ruble, with the value of the Russian ruble at $O P_0$, eg, against the US\$.

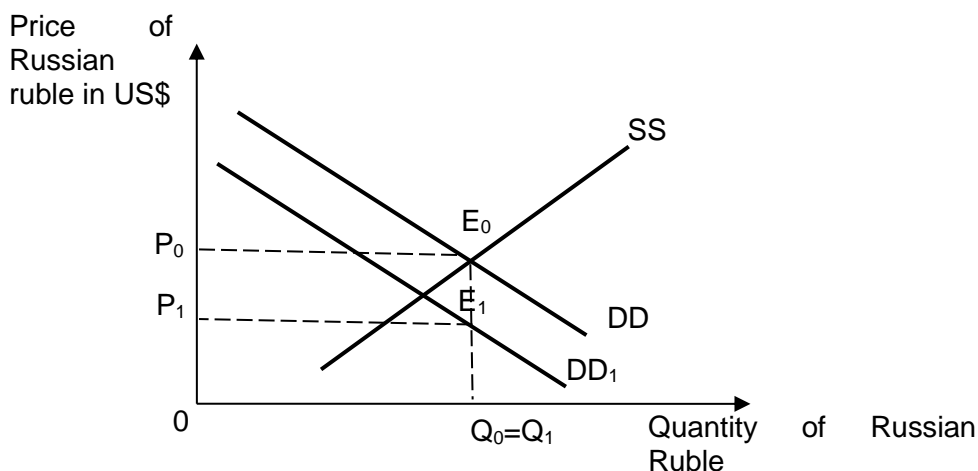


Figure 1: Depreciation/Erosion of value of Russian ruble

Extract states “oil’s retreat choked revenue of the world’s largest energy exporter and restricted Russia’s ability to lift its economy out of a recession.” Demand for oil is price inelastic since it is an essential input for production of goods and services. When price of oil falls, quantity demanded for oil exports rises less than proportionate, thus fall in exports revenue. In addition, due to uncertainty of Russia’s economic prospects, there is a fall in confidence level among foreign investors. Both factors lead to a fall in demand for Russian ruble which is showed by a leftward shift of the demand curve from DD to DD1.

Hence at the present exchange rate, there will be a fall in the demand for Russian ruble or rise in its supply, a surplus of the currency arises. This will lead to a fall in value of the Russian ruble.

- (d) (i) **Explain the relationship between profits and capital expenditure of the US shale production firms shown in Figure 2.** [2]

Positive relationship as seen in Figure 2 whereby when profits rose, capital expenditure rose
When profits rise, US shale firms will have more funds and ability to purchase capital investment.

- (ii) **Discuss the short run and long run factors that are likely to influence a shale firm’s decision as to whether it should ‘invest in new wells’.** [8]

Introduction

A shale firm’s decides whether it should ‘invest in new wells’ in order to increase production and this depends on mainly cost and revenue factors, as the traditional objective of firms are assumed to maximise its profits.

P1: Short Run factors

In short run, for a shale firm to ‘invest in new wells’, it must at least meet the condition whereby total revenue is at least equal or greater than total variable cost.

Low average variable cost

For shale firms mentioned in Extract 3, existing wells that are currently producing oil or gas are extraordinarily profitable, because most of the costs in the shale production process are already sunk, meaning most of the costs that the shale firms incur are fixed. Hence, the firm's fixed costs are irrelevant in this decision-making process because the firm has to incur fixed costs whether it decides to produce or not produce in the short run.

With low average operating costs of \$10-20 per barrel of oil produced, such as labour cost incurred in shale oil extracting process, investment in new shale wells may continue in the short run if oil prices are able to maintain at a minimum of \$10-20 too.

Price of oil (average revenue)

Though demand is sputtering as seen in Extract 1 and hence falling, but it is unlikely that prices will hit rock bottom in the near future. This is because oil is still a main source of energy and hence there will be a minimal demand for oil.

Evaluation:

In the short run, the total revenue of US shale firms may possibly fall further with Saudi Arabia cutting prices on oil. As Saudi Arabia is a close substitute for US shale oil as an alternative energy source, consumers may switch and increase quantity demanded to buy Saudi Arabia's oil.

P2: Long Run factors

In long run, for a shale firm to 'invest in new wells', it must at least meet the condition whereby total revenue is at least equal or greater than total cost (or whereby price must be at least equal or greater than average cost).

Cost factor

In the long run, since all factors are variable, there are no fixed costs. Hence all factors are variable including costs of drilling new shale wells.

Revenue factor

Alternative sources of energy may be developed over time with research and development done. These may be greener and produce less negative externalities such as possible water pollution from the production of shale oil and gas. These substitutes may grow in popularity in the long run, leading to the fall in demand for shale oil. Hence, price of shale oil may fall significantly in the long run.

Evaluation:

The ability to continue production in the short run and long run could also be influenced by government policies. In order to be more energy independent, US government might provide subsidy to encourage firms to invest in new wells.

- (e) Discuss the impact of the shale revolution on the US consumers and other economies. [10]**

Introduction

- (i) Shale revolution: as seen in Extract 4, with the surge in fracking and horizontal drilling, oil and gas production in the US has increased dramatically during the last decade

(ii) Overview: This increase in oil and gas production in the US has different impact on various economic agents

- US consumers of energy – Rise in consumer welfare: lower energy prices for households, lower factor prices for industrial production
- US consumers – Fall in consumer welfare for third parties in terms of negative externalities
- Other economies – Macroeconomic impact on oil exporters (OPEC, US, Saudi Arabia) and oil importers (India etc): link to any 2 macroeconomic goals

P1: Positive impact on US consumers in terms of higher consumer welfare due to lower prices and higher quantities enjoyed in various markets.

With US entering the global energy market as a major oil and gas producer, there is an increase in supply of energy sources. Since energy sources like *natural gas* are major factor of production for electricity generation as seen in Extract 4, the rise in supply of natural gas due to the shale revolution has led to the fall in energy prices and hence a fall in cost of generating electricity. This in turn translate into a fall in heating homes.

Since electricity to drive heaters in homes are essentials during seasons of cold weather, demand for electricity is price inelastic. With a fall in price of electricity, there will only be a less than proportionate fall in quantity demanded for electricity to heat homes *ceteris paribus*, hence leading to a fall in energy expenditure for US consumers.

P2: Negative impact on other oil exporting countries, like Russia and the Middle East, in terms of a worsening trade balance and in turn adversely affecting economic growth and employment.

Rise of US as a new oil exporter in global market → Assume global demand remains constant → Fall in market share for incumbent oil exporters such as Russia → as seen in Extract 2, choked revenue of the world's largest energy exporter and restricted Russia's ability to lift its economy out of a recession → Fall in export revenue for Russia, assuming import expenditure constant, worsening trade balance

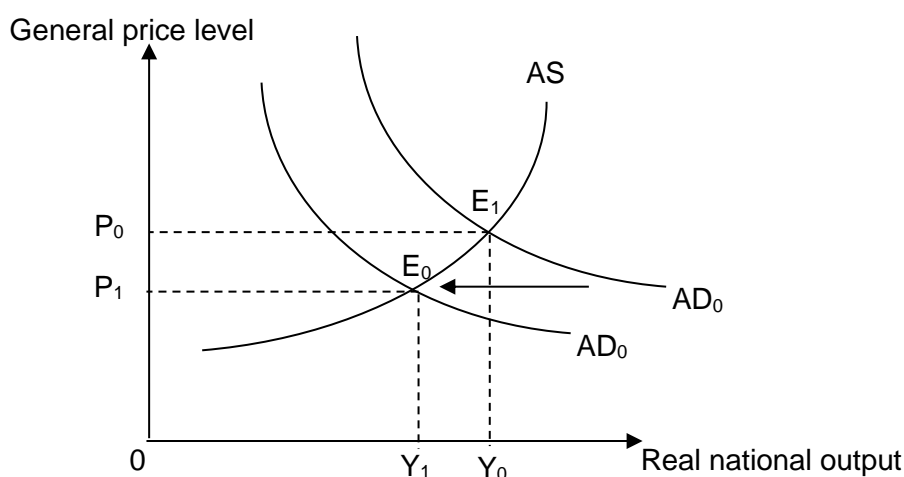


Figure 1: Fall in aggregate demand

Assuming other components of AD remains unchanged, the fall in net exports will result in a fall in AD for Russia as shown in Figure 1 by the leftward shift of the AD curve from AD₀ to AD₁. The resultant surplus lead to a new equilibrium general price level and real national output are lower at P₁ and Y₁. With a fall in real national output, this will lead to lower national incomes. Consequently, this fall in incomes will lead to a fall in induced consumption and a further fall in national incomes.

Evaluation:

The significant fall in AD & in turn NY if Russia is highly dependent on its oil exports

P3: Positive impact on net oil importers such as countries, like India, Senegal and Zambia, in terms of lowering inflation and raising economic growth.

With the shale revolution that will reduce global prices, these net oil importers will benefit from oil price reductions whereby they will enjoy fall in price of imported oil. Since oil is an important energy source for many industrial activities, this will lead to a fall in cost of production for various industries. Assuming no change in revenue, there will be a rise in profits for producers in these countries and hence there will be a rise in short run aggregate supply as seen in Figure 2 below whereby AS curve shifts from AS_0 to AS_1 .

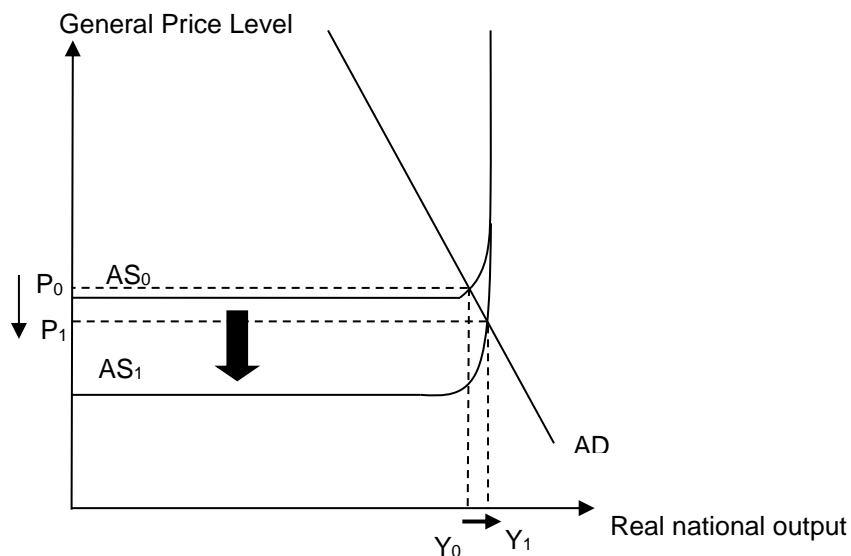


Figure 2: A rise in SRAS for net importing countries

At P_0 , the level of aggregate supply exceeds the level of aggregate demand. In other words, producers wish to supply more than is demanded. Hence, there is surplus of output. The general price level will keep on falling the general price level is lower at P_1 while the real national output is greater at Y_1 .

Conclusion

Overall, the shale revolution spells good news for US consumers especially if the US government is able to put in place regulations that can manage the amount of negative externalities that shale production may bring to third parties.

SECTION A – QUESTION 2

- (a) (i) **What is meant by real wages?** [1]

Nominal wages / earning of workers adjusted for inflation.

- (ii) **Based on Figure 3, compare the changes in the output per hour and median real wages for Britain and France between 2009 and 2014.** [2]

Output per hour rose slightly whilst the median real wages fell significantly for UK. In contrast, in France, both output per hour and real wages rose continuously with its rate of output rising faster than UK

- (iii) **With reference to the data, explain a factor that could have contributed to the change in UK's real wages after 2009.** [2]

World economy slowing down with slow growth in China, the second largest economy that drives the world economy, including UK (ext 4). As a result, UK investors and firms have a pessimistic economic outlook and cutback production as they anticipate that its trading partners will buy less imports from them. This will cause a fall in the derived demand for labour as less production is required. Assume price of goods and services unchanged, real wages thus fell.

- (b) (i) **Explain why a rise in a country's wages is not evidence of a narrowing income gap.** [3]

A narrowing income gap means there is less uneven distribution of earnings amongst the various groups of people.

Wages are a major source of household income in both developed and developing economies but a rise in the country's wages does not mean that all workers benefit equally. The rise in wages could have been significant and benefitted only certain industries/sectors, especially those in the trade sectors spurred by globalisation export opportunities. At the same time, a fall in demand for less skilled workers reduces their income.

In addition, it has also been observed that globalisation presents vast opportunities for capitalists and entrepreneurs which means that their profits could also have improved greatly.

- (ii) **Extract 4 suggests that low pay across an economy as a whole threatens to put a lid on its growth. Using economic analysis and relevant diagram, explain and comment whether this threat is valid.** [6]

Growth may be actual or potential rise in real GDP. Using the expenditure method, GDP is the sum of spending by households, firms, government and the foreign sector, ie: $C+I+G+X-M$.

It may be achieved by either increasing aggregate demand (AD) for locally produced goods and services and/or a rise in aggregate supply (AS).

Low pay results in low C by households due to firstly their low income and purchasing power and secondly, households' *pessimistic outlook* at the same

time. Therefore, in figure 1, at the same price OP , AD will fall. This is illustrated by a left shift of AD from AD_0 to AD_1 .

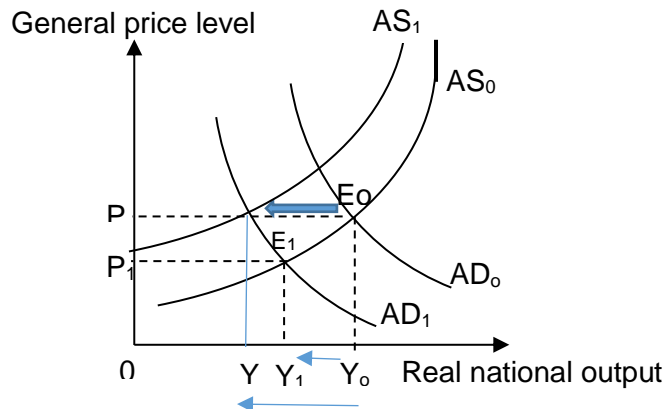


Figure 1: Impact of low pay on growth

Assuming no change in aggregate supply, the resulting surplus reduces the price of goods and services. This will reduce quantity supplied, causing a movement along AS and increases quantity demanded along AD_1 until new lower equilibrium is achieved with a lower national income level at OY_1 .

This fall may be to a large extent for countries like USA and rich countries, where consumption comprise a large percentage of their GDP (68%) and especially at this current period of slow growth where consumption is required to boost production.

In addition, this fall in consumption would at the same time cause a fall in net investment by firms when they cut back on production. This fall in net investments means that the productive capacity will also be reduced in the long run. The aggregate supply curve shifts to AS_1 in diagram. The actual growth could fall to OY .

However, if low pay is a result of technology advancements where workers are replaced by machinery or business firms switch production approaches to more capital and automation and demand less labour (ext 1), it could mean that growth might be assisted by more efficient methods of production. This could also result in export competitiveness and rise in real GDP.

(c) Explain why maintaining a rise in the US interest rate is good news for the US but bad news for countries like Brazil. [4]

A rise in interest rates is good news for United States because of the current state of the economy.

It signals that US is beginning to show signs of economy recovery as suggested by successful “stimulus efforts” in ext 6. This means that the job market is improving and there is some turn around in economic growth. Hence, raising interest rate suggests that United States has already reached its targeted job creation and inflation rate. This is in spite of the problem of secular stagnation where it is gripped by higher health and pension costs associated with ageing population. Hence a rise in interest is a good contractionary tool to curb possible demand pull inflation.

However, rising US interest rates is bad news for Brazil because firstly, if Brazil is a big borrower from US banks, it incurs higher interest payment on its debt. In addition, this will prevent some government investments in Brazil due to the higher cost of borrowing from US banks. As a result, this fall in government spending will reduce the aggregate demand and output and income. Hence this further curtails economic growth and job creation in the country. Secondly, a high public debt ridden with high interest payment may dampen investors confidence in the country, further crippling the economy.

- (d) (i) **Analyse how infrastructure investment by emerging economies will ‘put a strain’ on their balance of payments (extract 6).** [3]

Balance of payments is a record of receipts and payments from exports and imports of goods, services and assets. A strain suggests the country is paying more than it is receiving from its international transactions.

Infrastructural development could mean capital/government spending on roads, ports etc. These require imports of capital goods, trains, oil and construction equipment, thus demand for imports and import expenditure will rise. Such investments are “large” and therefore could result in huge import expenditure and hence a *severe current account deficit*, assuming export revenue unchanged. This will put a strain on achieving a healthy balance of payments, *assuming capital account unchanged*.

Furthermore, extract mentions the possibility of inflation with infrastructure investment. This could result because of a rise in government spending on infrastructure that stimulates the economy to near full employment level. This resulting demand pull price instability could reduce foreign direct investment as foreign firms could be discouraged from setting up business in the country as they have challenges estimating cost, revenue and profits. Assuming local firms investment overseas remain unchanged, this puts a strain on the capital account as a net outflow of currency would result.

- (ii) **Extract 5 states that “these kinds of investments will help hundreds of millions of people lift themselves out of poverty”. Based on the data and your own relevant knowledge, assess whether a country should then focus on infrastructure investment to achieve growth or pursue other economic goals as its priority.** [10]

There are a few fundamental macro-goals a country should seek to achieve, such as growth, external healthy balance of payments, low inflation stability and full employment. Microeconomic goals include equity in income distribution amongst various groups of people and efficiency in resource allocation.

TS1a: The data (ext 6) suggests the importance of developing physical infrastructure such as ports and highways to stimulate economic growth. Infrastructure investment can be seen as an expansionary fiscal tool with long run sustainable rise in real GDP. Firstly, this rise in government spending will initially raise the aggregate demand for locally produced goods and services, stimulate production and bring about a rise in real GDP. Secondly, once this infrastructure is completed, it improves the productive capacity of and attracts further investments in the economy bringing about an increase of the country’s aggregate supply. This enables sustainable economic growth into the long run.

TS1b: At first glance, it appears that this focus on government spending to improve infrastructure is therefore necessary if growth is the priority. This would be the case especially if a country experiencing slow growth or recession or **severe** poverty. This will especially *lift emerging economies out of poverty*, bring about a **higher standard of living** for everyone as a rise in income would now mean a higher purchasing power for the average citizen, **assuming the inflation rate remain constant or rise less than the rise in national income.** In addition, through growth, it is hoped that strong job creation and equity goals can also be achieved through a redistribution of income that a rise in government tax revenue makes possible with economic growth.

Hence under such conditions, growth would be a reasonable priority to pursue for countries like Brazil with only a growth rate of 0.1% (Table 1) with the danger of sliding into **recession**. If this happens, investors' confidence will further be shaken with serious repercussions on reviving the economy. In addition, the strength of choosing this priority is that it is not likely to be **in conflict** with other goals, but achieves other important goals such as employment and equity simultaneously as explained above.

TS2: Some countries such as India and China also appear to suffer from serious pollution issues with an unhealthy pollution index of close to 100 (Table 1) and may need to prioritise micro economic goals instead. Such countries should seriously also look into environmentally sustainable growth with measures to manage growth and efficient use of resources at an optimal level. This is because environmental pollution will undermine citizens' non material well-being and quality of life due to negative externalities arising from economic activity. Such externalities could affect both the living and the unborn as water and air pollution cause serious medical concerns and deaths where research has already shown to have happened in countries like China. Hence instead of pursuing growth at all cost, it should prioritise cutting on environmental damage.

TS3: However, the data also suggests that countries such as Brazil and United States suffer from a huge deficit in their current account balance. This means that the country's export earnings are less than its import expenditure arising from trade in goods and services. This means the country suffers from an external debt where it is living beyond its means. The opportunity cost of interest paid on debt would mean less funds available for other competing needs of the economy. The more immediate concern is that a **massive** current account deficit suggests a continuing loss of export competitiveness and a possible loss of investors' confidence and credit rating with long term consequences. Hence, the severity of the deficit suggests this could be the priority area for such countries. Instead of concentrating on growth alone fuelled by domestic factors, these countries could look into measures to improve, for example training and productivity of their workers to reduce their cost of production in the respective sectors to ensure a healthy external performance.

Conclusion

There are many economic goals a government wishes to pursue. With a limited budget, it should consider carefully how serious or how far short its country is currently at in achieving these goals and whether they wish to solve the short

term challenges with long term solutions. This requires an expedient mix of policies to achieve as many goals simultaneously.