

93402



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SUPERVISOR'S USE ONLY

SCHOLARSHIP EXEMPLAR



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	
TOTAL	

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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

1) Market changes
 — oil prices ↑ (A)
 — fuel tax (A)
 — depreciation (A)

2) PED

A) inelastic (C)

B) short vs long term

0.2 vs 0.6 (C)

can switch, make lifestyle changes
 (to EV) (D)

3) High price long term

A) Petrol

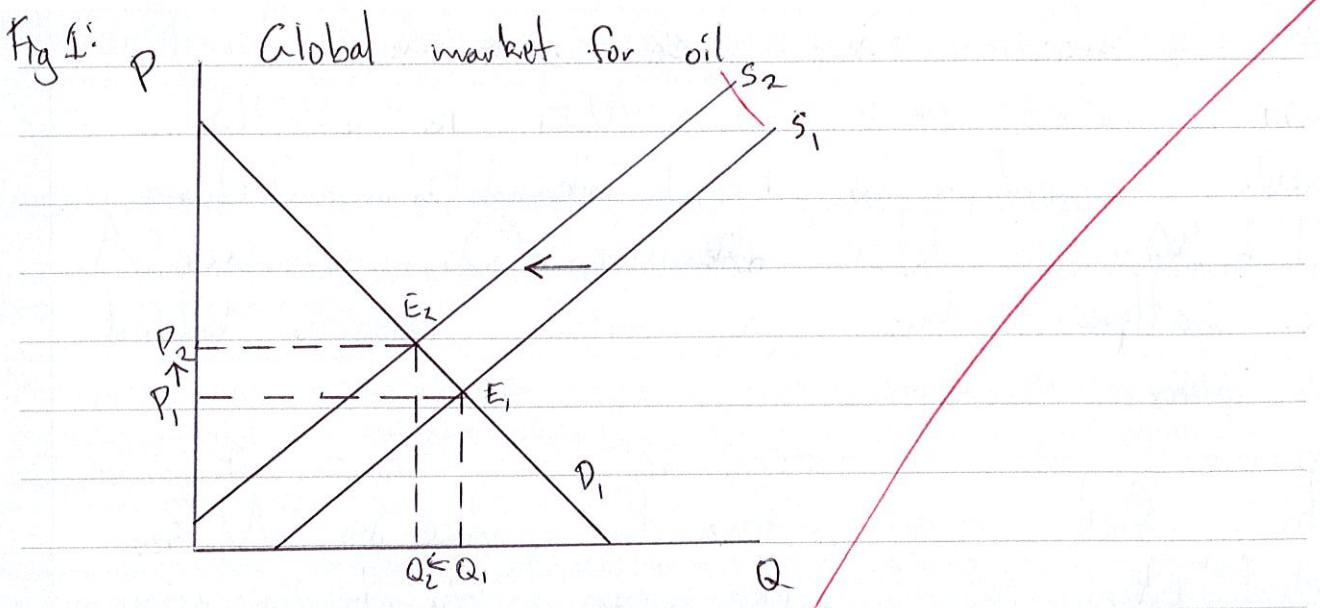
— Oligopoly

B) EV

Substitute, R+D, infrastructure (B) (D) Importing
 ↑ speed

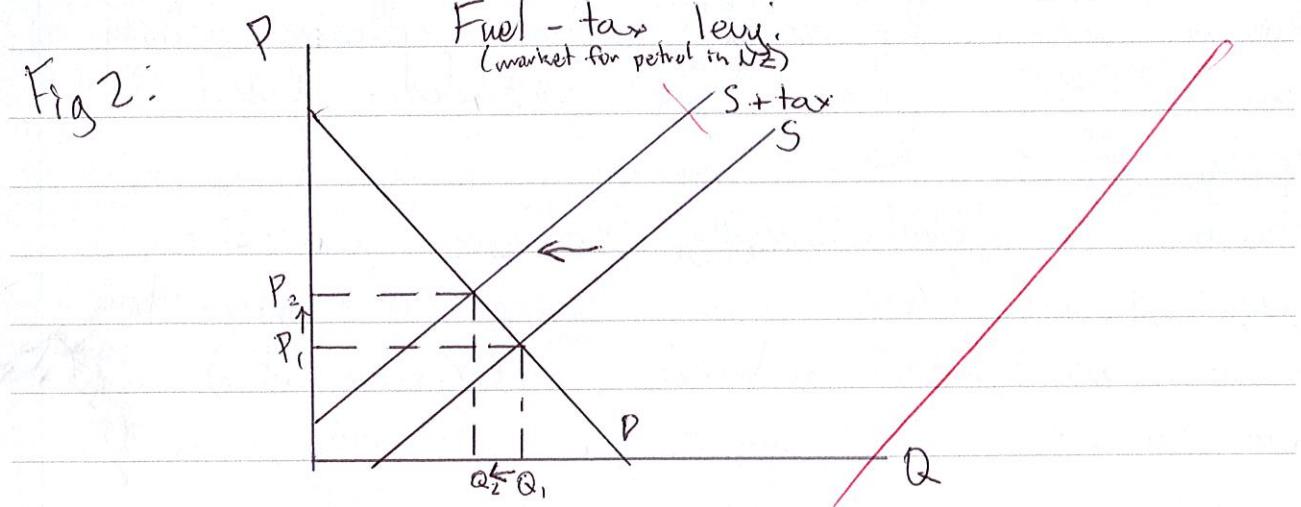
It is clear from resources A and B that petrol prices in NZ in 2018 had "surged to fresh heights," "hitting \$2.40 per litre" (Source A). Source A also outlines the 3 main reasons behind this price increase.

The first reason for the rise in NZ petrol prices is "a rise in oil prices on the international market." Globally, oil reserves are being depleted — as oil is not a renewable resource the long-term supply of oil is decreasing. Additionally, much of the world's oil is ~~from~~ sourced from the Middle East, ~~which~~ where there has been political and economic instability largely due to A) Donald Trump's unpredictable foreign policy, B) The war in Yemen which is home to many large oil reserves and C) An escalation of Iran-Saudi tensions, with Iran stealing a British oil tanker in 2019. There is also the possibility that collusive activity from OPEC nations have restricted global supply. All of these changes cause a decrease in global supply, shown on the graph below: (And have cause oil prices to rise to US \$85 a barrel (Resource B))



This graph shows a decrease in supply from S_1 to S_2 shifting the market equilibrium from P_1, Q_1 to P_2, Q_2 , decreasing quantity traded and increasing the price of oil. As oil is a key ingredient in petrol, higher prices mean a ~~reduced~~ similar contraction in the supply curve for petrol in NZ will have been seen in 2018.

Secondly, an increase in the nationwide fuel-tax ~~levy~~ levy has reduced supply of petrol as well. This can be shown on the graph below:



The tax increases the cost of producing and selling petrol, so suppliers can't afford to supply as much petrol for the same amount of money. Hence, supply decrease and the price of petrol rises.

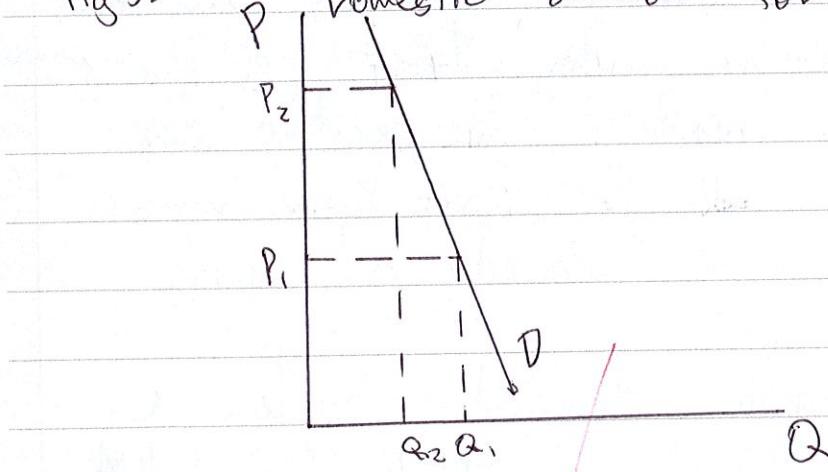
Finally, "the depreciation of the New Zealand dollar" has increased the relative price of imports. As we import almost all of our oil/petrol from overseas, this has reduced the amount of international oil/petrol ~~we can purchase with~~ petrol retailers in NZ can purchase with the same amount of money. This is particularly important given the government's decision to ban all oil extraction in New Zealand in the future, ~~therefore~~ ~~our reliance on imported oil and petrol.~~ ~~This was~~ A depreciation of the NZ dollar also reduces domestic supply of petrol as shown in Fig. 2. Overall, then, the price of petrol has risen to \$2.40 per litre and could potentially reach \$3 per litre ~~(Resource A)~~ due to all 3 of these reasons causing a decrease in domestic oil supply.

Petrol has inelastic demand. Source C states that its short-run PED (Price elasticity of demand) is only 0.2, which means for every 1% the ~~oil~~ petrol price rises, consumers only decrease their quantity of

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petrol demanded by 0.2%. This is because petrol to many people is a necessity. People Consumers who live far away from their workplace often have to drive to work as there are no substitutes for car transport like buses or trains that run in their area. Even where there are, often these journeys are much longer, so consumers would ~~be~~ almost always prefer to drive as it is more efficient and convenient. Additionally, cars are much more flexible, and allow consumers to go whenever they want, whenever they want in a way that walking, cycling or taking public transport doesn't. All of this means that petrol has no close substitutes and is a necessity good for many consumers. As it is inelastic, its demand curve ~~is~~ has a large slope as shown below.

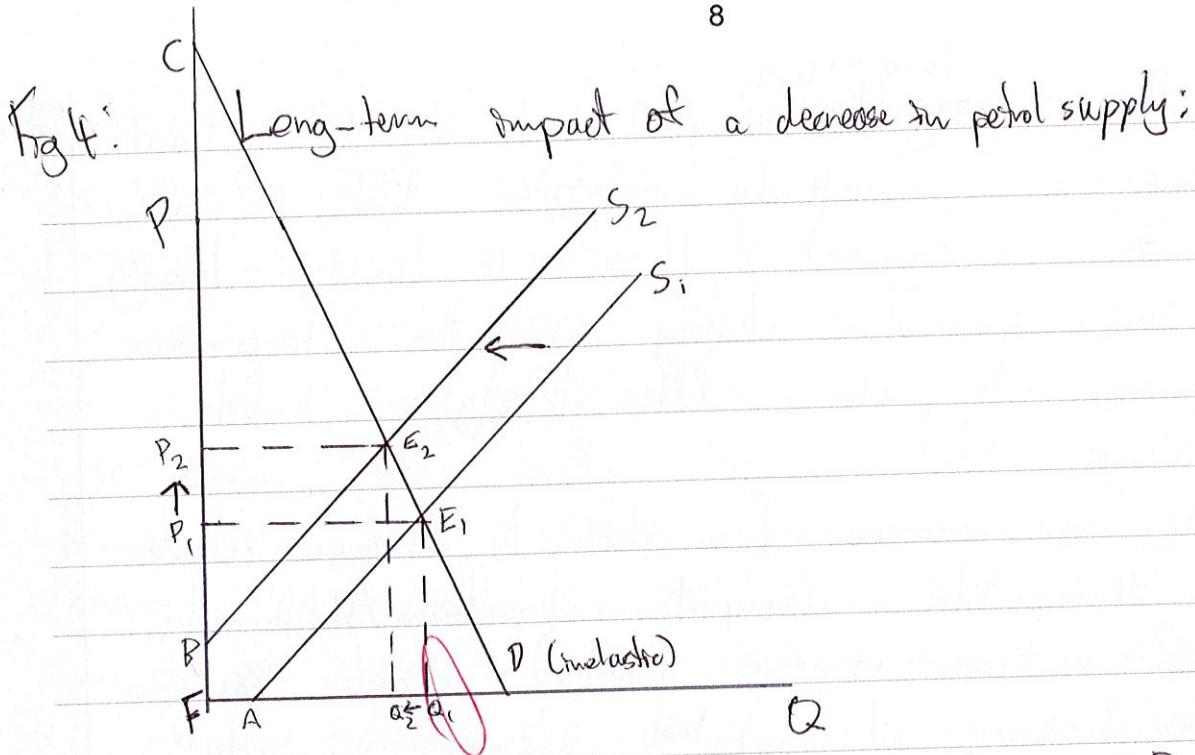
Fig 3: Domestic demand for oil:



This means a large increase in price from P_1 to P_2 will only decrease ^{equilibrium} quantity demanded from Q_1 to Q_2 .

In the ~~long term~~, resource C shows that petrol has a relatively higher PED of 0.6 (longer than 1 year). This is likely largely due to an increased ability in the long-run for consumers to change their lifestyle habits. They may find a job closer to where they live, or ~~drive~~ be able to arrange regular carpooling to public transport networks. Additionally, as ~~the~~ electric vehicles (EVs) become ~~more~~ more affordable "across all market segments in 2019," consumers may buy an EV instead of a petrol car ~~where~~ or if oil prices constantly rise. These all cause PED to rise, but note that 0.6 is still ~~relatively~~ inelastic, as it is still difficult for consumers to switch.

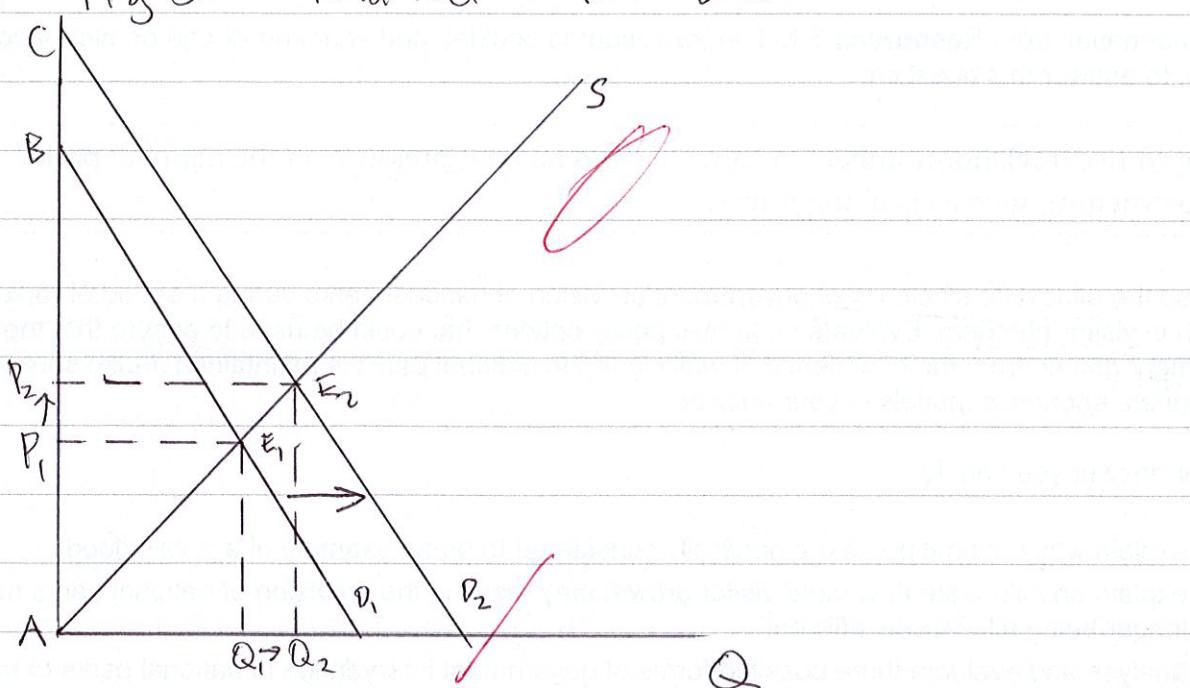
A persistently high price of petrol is fairly likely given the decreasing global oil supply in the long-term and the fact that the domestic fuel-tax levy ~~does~~ is not being planned to be repealed ~~any~~ in the near future. Its impact on the petrol market can be shown on the graph below. 4



Consumer surplus would decrease from CP_1E_1 to CP_2E_2 and producer surplus would decrease from AFP_1E_1 to BP_2E_2 . Allocative efficiency, however, would still be achieved as there is no deadweight loss and the equilibrium merely shifts. However, it can be argued that as some of this decrease in supply is due to the fuel-tax levy, then that would cause a deadweight loss, decreasing allocative efficiency. (It wouldn't be achieved). It is also worth noting here that petrol suppliers operate within an oligopolistic market structure and are interdependent, so the demand curve could be ~~sloped~~ 'kinked' as well.

As resource C states, "oil's price surge could turbo-charge demand" for EVs. This is because EVs are a substitute good. Resource D is clear in showing that many NZers are considering switching already, with 84% "agreed that EVs are the "way of the future." This is shown below:

Fig 5: Market for EVs:



The rise in petrol prices would cause an increase in demand for EVs from D_1 to D_2 , shifting market equilibrium from E_1 (P_1, Q_1) to E_2 (P_2, Q_2). This would increase consumer surplus from $P_1 E_1 B$ to $P_2 E_2 C$, and increase producer surplus from $A P_1 E_1$ to $A P_2 E_2$. However, this would also increase the equilibrium price to P_2 so although allocative efficiency will be achieved, ~~as many~~ consumers may be shut out of the market, particularly those with lower incomes (raising equity concerns). However, this could be offset by an increase in supply of EVs caused by technological innovation, although this may be limited by the ability of companies to import "enough second-hand vehicles from Japan and the UK". Additionally, the size of the increase in demand (and subsequently consumer + producer surplus) would depend on how fast progress is made on the "infrastructure needed" to support EVs, and how confident consumers are in making the switch.

QUESTION TWO: NATIONAL PARKS

Use information from **Resources E to I**, in the resource booklet, and your knowledge of micro-economic 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 use 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.

PLANNING

1) Public good
 E A

2) Rapid growth → allocative efficiency

3) Intervention
 A) Fee

Efficiency

B) Booking

Equity

C) More walkways

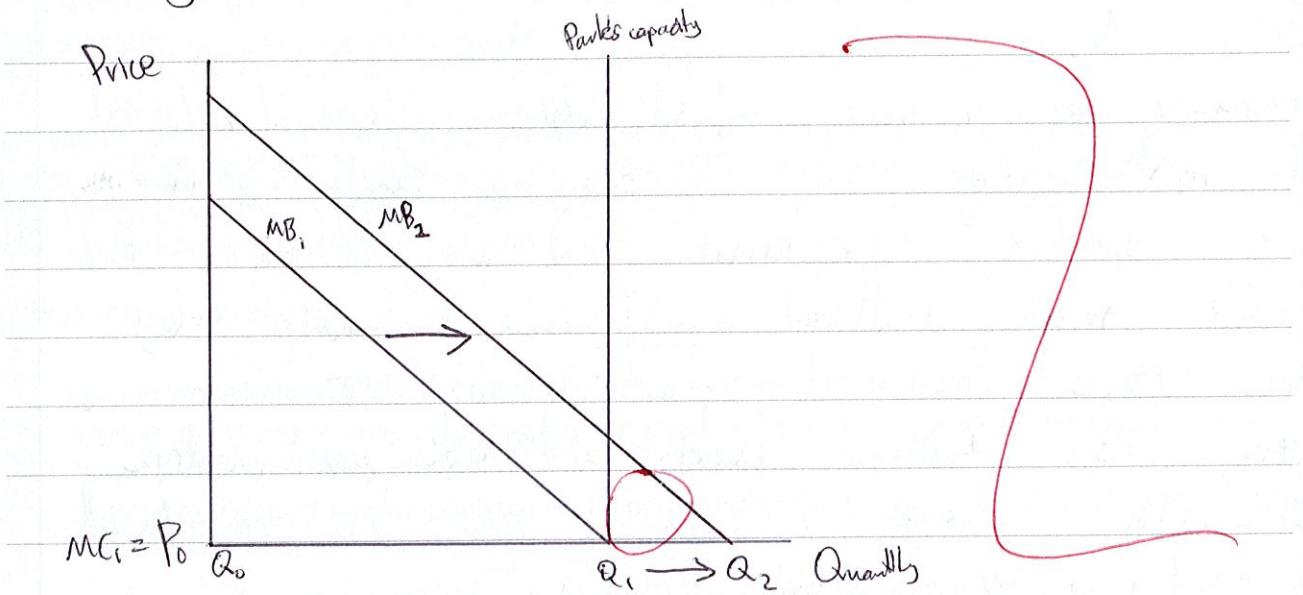
National parks are generally considered to be a public good as they are not excludable by price and (mostly) non-rival in consumption.

~~Entry to a national park is free, so any consumer can "see what New Zealand looked like thousands of years ago, both natural and unspoiled" (resource E)~~ regardless of their disposable income. Hence it is non-excludable by price. For the most part, one consumer using the national park does not stop another from doing so, so it can be considered non-rival in consumption. However, resource F describes how "overcrowding on the track has become a major ~~except~~ complaint among tourists", so while entry to the park is non-rival, full enjoyment of it may be, suggesting that perhaps a national park such as Tongariro is an ~~imperfe~~ public good as described in resource A. In any case, national parks must be directly provided by the government, as otherwise the free market would fail to supply them as there is no profit to be made.

Rapid visitor growth such as the 125000 ~~visitors~~ visitors to Tongariro National Park in 2015 described in resource F can be thought of economically as an increase in visitor demand, which corresponds to an increase in the MB curve shown in

resource I). This is shown below:

Fig 6: Increase in visitor demand for national parks

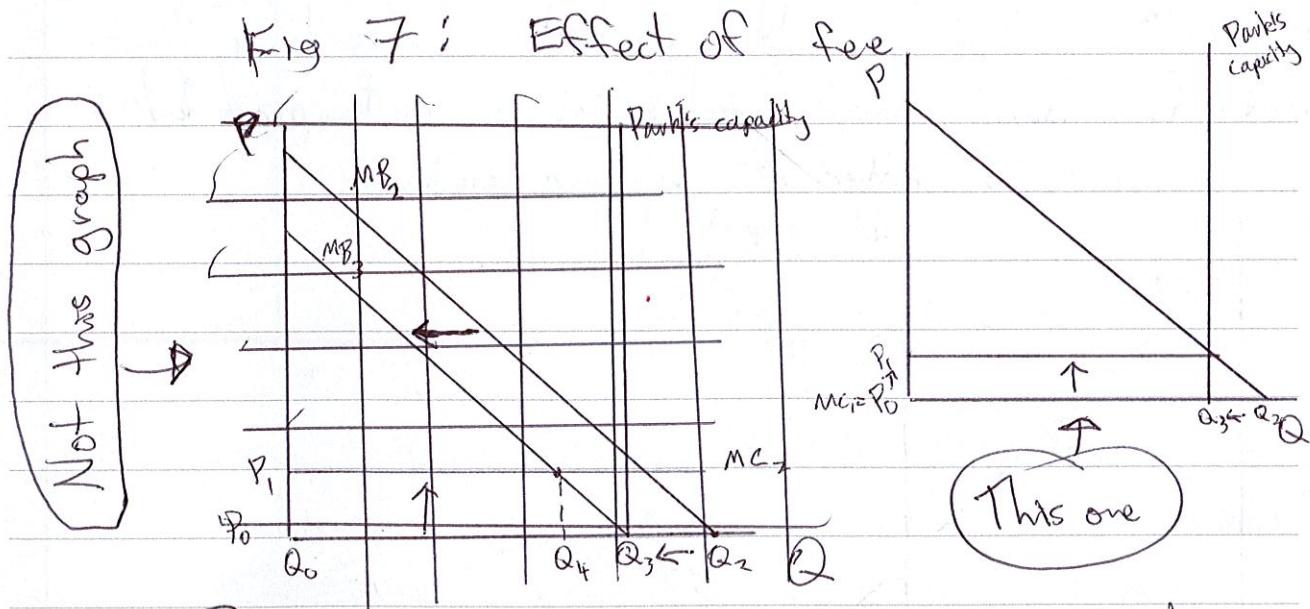


Initially, demand was MB_1 , and allocative efficiency was achieved as $MB = MC(0)$ at the market equilibrium at $P_0 Q_1$. The increase in visitor numbers causes an increase in the MB curve to MB_2 , and the new market equilibrium is at $P_0 Q_2$, above the Park's capacity. This is not allocatively efficient for a few reasons. Firstly, there may be externalities caused by the excess of tourists.— perhaps they disrupt wildlife or make the tracks too muddy. Secondly, In this case, marginal private benefit would exceed marginal social benefit. Secondly, the excess of visitors may decrease the marginal benefit that every visitor receives from visiting the park as they cannot achieve their desired "wildlife experience" described in resource F. However, due to information failure, consumers do not know this.

before they enter the park, it may not affect the MB_2 curve to shift it back to the allocatively efficient position of MB_1 . 2

Resource H identifies 3 possible forms of government intervention, that could improve the situation. The first is to "charge visitors a fee to use the most popular walkways." This fee would dissuade some visitors, so the ~~MC~~^(+ increase cost) curve would shift back to the allocatively efficient position as shown below:

Fig 7: Effect of fee

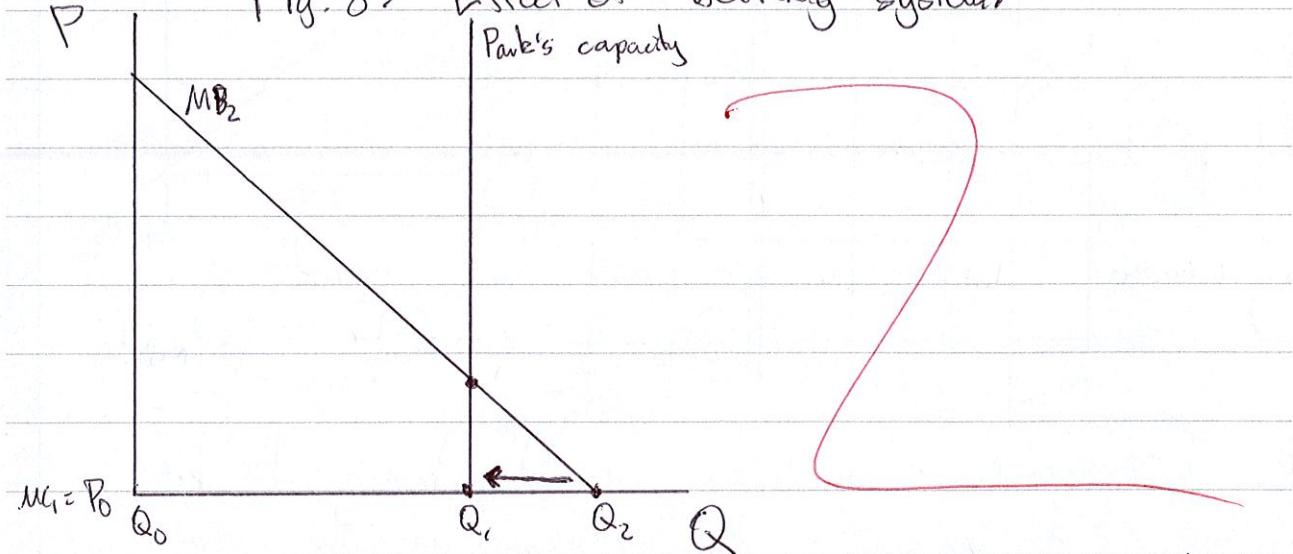


Economic analysis would have to be undertaken to ensure the fee was the right size so it didn't ~~decrease~~^{increase MC} demand too much or too little, but if successful, this fee would restore allocative efficiency as equilibrium would become P_1 , Q_3 . However, this policy approach would not be equitable as it excludes consumers who have less of an ability to pay from using the park. This means

that those with lower incomes, both domestic and international, are less likely to be able to receive the benefits of seeing the parkes than those with higher incomes. It would also make the park excludable by putting, making it more of an impure public good, or even a private good as discussed in Resource A instead of a public good.

The second possible invention would be to "create a booking system to limit the number of walkovers." This would restrict access to a "first-come, first-served" basis, and is shown on the graph below:

Fig. 8: Effect of booking system:

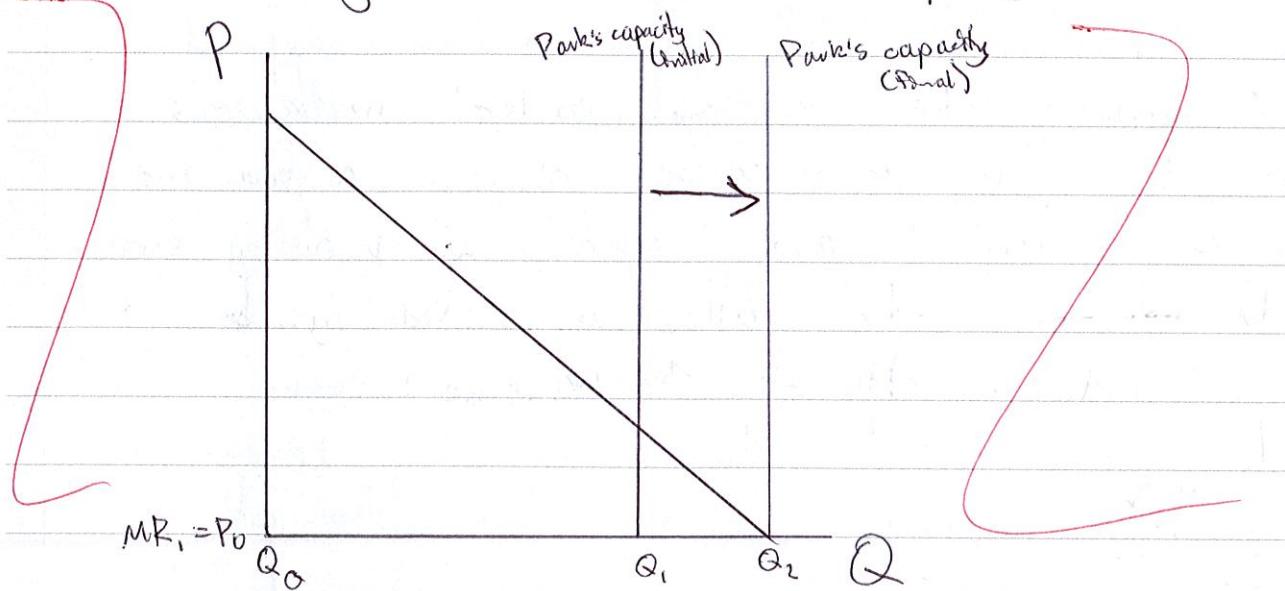


Here, equilibrium shifts back to $P_0 Q_1$, without any impact on equity as anyone has the ability to book online regardless of their income or means. However, allocative efficiency isn't achieved as $MB \neq MC$ at equilibrium, so consumer surplus isn't maximised. ~~However~~ Nevertheless, those consumers who do manage to gain a successful

bookings receive a higher marginal benefit from visiting the park, and those who don't can always try again in the next season.

The final possible intervention would be to "extend and improve the national park's walkways network". This can be shown as below:

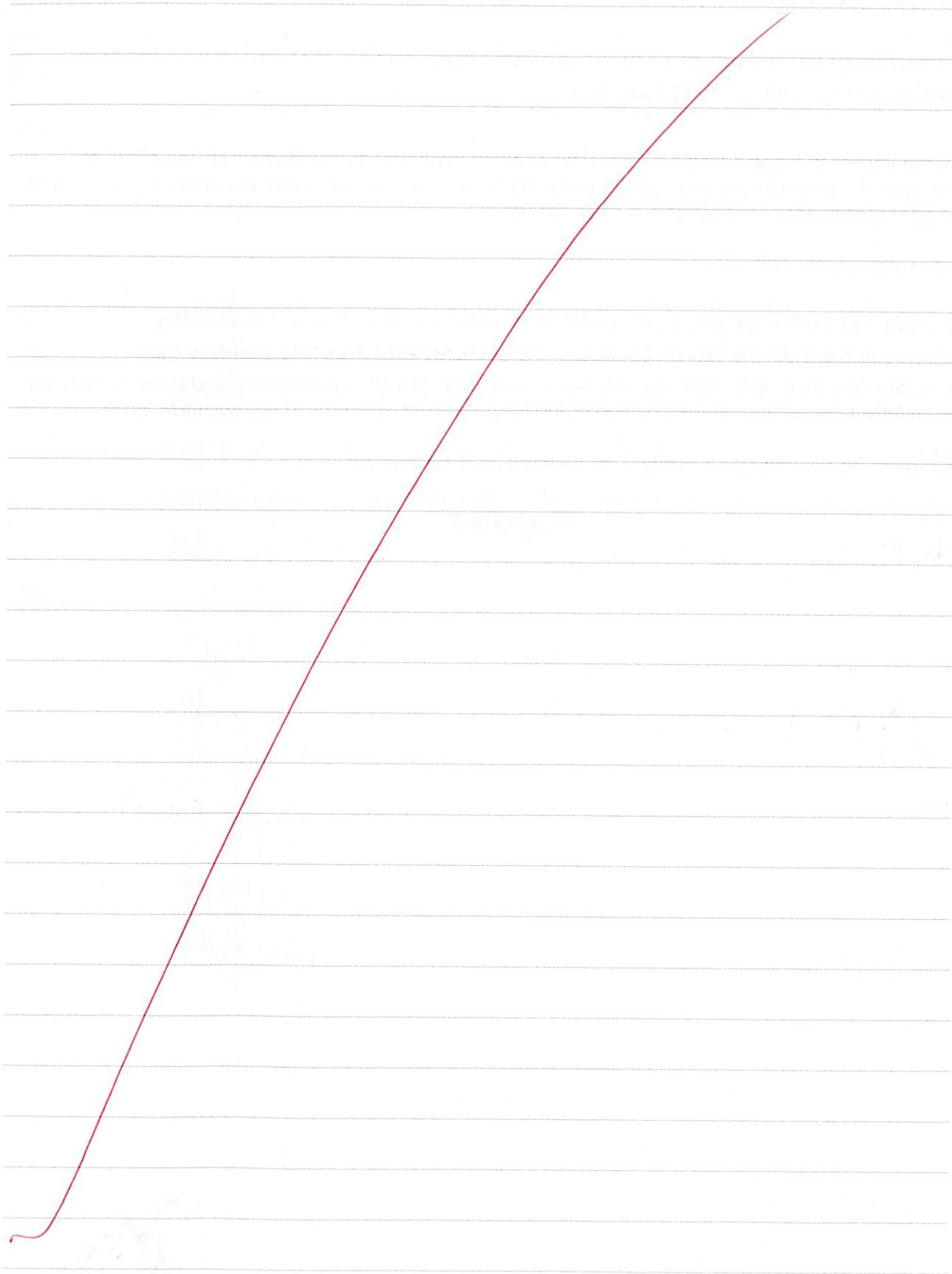
Fig 9: Increase in capacity:



The increase in capacity allows allocative efficiency to be achieved as consumer surplus is maximised when ~~$MR = MC$~~ $MB = MC$ (P_0, Q_2) (there is no producer surplus). It would also be equitable, as any consumer could utilise the new walkways. The only drawback would be any potential externalities. The new pathways would have to be created in areas that don't majorly disrupt the surrounding natural environment, but given the DOC is generally very environmentally friendly and sustainable this is not an unreasonable assumption. Also, it must be

ensured that the new paths A) are as appealing to visitors so that they actually choose to walk on them instead and B) don't detract from the "natural" experience of visitors on the other tracks for in order to maximise visitor enjoyment. 2

In conclusion, I would recommend that the Department of Conservation expand and improve the national parks' walkways network. This is because charging a fee would decrease equity and creating a booking system would ~~decrease~~ cause allocation efficiency to not be achieved (although the revenue from a fee could be used to fund DOC conservation projects). However, negative externalities of consumption must be minimised otherwise the other options may be a better long-term solution.



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.

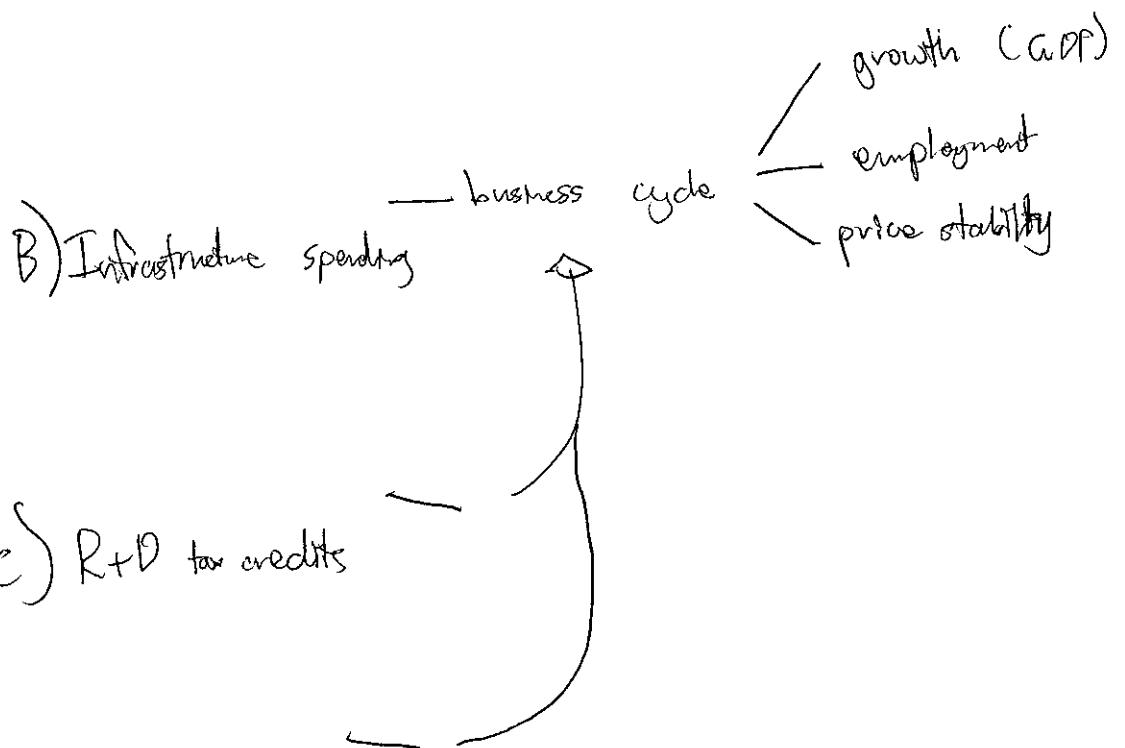
In your answer you should:

- 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

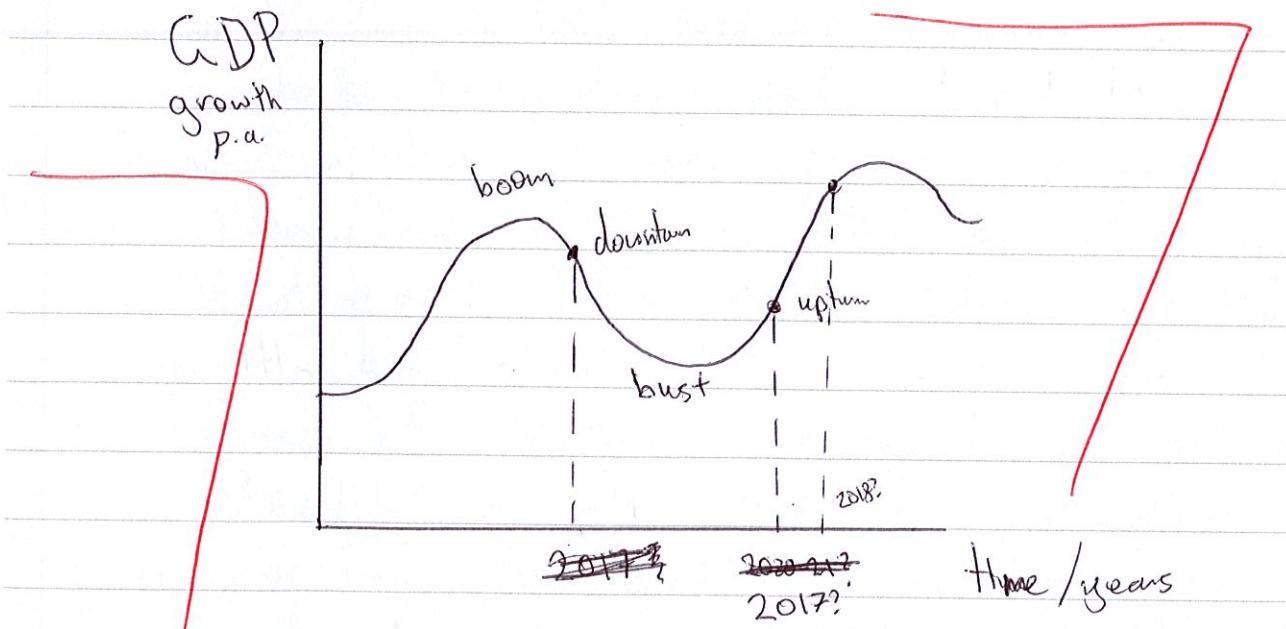
- 1) Business cycle
- 2) A) Families package



According to resource K, GDP growth is expected to decline from 2017 - 2019

(3.4% to 2.3% p.a.). Apart from a spike to 3.1% in 2020, the general trend^{to 2021} is downwards-sloping. Although the predicted unemployment rate also decreases from 4.5% in 2017 to 3.7% in 2021, the net change in employment is also expected to decrease, signifying that the economy will become closer to reaching full employment. However, the slowing GDP growth suggests that the economy is currently in an economic downturn, although an upturn is potentially likely in 2020-2021. Hence, NZ is positioned on the business cycle as indicated below:

Fig 10: The NZ position on business cycle



This position has an effect on the fiscal policies that will be discussed below. It is also interesting to note the graph of total New Zealand

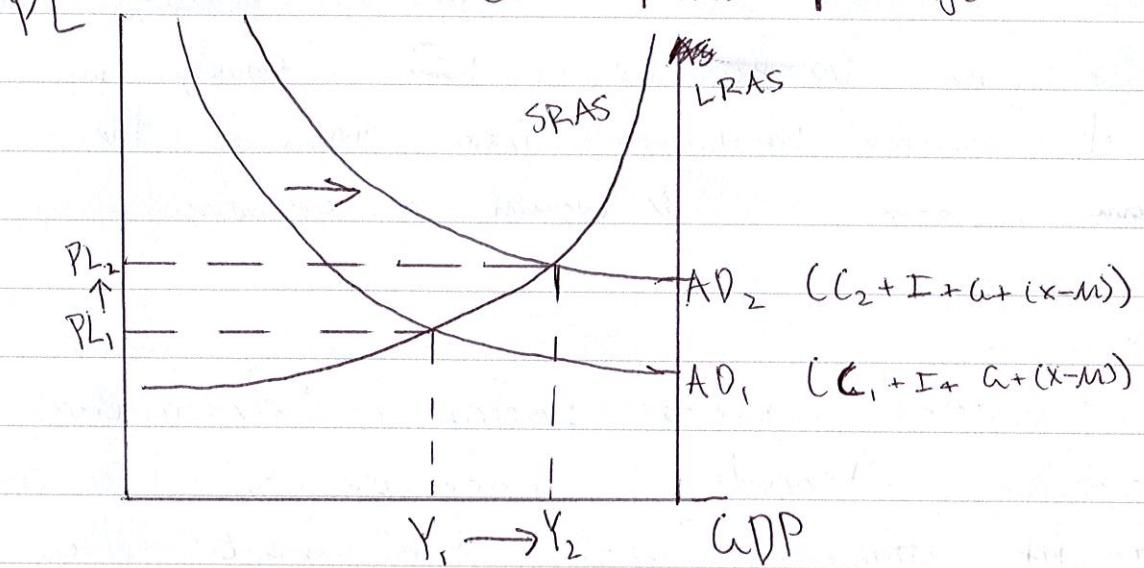
The first fiscal policy discussed in resource J would

construction activity in resource K, as construction spending is generally a fairly good indicator of an economy's position on the business cycle as it represents how willing consumers and businesses are to undertake new economic spending. This reaffirms the conclusion reached from the Westpac data: that ~~NZ~~ the NZ economy is currently in an economic upturn, heading towards a boom as ~~as~~ full employment is approached.)

This first fiscal policy discussed in resource J is the families package. This entails an increase in transfer payments such as "the winter-energy payment, the Best Start payment and maternity paid parental leave" which are targeted at families. It predicts that "a family with a household income of \$55 000 a year or less would be \$129 a week better off." This is incredibly useful for low-income households, and although there is a chance it increases the size of the poverty trap, that is unlikely as the benefits are not directly tied to employment. It is a policy that greatly improves equity, as it helps primarily families with the lowest incomes. Additionally, ~~the package~~ "most of the money will be going to low-income households that have a high marginal propensity to spend rather than save."

This means the size of their multiplier is higher, leading to a larger increase in consumer spending (and hence aggregate demand) than money going to other households would. Hence, although these are transfer payments, they will likely increase economic growth as shown below:

Fig 11: Increase in consumer spending due to Families Package:



The increase in AD from AD_1 to AD_2 increases GDP from Y_1 to Y_2 and increases the price level from PL_1 to PL_2 . When the economy is in the boom section of the business cycle, AD is higher on the AS curve (so the AS curve is relatively steeper^(and more inelastic)), so the Families Package would have a relatively larger effect on inflation and a relatively smaller effect (increase) on growth. The effect on unemployment (decreasing unemployment) would also be lesser, as the economy would be closer to full employment. Contrastingly, if the economy was in the bust section of the business

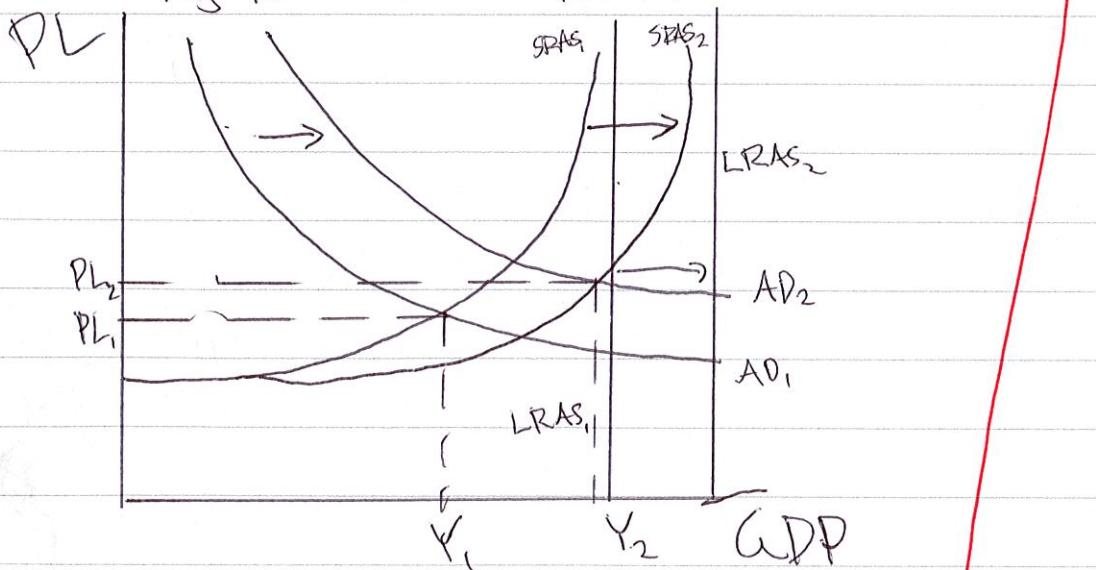
cycle, then the AS curve would be relatively more elastic (flatter), so the increased AD would lead to a ~~smaller~~^{smaller} increase in inflation and a smaller ~~larger~~^{larger} increase in growth. There would also be a larger decrease in unemployment as the economy is further away from full capacity (LRAS). It is also important to note that these benefits are an automatic price stabiliser, as ~~the~~ when the economy is ~~bad~~ in bust, more families are likely to use them so the ~~more~~ increase in AD would be greater, and vice-versa.]

The second fiscal policy is infrastructure spending. According to resource J, this rose to \$4 billion this year from \$3.6 million next year. The focus on regional development is important as it is highly equitable and could potentially increase the productive capacity of the NZ economy in the long-term, shifting LRAS. Nevertheless, the most immediate impact of this spending is an increase in the government spending component of AD. ~~For Gareth Kiernan describes~~ Resource J describes it as "stimulatory for 2018/2019," which means it is likely to cause a similar ~~effect to~~ increase in AD as demonstrated in fig. 11 from the Families Package. The effects of this increase

on AD on inflation, growth and employment with respect to the economy's position in the business cycle would hence be the same as described above, although note that ~~this is~~ no construction spending is not an automatic stabiliser, and rather tends to increase when the economy is in boom. Gareth Kavanagh talks of "supply constraints in the economy" showing the impact of ~~this~~ spending on growth, which again suggests ^{the NZ economy is} ~~two~~ approaching a period of boom.)

The final policy is Research and Development tax credits. Although a fiscal policy, the effect of this is to increase aggregate supply, as increased technological innovation improves the economy's productive capacity. However, increased "private-sector R + D investment" would also stimulate AD as shown below.

Fig 12: Effect of R+D tax credits



This is because it becomes

cheaper for private firms to produce their products (research + development), so they are able to produce more. The net effect is a large increase in growth ($Y_1 \rightarrow Y_2$) and an uncertain change in inflation ($P_1 \rightarrow P_2$). The relative size of the GDP growth ~~and~~ and reduction in unemployment ~~would be~~ compared to the size of the growth in inflation would be ~~inversely~~ to our position on the business cycle, as with the other policies. So, in conclusion, the impact of all the fiscal policies depends on our position in the business cycles, yet all seek to improve ~~to~~ short-term and long-term outcomes for NZ in terms of both equity and efficiency. 

Scholarship Exemplar 2019

Subject	Economics		Standard	93402	Total score	15	
Q	Grade score	Annotation					
1	05	<p>The candidate showed a relatively sophisticated analysis in places, with a competent level of integration and synthesis, and a logical and clear discussion. For example:</p> <p>On pages 4–5, the candidate gave explanation of several causes of a decrease in supply on the New Zealand market for petrol, integrating information from the resource material, their own knowledge and illustrating an increase in price using a supply / demand model. This could have been further enhanced if the candidate had used an inelastic demand curve in Figure 2, and discussed the relative impact on price and quantity.</p> <p>Some explanations lacked economic literacy. Integration of economic theory (e.g. using market forces to explain new equilibrium price or New Zealand being a price taker with graph) would have added more depth.</p> <p>Pages 5–7 saw the candidate provide a sophisticated and logical discussion of the inelastic demand for petrol and its changes in the long run. PED of 0.2 was clearly explained, and reasons were given as to why public transport was not a close substitute. Changes in behaviour were linked to the change in PED over time.</p> <p>On pages 7–8, the candidate incorrectly showed a decrease in supply, omitting the decrease in demand. The explanation of allocative efficiency was correct.</p> <p>Pages 8–9 saw the candidate provide detailed analysis of changes to CS, PS and AE in the EV market caused by an increase in demand, using a labelled graph. Although there was discussion of the impact of an increase in supply, this was not shown on the graph. This could have been further enhanced by referring to specific changes in price and quantity to justify CS and PS changes.</p> <p>Overall this answer earned a grade score of 5, this due to some strong and detailed analysis in places. However, there were also some areas of weaker analysis (e.g. in the Market for Petrol) that prevented a higher grade.</p>					
2	05	<p>The candidate produced a reasonable economic analysis of the impact of increasing visitor numbers on national parks as a public good, and government interventions to address capacity issues. However, in a number of areas, the answer lacked depth and made generalisations, which prevented a higher grade. For example:</p> <p>On page 11, the candidate explained in some detail why national parks were generally considered to be non-rivalrous, and why in some situations this might not be the case. However, the candidate was unable to correctly explain why national parks were non-excludable by price.</p> <p>They, on pages 11–12, correctly illustrated the impact of growing visitor numbers on national parks but failed to identify the area of deadweight loss and provided a weak explanation as to why allocative inefficiency now existed.</p> <p>On pages 13–14, the candidate correctly illustrated the effect of a fee and provided a very brief explanation of how this would result in allocative efficiency, as well as how it could be inequitable. Greater depth of explanation would have added more clarity.</p> <p>On pages 14–15, the candidate correctly illustrated the effect of a booking system, but incorrectly stated that this would not be allocatively efficient. The explanation of equity impacts was weak.</p> <p>The candidate, on pages 15–16, correctly illustrated and explained how expanded walkways and facilities would improve allocative efficiency and equity, and also provided additional insights that expanded the analysis.</p>					

		<p>On page 16 there was a limited but justified conclusion.</p> <p>Overall, this answer provided adequate coverage of the question and correctly identified and illustrated key points sufficient to gain a grade score of 5. The answer would have been enhanced had more time been taken to explain these points in depth.</p>
3	05	<p>The candidate has 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 page 19, the candidate adequately explained the position of the economy in relation to the business cycle. This explanation referred to data from the resources, identifying trends, both past and future. The candidate could have added more detail about how this data was interrelated, how trends impacted on the current position and how time lagged impact on the signals that the data was indicating. This additional consideration may have resulted in the candidate identifying a different position on the business cycle.</p> <p>On pages 20–24, the 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 identified, but not explained. The opportunity to use the multiplier effect to explain further rounds of Consumption and Investment was missed. The link between Research and Development and increasing Aggregate Supply could have also been more clearly explained.</p> <p>The candidate's evaluation, on page 24, 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 integrated into the analysis of the policies. The candidate could have enhanced the evaluation by comprehensively covering all three policies rather than providing detail for two policy options only. No overall conclusion relating to the effectiveness of the policies, given New Zealand's current position, was made.</p>