

93402



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SUPERVISOR'S USE ONLY

# OUTSTANDING SCHOLARSHIP



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD  
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

## Scholarship 2019 Economics

2.00 p.m. Tuesday 12 November 2019

Time allowed: Three hours

Total score: 24

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

Pull out Resource Booklet 93402R from the centre of this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–28 in the correct order and that none of these pages is blank.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF  
THE EXAMINATION.**

Question	Score
ONE	
TWO	
THREE	
<b>TOTAL</b>	

ASSESSOR'S USE ONLY

**INSTRUCTIONS:** Write an essay in response to EACH of the THREE questions in this paper. Question Two is on page 10, and Question Three is on page 18.

### **QUESTION ONE: PETROL, ELASTICITIES AND ALLOCATIVE EFFICIENCY**

Use information in **Resources A to D**, in the resource booklet, and your knowledge of micro-economic theory, to answer this question.

For a period of time in 2018 petrol prices rose steeply, with predictions that they could go even higher. High petrol prices are likely to impact on consumers' buying behaviour in a range of markets.

Analyse the changes in the market for petrol and the price elasticity of demand for petrol. Evaluate the impact that high petrol prices would have on allocative efficiency in the petrol and electric vehicle markets in the long term. Make sure you use appropriate economic models in your answer.

In your answer you should:

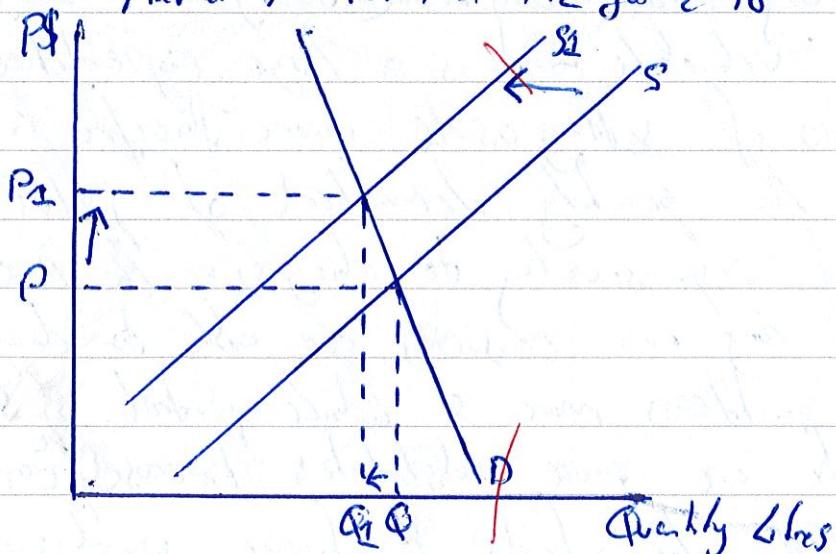
- analyse and explain the market changes that resulted in higher petrol prices in New Zealand in 2018
- explain why petrol has inelastic demand and analyse why price elasticity of demand for petrol differs in the short term compared with the long term
- evaluate how a persistently high price of petrol would impact the markets for petrol and electric vehicles in the long term, including changes to consumer surplus, producer surplus and allocative efficiency.

Use this space for planning your essay. This plan will NOT be marked.

#### **PLANNING**

In May 2018 petrol prices "hit a record \$2.40 per litre" according to Resource A. This is because the price of oil as a global commodity rose in 2018 and because NZ is so small compared to the international market we have such little bargaining power that firms like Z Energy are price takers so have to accept the higher market price for oil. This was compounded by the fact that the NZD depreciated last year so oil was even more expensive when expressed in NZ\$. This meant that the costs of production for the NZ oil oligopolies increased since they import this oil from overseas. On top of that additional fuel levies, which are essentially a variable cost for the petrol companies, were introduced further increasing the petrol companies costs of production. Since the petrol companies in NZ are oligopolies they have significant control over price<sup>as they have a lot of market power</sup> so were able to pass on these costs to consumers without losing much share (as high barriers to entry<sup>as the demand for petrol is relatively so刚性</sup>)<sup>so刚性</sup>. They were therefore only willing to supply less petrol at each and every price decreasing the supply of petrol in the NZ market from S to S<sub>1</sub>. This ~~more~~<sup>less</sup> offset any decrease in the demand for

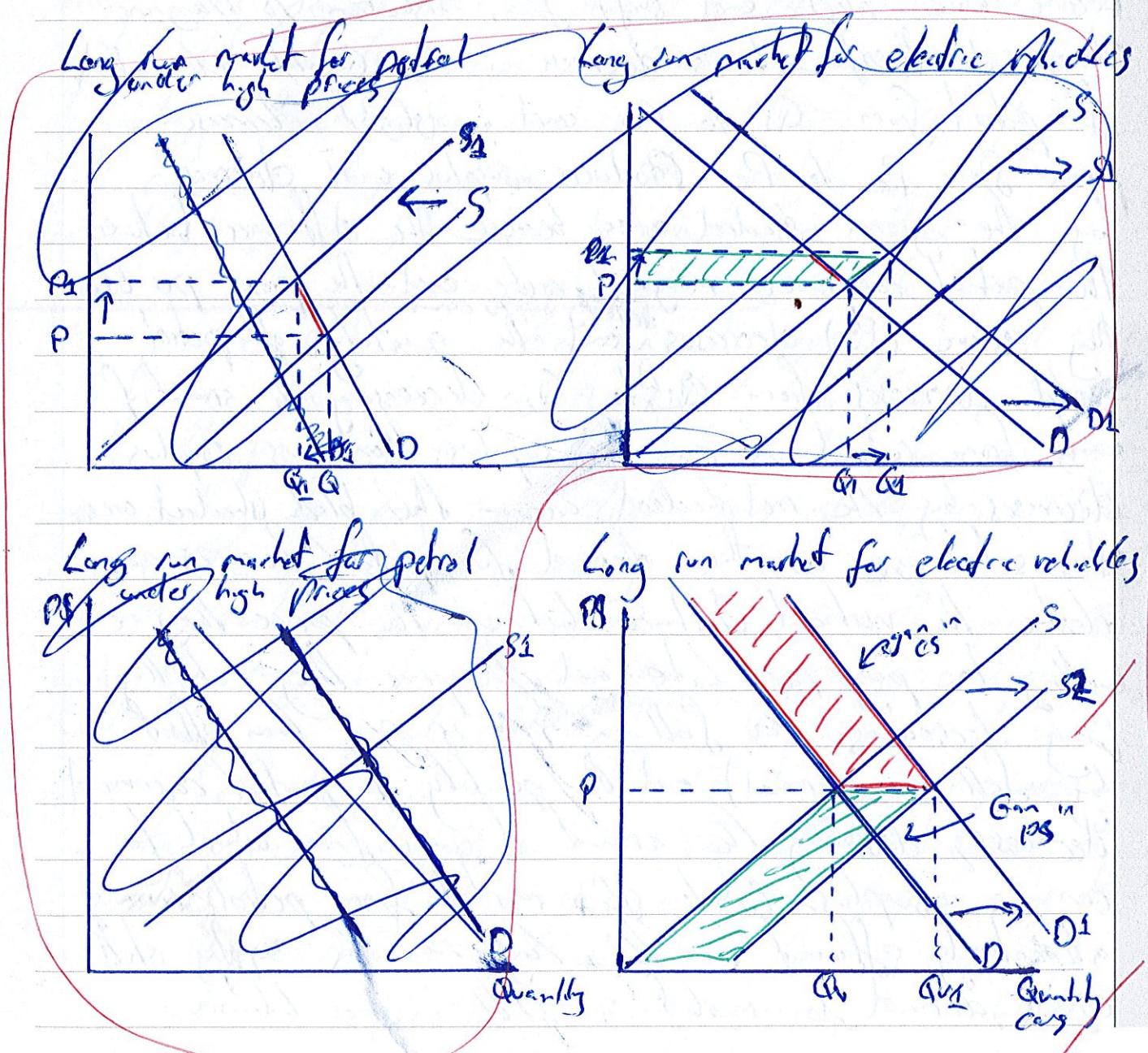
B. Market for Petrol in NZ for 2018



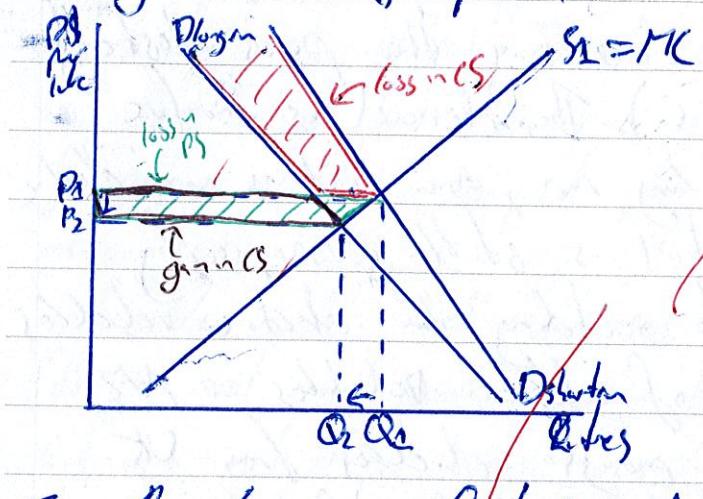
This decrease in the supply of petrol from  $S_1$  to  $S_2$  creates a shortage of petrol at the original equilibrium price,  $P_1$ , as  $Q_d > Q_s$ . Petrol consumers therefore bid up the price of petrol as they compete for the scarce supply. As the price rises  $Q_s$  increases as supplying petrol is now profitable and  $Q_d$  decreases as petrol is less affordable (though not by much since demand is inelastic). This continues until a new equilibrium is reached at  $Q_s^*$ ,  $P_2$  where Supply = demand. Therefore in 2018 the price rose from  $P_1$  to \$2.40 ( $P_2$ ).

Price elasticity of demand depends on whether the good is a necessity or a substitute and the availability of substitutes. In the short run the demand for petrol is very price inelastic, 0.2 (Resource C), this is because in the short run petrol is a necessity as ~~carrying~~<sup>most</sup> people depend on it as an essential part of ~~carrying~~<sup>most</sup> their lives i.e. they need it to get to work, school and so on, and there are very few substitutes because public transport is limited in NZ and few households have enough discretionary income available to go out and buy an electric vehicle - it is a large expenditure and needs years of saving extra income. Therefore in the short run the quantity demanded of petrol will not change responsiveness to changes in the price of petrol. In the long run consumers are able to change their consumption patterns more so while petrol is still a necessity there are more substitutes because <sup>note</sup> consumers are able to raise the funds to finance purchasing

an electric vehicle so consumers can switch from petrol to electricity. Therefore increasing the price elasticity of demand to 0.6 (Reserve C). The demand is therefore still inelastic even in the long run, even if it is more elastic than the short run, as petrol is still a necessity and there are still barriers to switching to electric vehicles like the limited availability of electric vehicles in NZ as it is difficult to import enough vehicles from UK and Japan and the limited availability of charging infrastructure in NZ.



## Long run market for petrol



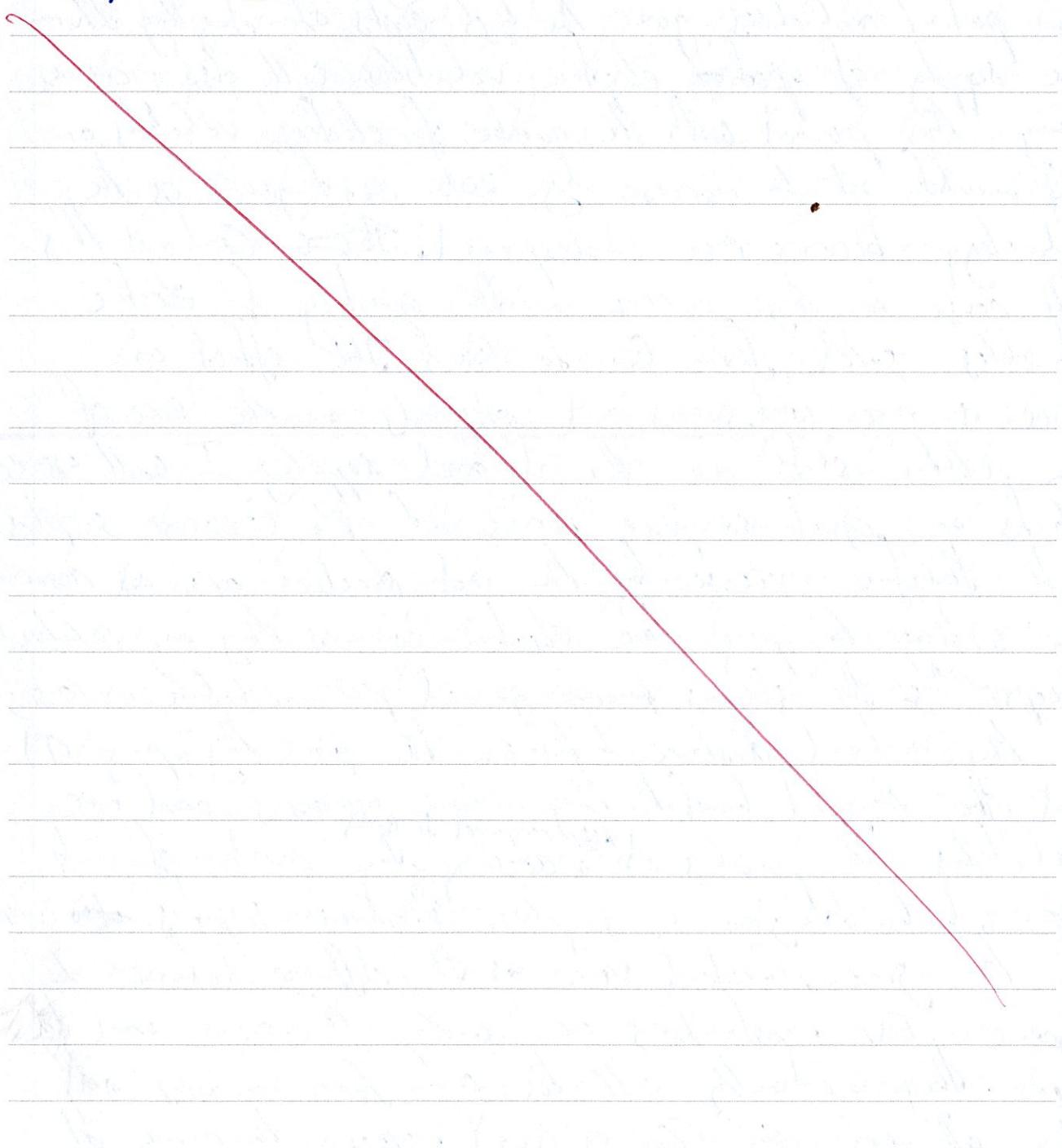
Note: demand becomes less elastic as price drops

In the long run of high petrol prices persist because as indicated by the supply of petrol remaining at the long run  $S_1$  demand will become more elastic and shift from  $D_{\text{short run}}$  to  $D_{\text{long run}}$ . There will therefore be a decrease in the quantity demanded of petrol from  $Q_1$  to  $Q_2$  and a slight decrease in price from  $P_1$  to  $P_2$ . Producer surplus will decrease by the green shaded area because the difference between the petrol companies marginal costs and the price per litre they receive ( $P_2$ ) decreases <sup>decreasing supply and increasing price</sup> and the quantity of petrol sold decreases from  $Q_1$  to  $Q_2$  decreasing the amount of units from which to earn a surplus. Consumers surplus decreases by the red shaded area - the black shaded area. This is because as their demand for petrol becomes more elastic the vertical distance between the price they are willing to pay per litre and the price they actually pay decreases (as fall in price is now has offset by fall in demand) and the quantity of petrol consumed decreases, decreasing the amount of units from which to earn a surplus. While the market from petrol remains allocatively efficient in the long run as supply still equals demand so market is still in equilibrium.

and the sum of CS and PS are still unchanged.  
 The sum of producer and consumer surplus does decrease so the net social welfare gained from the petrol market decreases. Society is effectively allocating less resource to the petrol market now following the price signal.

Possibly high petrol prices will cause an increase in the demand for electric vehicles from  $D_1$  to  $D_2$  as electric vehicles are now relatively cheaper compared to petrol vehicles given the high costs of fueling them. The supply of ~~petrol~~ electric vehicles will also increase during this period with the number of electric vehicles on the market set to increase by 20% next year as the technology becomes more widespread. Combined this will cause a large increase in the quantity of electric vehicles sold from  $Q_1$  to  $Q_2$ . The effect on price is not ambiguous and depends on the size of the relative shifts in demand and supply. It will assure shifts are equal so price remains at  $P_0$ . Consumer surplus will therefore increase by the red shaded area as consumers are willing to pay more electric car as they are relatively cheaper <sup>now</sup> so the surplus gained per vehicle increases as the vertical distance between the price they pay ( $P_1$ ) and the marginal benefit they receive increases and more vehicles are produced <sup>(the demand is greater)</sup>. The worth of utility from which to gain a supply. Producer surplus ~~also~~ increases by the green shaded area as the difference between the price EV manufacturers are willing to receive and the price they actually sell the car for increases and they sell one car ( $Q_1$  vs  $Q_2$ ) increasing the worth of

units from which to gain a surplus. While the EV market was allocatively efficient ~~now~~ before the change after the change because at both stages it was at equilibrium ( $D=S$ ) the sum of CS and PS is greater now so the gain in net social welfare from the EV market is greater. Society is efficiently allocating more resources to the EV market now following the price signals.





## QUESTION TWO: NATIONAL PARKS

Use information from Resources E to I, in the resource booklet, and your knowledge of micro-economics theory, to answer this question.

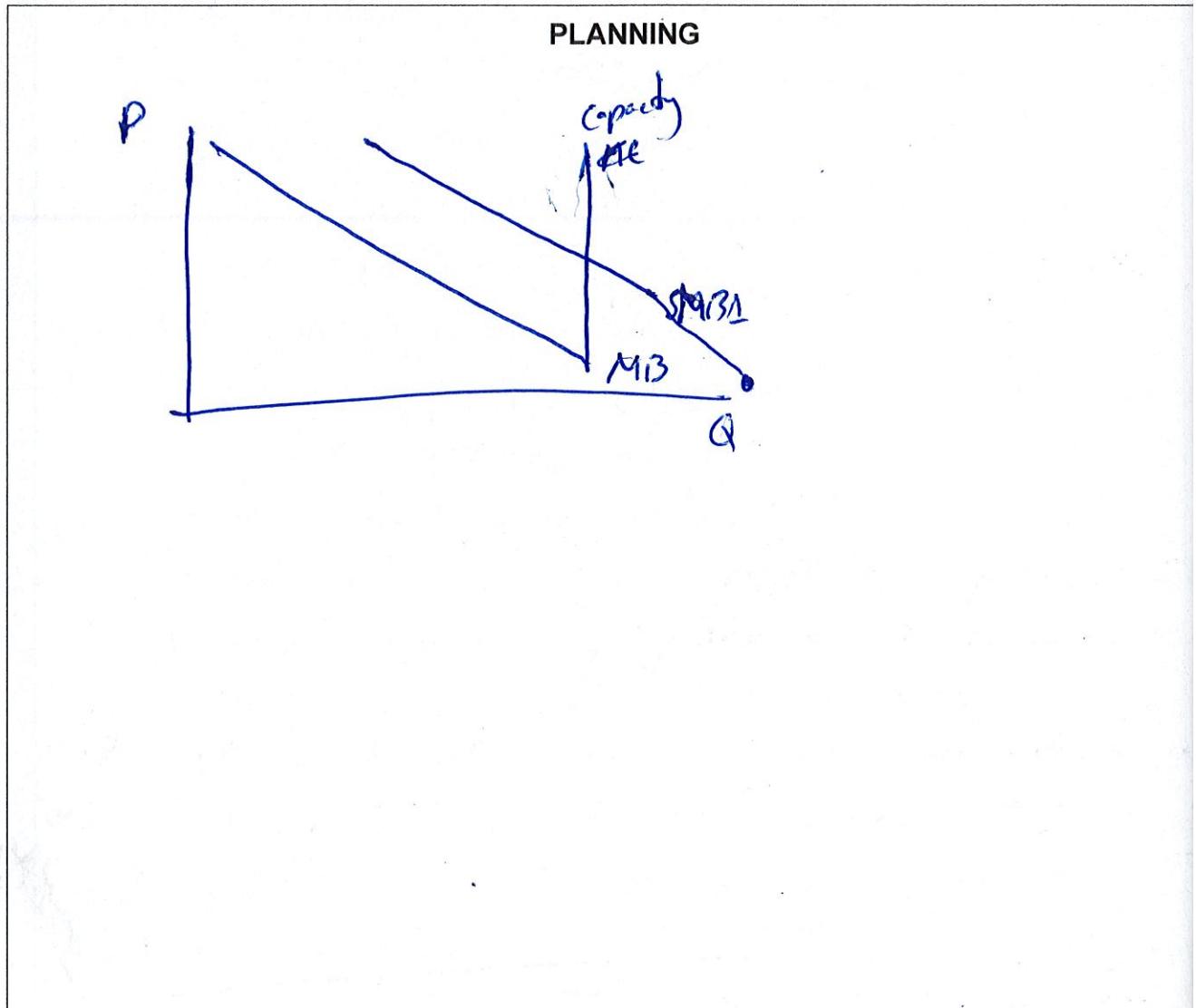
A rapid rise in visitor numbers to New Zealand has put pressure on the national parks' infrastructure, such as walking tracks.

Analyse the allocative efficiency of government provision of national parks during a period of rapid growth in visitor numbers. Evaluate economic policy options that could be used to ensure that the enjoyment gained from the experience of walking in the national parks is maintained. Make sure you appropriate economic models in your answer.

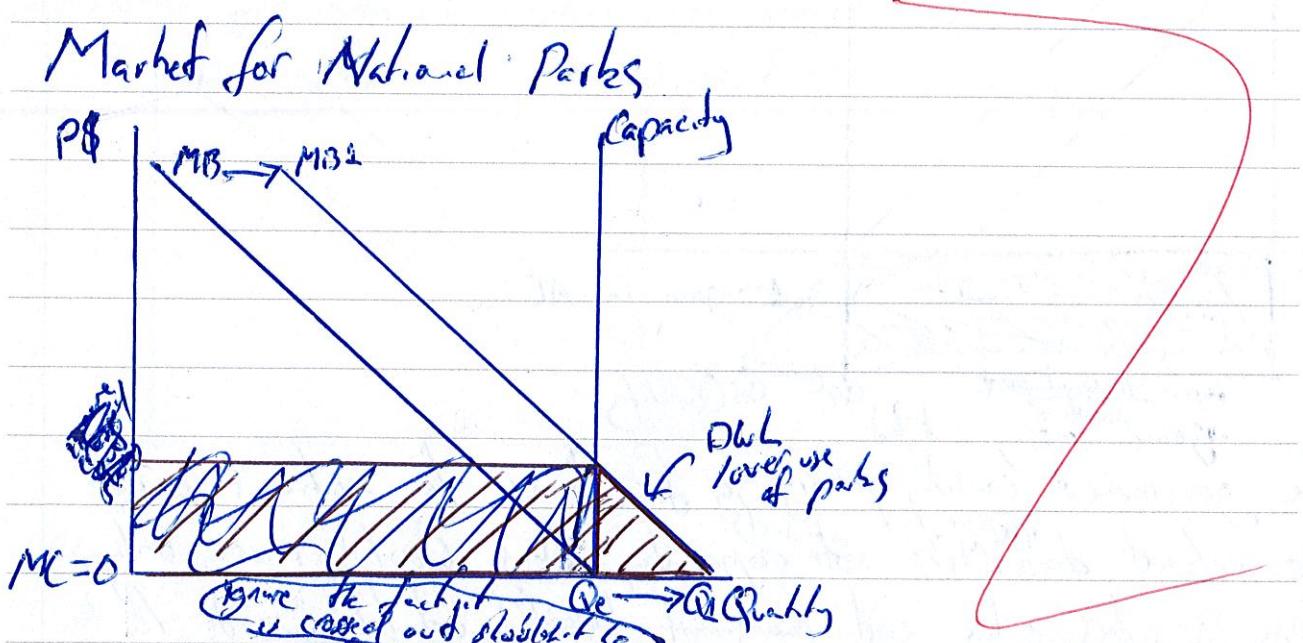
In your answer you should:

- explain why national parks are generally considered to be an example of a public good
- explain and illustrate how rapid visitor growth may result in the provision of national parks no longer being allocatively efficient
- analyse and evaluate three possible forms of government intervention in national parks to maintain visitor enjoyment, in terms of efficiency and equity.

Use this space for planning your essay. This plan will NOT be marked.



National parks can be considered an <sup>imper</sup> public good because they are non-excludable in pricing at the moment because users of national parks aren't restricted or separated by their willingness to pay to use the national parks. But public parks are too an excludable <sup>public</sup> goods since its use by some consumers does in some ways limit the parks availability to others as seen in Tongariro National Park where many visitors find the crossing is now too busy to be possible (Resource F). Generally however national parks would be considered as <sup>pure</sup> public goods because usually the use of national parks doesn't exceed their capacity so provided use is within capacity the use of the park by one person doesn't reduce its availability to others.

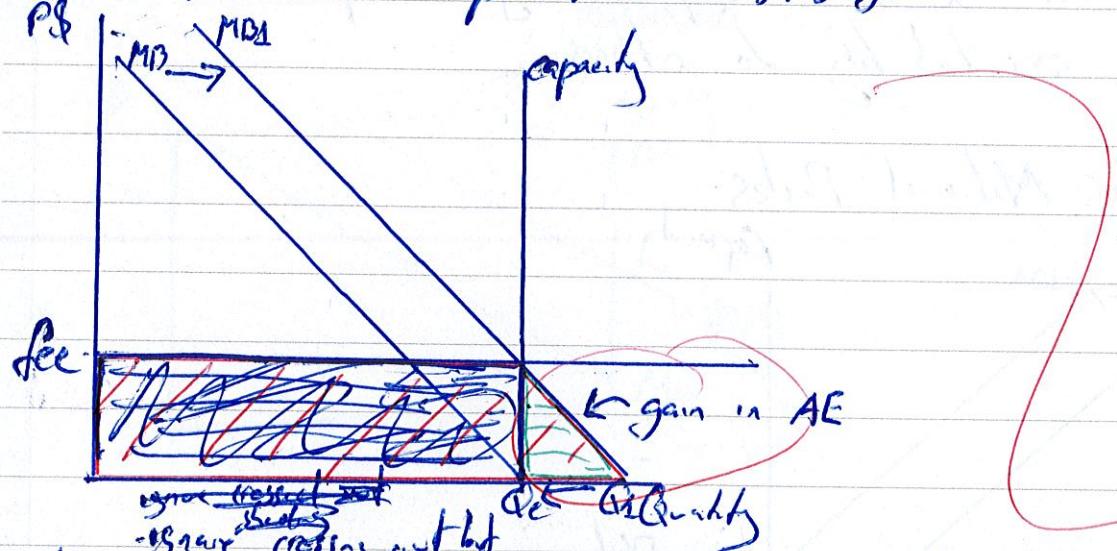


The market for national parks is allocatively efficient at the price of \$80<sup>cmi</sup>, which is the cost of using a public good.  $MB = MC$  or demand = the national parks capacity. However the increase in the demand for national parks from  $M1B$  to  $M2B$  due to additional tourists means that at the

"private market equilibrium"  $MB_1 = \$0$  at quantity of Natural Parks  $Q_2$  is  $>$  than the socially desirable and allocatively efficient ~~quantity~~ amount of  $Q_3$ ,  $Q_2$ . Natural parks are therefore currently over used causing a deadweight loss as shown by the black shaded area which are the net social welfare not reflected as it's opportunity cost for the natural parks which is being ruined by their overuse. The market for natural parks is ~~not~~ allocatively efficient.

To correct this market failure the government has a few interventions available to it.

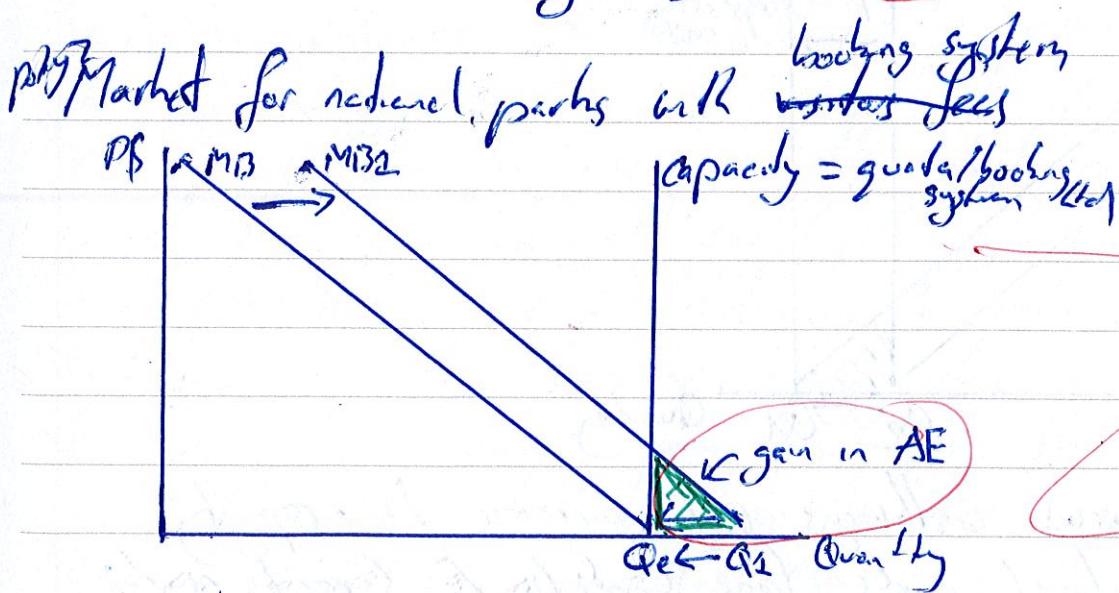
(d) Market for national parks with visitors fee.



The government could charge a fee to use the national parks equivalent to  $MB_2$  at capacity. This would mean only those visitors who get marginal benefit  $Marginal Benefit \geq$  to the fee would use the National parks. This would reduce the use of the parks from  $Q_1$  to  $Q_3$  therefore changing the DWL and increasing the total consumer surplus by the green shaded area. Since even though consumers loses the blue shaded area of CS as they have to pay for it.

~~They get the whole red shaded area of enjoyment as the park is no longer overcrowded. Therefore the market for natural parks is allocatively efficient under a booking system. However, efficiency is improved, but the market is not perfectly allocatively efficient.~~

While it could be argued that the membership is equitable as those who value the national park the most still get to go as they are willing to pay to see, however, this is unfair on poorer families who only value it less because the marginal utility of each dollar is higher to them as they have less money so experience less diminishing marginal utility. Therefore the membership is not very equitable. 2

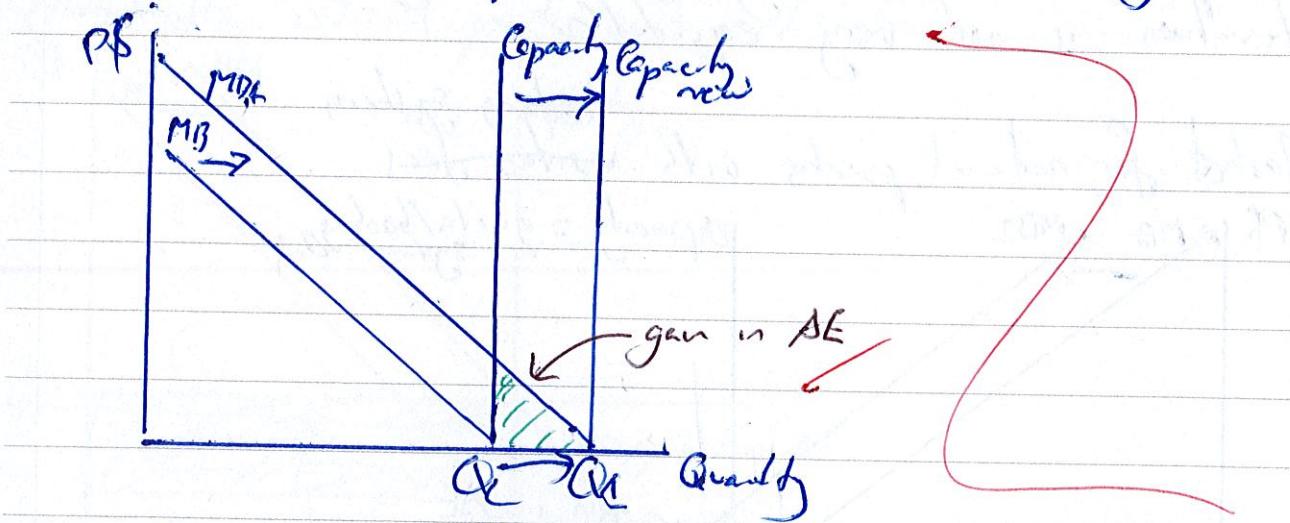


The booking system essentially acts as a quota limiting the supply of national parks to their capacity. The quantity of national parks used will therefore decrease from  $Q_d$  to  $Q_1$  as consumers won't be able to book  $> Q_1$  places. Therefore this will prevent the national parks from being over crowded, increasing the enjoyment for the  $Q_1$  amount of users who get to go.

The market for natural parks will therefore be allocatively efficient as  $MBA = \text{capacity}$ . Efficiency is improved.

From an equity standpoint it is equitable because those who want to see the parks the most will likely be the ones who take the measures to book early enough in advance. However it is inequitable because the ~~taxpayer~~, many of whom will have ~~no interest~~ in the natural parks will have to pay ~~the cost~~ for maintaining and setting up the booking system.

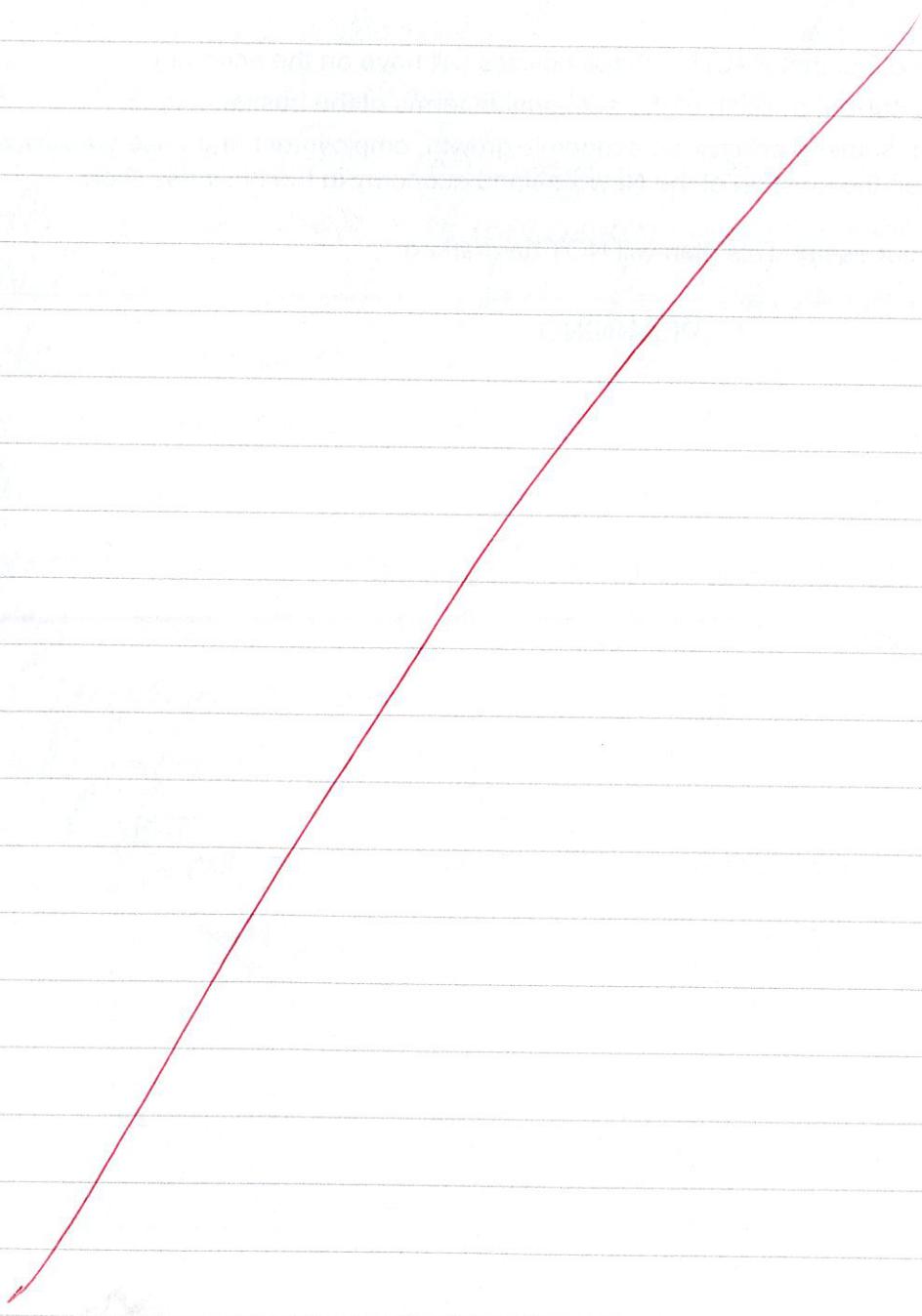
Q3) Market for natural parks if additional walkways are built



Building new walkways will increase the capacity of the natural parks from Capacity to Capacity new. This will mean that the parks are no longer overbooked so visiting for enjoyment once again is a gain in Allocative efficiency by the green shaded area. The method for natural parks is now again allocatively efficient so efficiency is improved.

Building more walkways improves equity because everyone who wants to use the paths can and there is no form of market discrimination against some users. However, it is also less efficient because the taxpayer's pay of taxes don't cover all of the paths, we'll have to pay the cost to set the walkways up.

Overall the government should choose the intervention of building the walkways. This is because it is the most equitable as there is no form of market discrimination against some users as no users are excluded (walking is a public good and it is the most efficient because while all three policies achieve allocative efficiency the total surplus is greatest for the walkways) as the rest people in Rely enjoy the paths. The fee policy is the least efficient because there is a loss of surplus enjoyment as the users have to pay a fee reducing the welfare difference between the price they are willing to pay (WOP) and the price they actually pay (Sa) and there is less surplus from which to gain a surplus in policy 1 and 2 since the market is panelling the species compared to QD in policy 3.



**QUESTION THREE: FISCAL STIMULUS AND THE NEW ZEALAND ECONOMY**

Use information from **Resources J and K**, in the resource booklet, and your knowledge of macro-economic theory to answer this question.

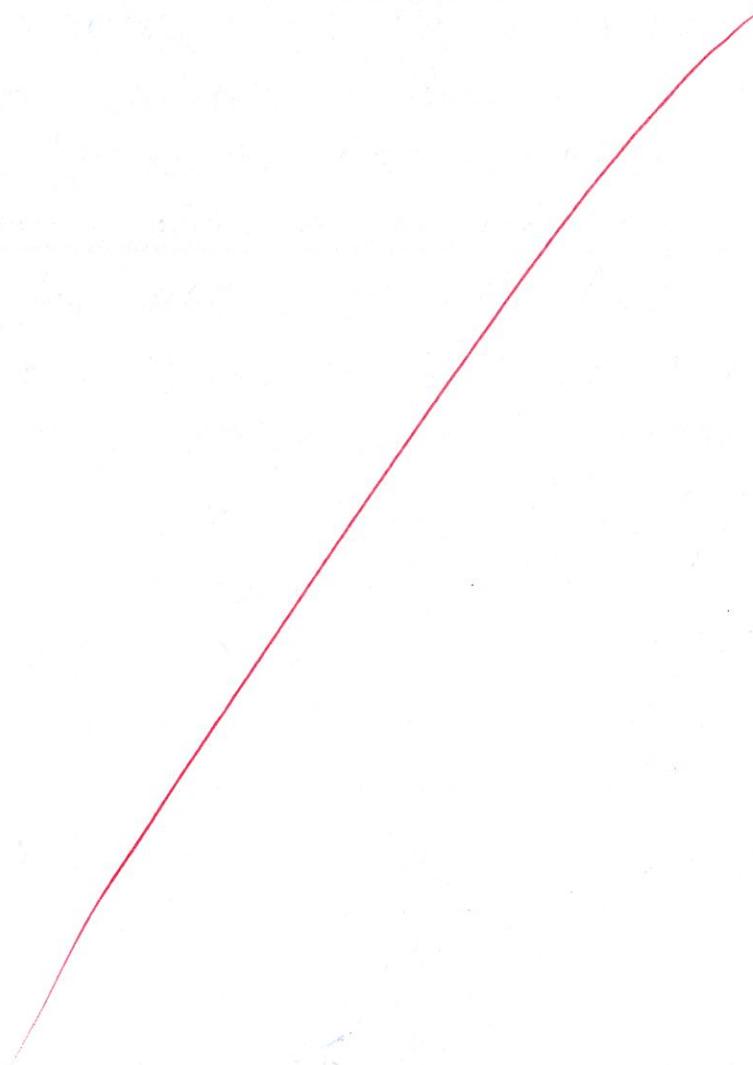
The government has introduced a number of new fiscal policies that will impact the New Zealand economy over the next few years.

Analyse the impact of these policies on the New Zealand economy and evaluate how the effect on economic growth, employment and price stability will depend on the position of the economy. Make sure you use appropriate economic models in your answer.

In your answer you should:

- analyse and explain the effect that EACH of these policies will have on the economy
- analyse and explain the current position of the economy in terms of the business cycle
- evaluate how the impact of these policies on economic growth, employment and price stability will be different depending on the position of the New Zealand economy in the business cycle.

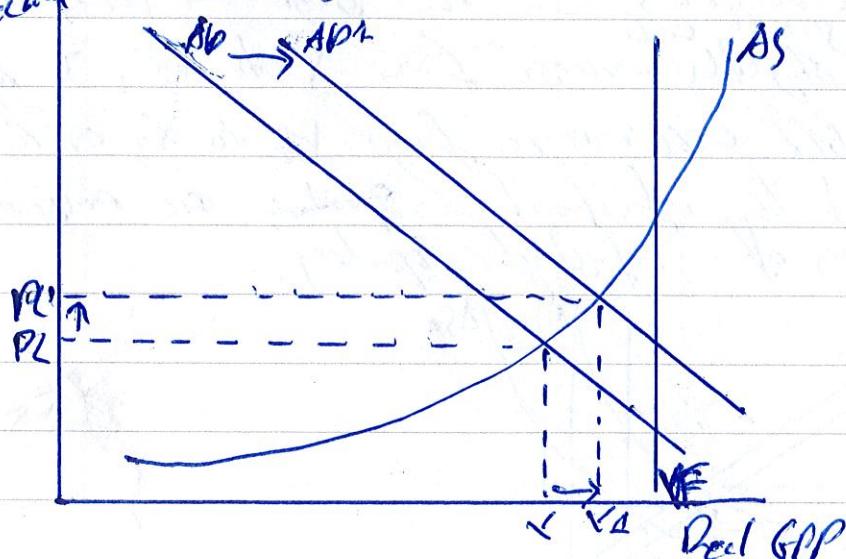
Use this space for planning your essay. This plan will NOT be marked.

**PLANNING**

The stimulus package will increase the disposable income of low income <sup>only</sup> households ( $\geq \$55,000$ ) by \$124 per week, Resource G. Since these households have limited income available to them they have a low marginal propensity to ~~spend~~ save so will immediately spend most of this government allowance on discretionary goods and services, increasing consumption in the economy. This will have a multiplier effect as ~~increased~~ this spending by the low income households will drags other increased incomes from the retailers and firms they bought from who in turn will therefore do more discretionary more and so on.

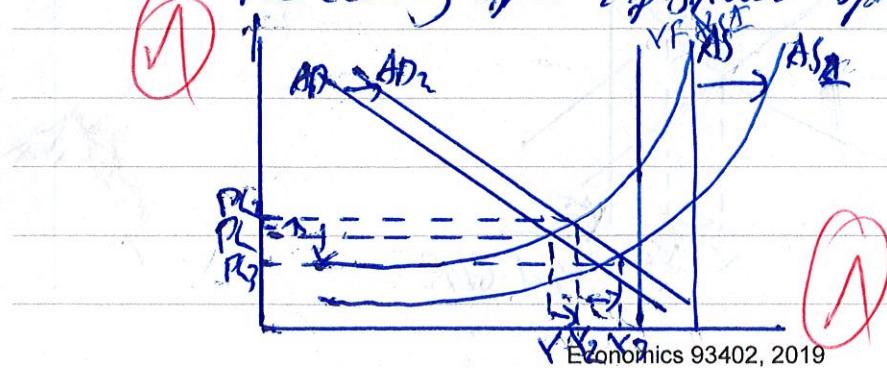
Net exports might fractionally decrease as some of this extra discretionary income is spent on imported goods and services but this will be more than offset by the increase in consumption spending so overall aggregate demand will increase from AD<sub>0</sub> to AD<sub>1</sub> increasing real GDP from Y<sub>0</sub> to Y<sub>1</sub>. Therefore raising the level of employment set as firms demand more labour to meet increased production and raising the price level from P<sub>L</sub><sup>0</sup> to P<sub>L</sub><sup>1</sup>.

Product N2 economy after the stimulus package:



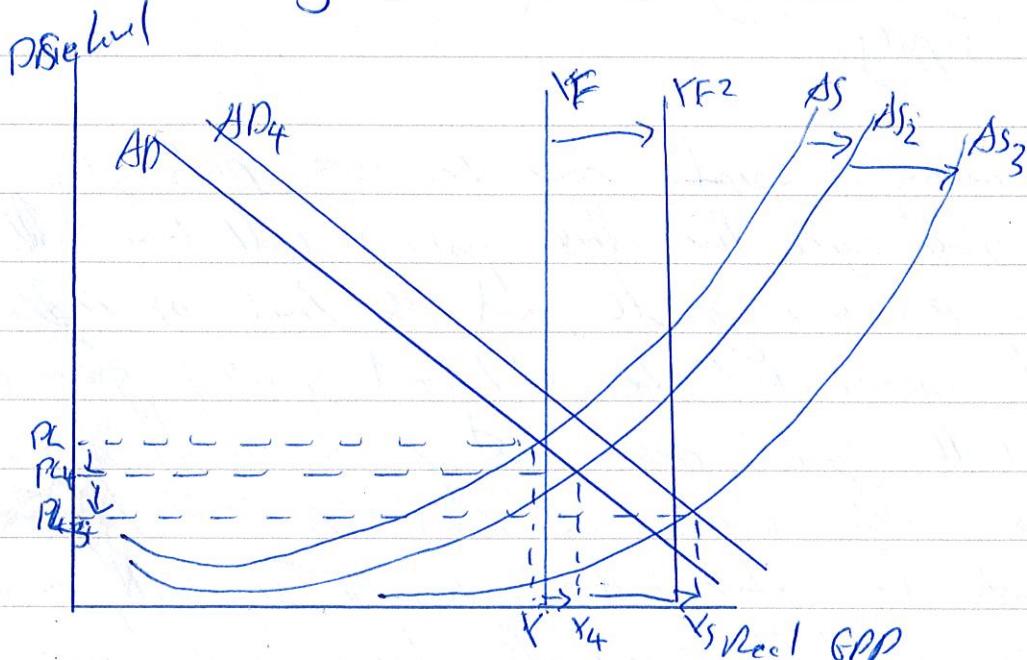
An additional \$400m infrastructure spending this year may go to \$1.1b over each year in 10 years time (Reserve 8).  
 Well in the short run we reduce government spending by the amount of the infrastructure spending. However this might not necessarily translate into an increase in AD as the construction sector is operating near capacity with limited availability of skilled workers and equipment. Therefore any government spending will just crowd out private sector spending by increasing the cost of resources for construction so less private sector contractors can afford to occur. Therefore aggregate demand will only slightly increase from  $AD_1$  to  $AD_2$ . In the long run once these projects are built it will increase the productive capacity of the economy <sup>from Y<sub>1</sub> to Y<sub>2</sub></sup>, particularly in the regions; as towns and rural farms and roads built, better increasing the availability of capital resources and therefore lowering the costs of production for firms and therefore increasing aggregate supply from  $AS_1$  to  $AS_2$ . In the short run the price level will increase from  $P_1$  to  $P_2$ . In the long run the price level will decrease from  $P_2$  to  $P_3$ . In the short run real GDP and therefore <sup>economic growth will</sup> only slightly increase from  $X_1$  to  $X_2$ . In the long run real GDP will increase from  $X_2$  to  $X_3$  as the capacity losses of the infrastructure spending are reduced.

NZ economy after infrastructure spending.



The Real D has credit of 12.5% will in the short run increase aggregate demand<sup>as firms pay less for</sup> therefore lowering their costs of production<sup>and production</sup> and increasing firm profitability so firms will produce more at each real price increasing AS from  $AS_1$  to  $AS_2$ . In the long run as the research benefits are realised and firms develop more productive and innovative<sup>and reducing costs from V to</sup> methods this will increase productivity<sup>and reducing costs of production</sup>, and further increasing AS from  $AS_2$  to  $AS_3$ . As more productive, welfare will also "boost wages" Reserve T increasing households income and hence increasing consumption and shifting AD from  $AD_1$  to  $AD_2$ . In the short run Real GPP will increase from  $V$  to  $V_4$  and the price level will drop from  $P_L$  to  $P_{L4}$ . In the long run as the productivity gains are realised Real GPP will further increase from  $V_4$  to  $V_5$  and the price level will further drop from  $P_{L4}$  to  $P_{L5}$  as the <sup>increase</sup> in AS will outweigh the gain in AD.

NZ economy after Real D has credit.



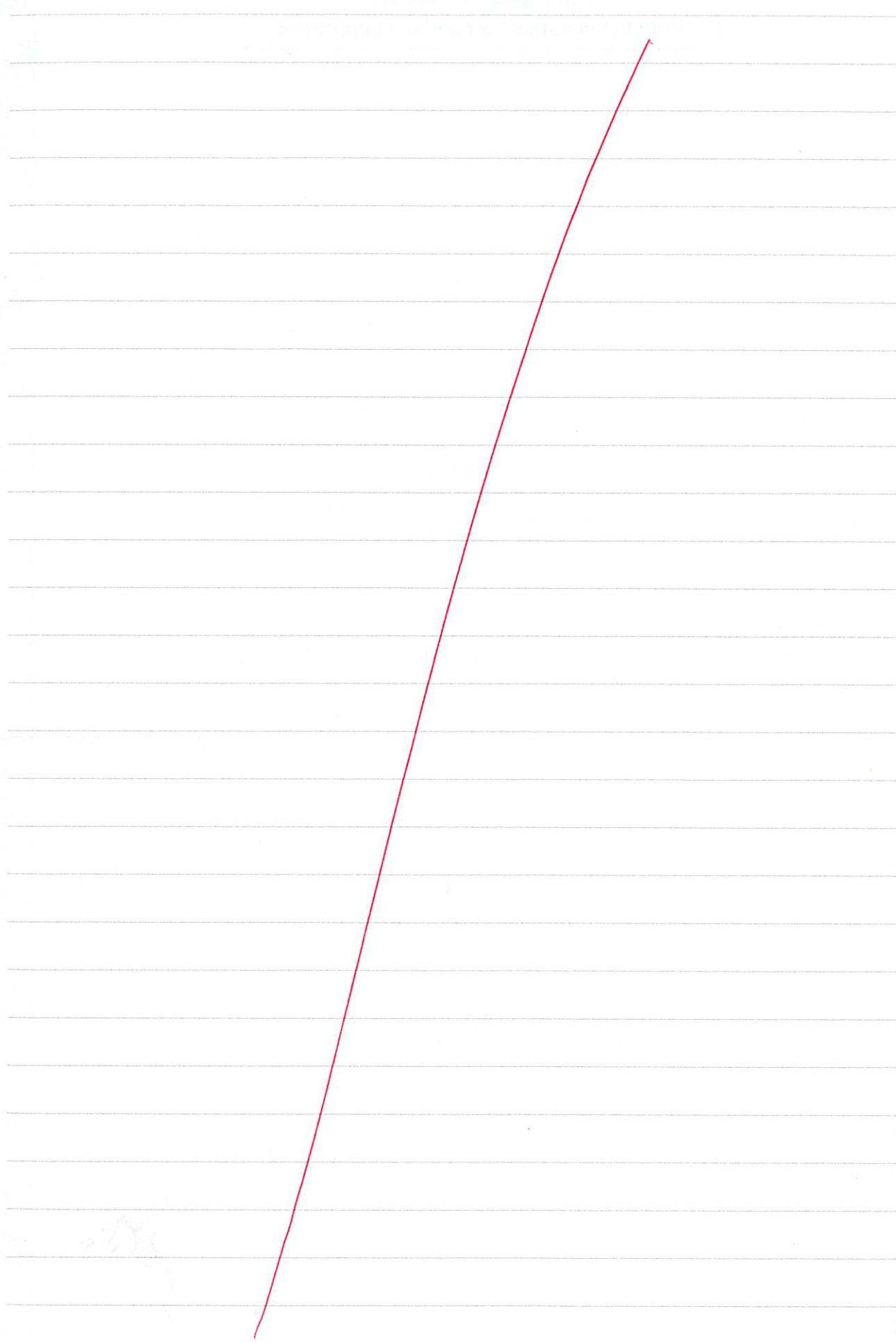
The NZ economy is currently in the ~~expansive boom~~ phase of the business cycle and is approaching the peak of the business cycle. This is because while Real GDP is forecast to increase over the coming years the rate of economic growth is forecast to slow from 3.4% in 2017 to 2.4% in 2021. At the same time the rate of inflation is predicted to rise from 1.6% in 2017 to 2.1% in 2021. This would indicate that while in the economy is going to continue to expand resources are going to become less available hence the falling rate of economic growth. Because the economy is approaching the point of full resource utilization there is increasing competition for resources which is putting an upward pressure on the price level. Eventually the economy will reach the point where it is beyond its sustainable resources limit and so no further growth can occur. This is seen in the low availability of construction resources and import controls on unregulated imports in the construction sector. All of these policies are examples of expansionary fiscal policy increasing aggregate demand and/or aggregate supply.

If the economy is operating near the boom peak phase of the business cycle then these policies will have little impact on economic growth and the level of employment as most resources will be utilised so this government spending will just crowd out private activity so there will be little increase in real GDP and little benefit for labor and employment. It will cause great price rises. If significantly driving up the price

level as he is even more press<sup>ur</sup> on cheaply  
scarce resources. And the sell or price level from  
the increase in productive capacity the last has  
Volcanic world wide not happen until the  
easy for so world be little help now.)

If the economy were at a recovery/birth stage  
of the business cycle then the policies would cause  
a large increase in income growth and employment  
and general inflation-right on help rock inflation  
to 1-2% target range so help price stability of  
the world be significant rebalancing of resources  
in the economy so plenty of idle capacity will  
what to carry out the spending.)

The government should only do the policies of  
economy in not a boom/bust phase of business  
cycle. //



## Outstanding Scholarship Exemplar 2019

<b>Subject</b>	Economics		<b>Standard</b>	93402	<b>Total score</b>	20
<b>Q</b>	<b>Grade score</b>	<b>Annotation</b>				
1	08	<p>This answer presented an economically literate and sophisticated analysis. For instance:</p> <p>On pages 3–4, the candidate gave logical and concise discussion of multiple causes of the decrease in supply for petrol, synthesising resource material. There was some integration of economic theory (e.g. inelastic demand curve into graph and market forces into explanation).</p> <p>On pages 4–5 there was perceptive discussion of availability of substitutes for petrol in both the short and long run. Discussion of both financial and supply barriers to switching to a substitute EV showed insight.</p> <p>The graphs on pages 5–6 clearly illustrated the change to PS and CS, rather than just identifying new CS and PS. The change in elasticity of demand curve was also integrated and its impact on CS and PS justified using changes to price and quantity. This provided a sophisticated economic analysis, however the shift in demand should also have been discussed.</p> <p>On page 7, the candidate's EV market analysis included impact of both an increase in demand and in supply, and perceptively concluded that the resulting impact on price, and thus CS, was dependent on the relative shifts. Overall this answer earned a grade score of 8 as it was convincing, contains sophisticated analysis and demonstrated perception and insight.</p>				
2	07	<p>This candidate produced a relatively sophisticated economic analysis of the impact of increasing visitor numbers on national parks as a public good, and government interventions to address capacity issues.</p> <p>For example:</p> <p>On page 11, the candidate explained why national parks might be considered an example of an impure public good, but also highlighted why in general they were likely to be a pure public good. The candidate correctly illustrated and explained the issue of growing demand for visiting national parks, including shifting the MB curve to the right and identifying the area of deadweight loss</p> <p>The candidate, on page 12, correctly identified and illustrated the effect of a fee charged in national parks, incorporating the concept of utility and explaining how allocative efficiency was achieved</p> <p>On page 13, the candidate explained clearly why a fee on national park entry might be seen as inequitable. They correctly identified and explained the effect of a booking system in national parks in achieving allocative efficiency</p> <p>On page 14, the candidate provided a competent explanation of why a booking system could be seen as both equitable and inequitable. They correctly identified and explained the impact of expanding walkways and so forth in national parks.</p> <p>The candidate, on page 15, provided a brief but accurate explanation of why expanding walkways could be seen as both equitable or inequitable</p> <p>A justified conclusion was provided, contrasting the three policies.</p> <p>This answer could have been improved by providing more in-depth explanation throughout, although overall it provided very good coverage of the key points required.</p>				
3	05	<p>The candidate effectively communicated a sophisticated economic analysis of fiscal stimulus and the New Zealand economy. Most of the requirements of the question were fulfilled, however some major discussion points were incomplete and the evaluation was inadequate.</p>				

		<p>On pages 19–21, the candidate’s analysis of the fiscal policies and their impact on the economy integrated the AD / AS model effectively. Appropriate references were made to the resources supplied. The candidate could have provided a more detailed explanation of how the fiscal policies impacted on Aggregate Demand and Aggregate Supply. Initial impacts on Consumption and Government Spending were explained. The opportunity to use the multiplier effect to explain further rounds of Consumption and Investment was missed. The link between investment in Research and Development and increasing Aggregate Demand could have also been included.</p> <p>On page 22, an explanation of the position of the economy in relation to the business cycle was provided. This explanation referred to trends identified in the resource data. The candidate could have added more detail about how this data was interrelated, how trends impact on the current position and how time lags impact on the signals that the data was indicating. This additional consideration might have resulted in the candidate identifying a different position on the business cycle.</p> <p>On pages 22–23, the candidate’s evaluation of the impacts of these policies on economic growth, employment and price stability, relative to the position of the New Zealand economy in the business cycle, was succinct. The candidate could have enhanced the evaluation by comprehensively covering all three policies rather than discussing policies in general. No overall conclusion relating to the effectiveness of the policies, given New Zealand’s current position, was made.</p>
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