

93402



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# TOP SCHOLAR



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

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

## Scholarship 2015 Economics

9.30 a.m. Thursday 26 November 2015

Time allowed: Three hours

Total marks: 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 2–27 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.**

This examination consists of three structured essay questions. For each question, use appropriate economic models to illustrate key points, and integrate information from the resource material to support your argument/evaluation.

### QUESTION ONE: THE UPS AND DOWNS OF NEW ZEALAND DAIRY FARMING

Before 2014, many dairy farmers had been earning supernormal profits, with some borrowing heavily in order to expand production. However, rapidly changing prices and costs are impacting on the profitability and future of dairy farms.

Use information from Resources A to G, and your knowledge of micro-economic theory, to answer this question.

Analyse the impact of changes in farm costs and dairy prices on the profitability and production levels of individual dairy farms in the short and long run. Evaluate how these impacts may differ depending on the level of debt of a farm in the short and long run. Use appropriate economic models to support your answer.

In your answer:

- explain why individual dairy farms are considered to be examples of perfect competitors
- discuss how increases in dairy farming production could lead to diminishing returns and rising marginal costs
- analyse and explain the impact of the changes in costs and dairy prices on an individual dairy farm's profitability and profit-maximizing production level in the short and long run
- analyse and evaluate how these changes could affect farms with differing levels of debt in the short and long run.

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

#### PLANNING

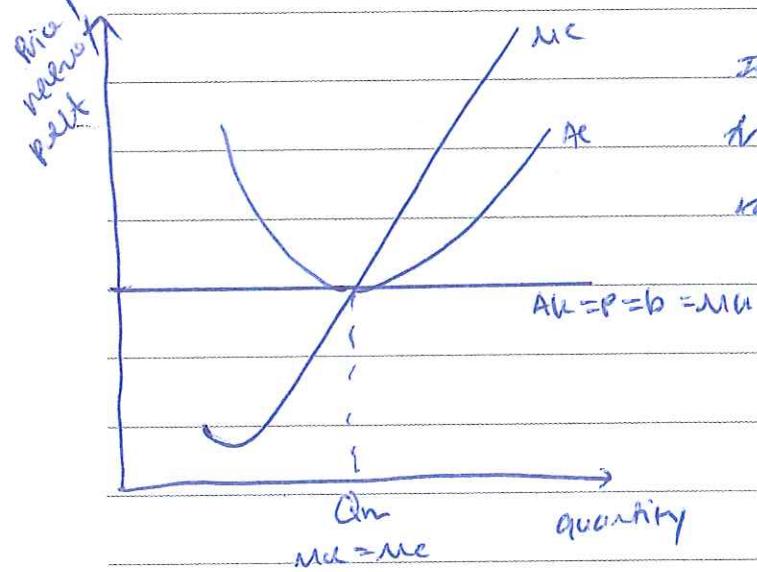
- pc + graph  
↑ prod

What does  
model  
assume?  
Source

Dairy farms are considered perfect competitors because ~~they~~  
 there are many buyers in the dairy market, and many ~~sellers~~  
 small relative to the size of the market with farms across Europe and New Zealand. They sell a homogeneous product. (milk is all very similar)

There is perfect knowledge with the most up to date dairying knowledge easily accessible. Importantly Dairy farmers are price takers, the Dairy Auction determines the price of milk and competitors must accept it. If they sell above this price they will sell nothing; if they sell below they are not profit maximising.

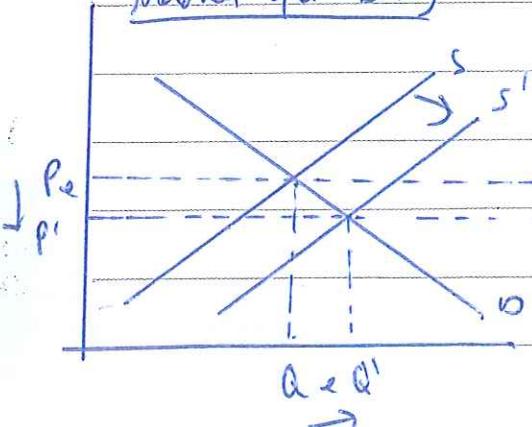
They are price takers, demonstrated by the horizontal demand curve. All production can be sold at this price. There are no barriers to entry (patents etc.)



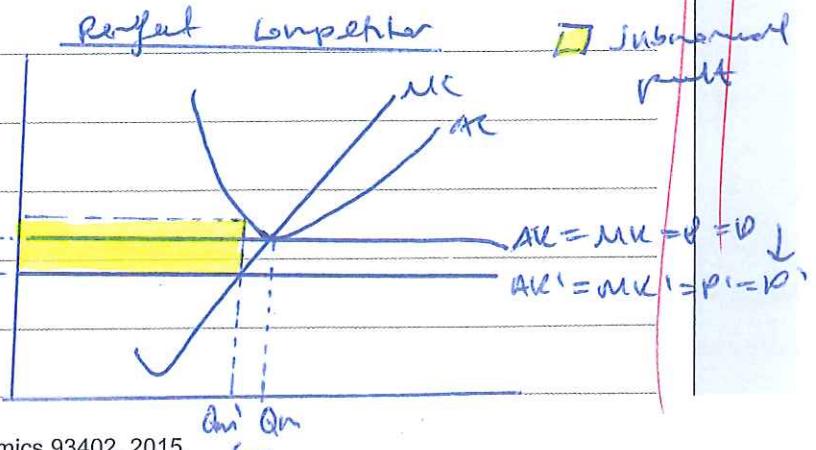
It is generally accepted that true perfect competition is rare, however dairy comes very close. Perfect competition is more of a goal to strive for than an attainable structure.

Marginal cost is the addition to total cost of producing another unit of output.

Market for Dairy



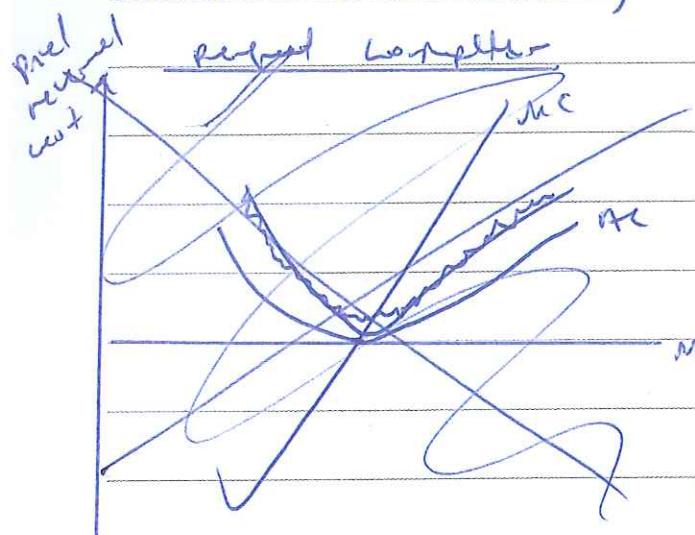
Perfect Competitor



Increasing milk production is done by "increasing the number of herds" or "increasing production per hectare." (Source B) Source B explains that "cows only work so hard on producing the maximum" utilizing their current resources to maximize output. This is combined with the pressure to keep pace with "global competition." Recent increases in supply in Europe this season with the removal of quotas have meant increasing competition ~~for~~ new Zealand Dairy farmers. This worldwide increase in production ~~also~~ in the Dairy market and improved productivity would increase market supply  $S_0$  to  $S_1$ , reducing market price  $P_0$  to  $P_1$ . This would reduce the profit  $\pi$  for each firm as they are price takers reducing  $ATC - MC = \pi + P$ . This means at the old profit maximizing quantity marginal cost becomes greater than marginal revenue ( $MC = MR$ ) as a result of this increasing marginal cost firms will reduce output  $Q_m$  to  $Q_{m1}$ , as every unit above  $Q_m$  they are making marginal losses, so are not profit maximizing ( $MC > MR$ ). This will result in a subnormal profit in the short run ( $AC > AR @ MC = MC$ ) where return is insufficient to keep the firm in its current operation.

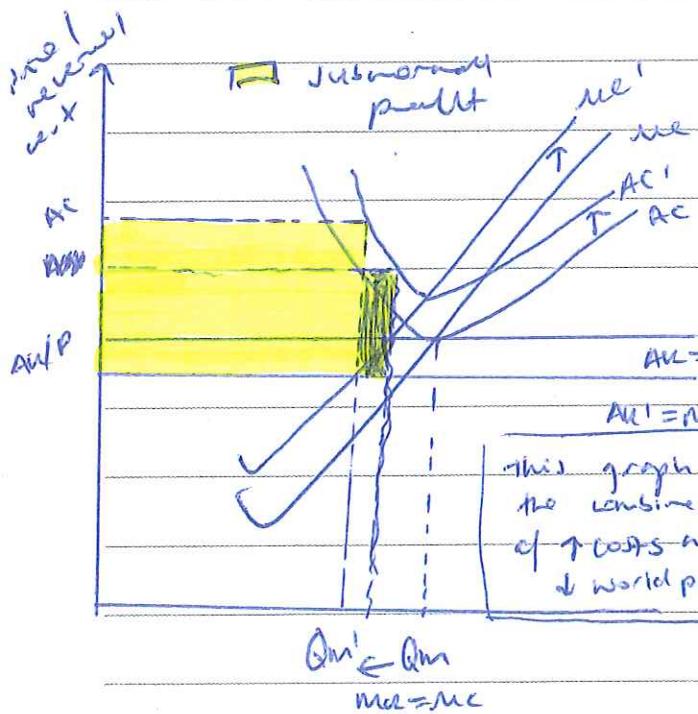
Experiencing Diminishing returns is shown by the upward slope of the marginal cost curve. This is in the short run, where if one factor is fixed (such as milking machines) adding additional variable factors (such as employees) initially reduces  $MC$ , but as

more variable factors are added, marginal cost increases because more variable factors are required to increase output. However, this is in the short run when one factor is fixed. In the long run all factors are variable. As the company expand and increase production



in the long run average cost can fall (economies of scale). However 95% of operating costs are directly related to hectares and cows" and these populations increase with farm size so firms should increase investment (purchasing capital) to increase productivity.

Quantity rather than farm size to level down.



In the short run for a firm, increasing costs

such as "environmental

$AC = MC = P = V$

$AC = MC = P = 0$ , "pollution legislation" (fixed cost, does not vary with output)

This graph shows (Source B) or the increase the combined effect of + costs and + world price, in costs of supplementary feeding, swell and fertilizer up 50% over the past decade (Source D)

(variable costs) varies with output)

would increase both variable costs and marginal cost and average cost upwards. This means in the short run ~~some~~ firms make subnormal profits ( $AC > AC @ MC = UC$ ) quickly falls to where  $MC = UC$  again to avoid marginal losses. Because there are no barriers to entry or exit of a

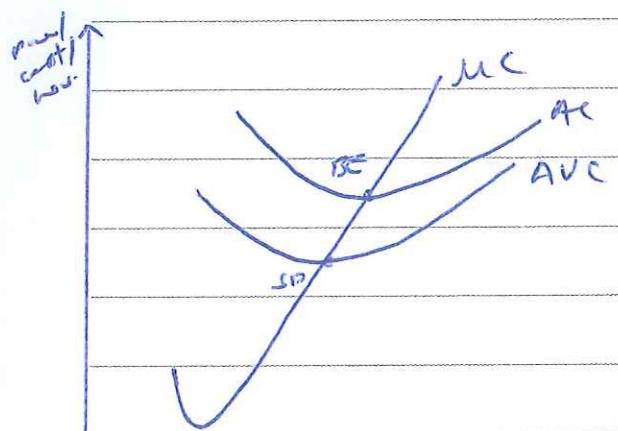
like milk

perfectly competitive market (which "most agricultural commodities fit") (Source A) firms will leave the industry as return is insufficient to keep the firm in current operation.

This means return is less than opportunity cost (the next best alternative forgone). The limitation of this is that opportunity is very hard to calculate as every farm's opportunity cost could be different. It is assumed that at this point, the firm could make greater profit if resources were shifted to another industry. If firms leave the industry, market supply will fall, increasing market price increasing  $MR = AC + P = P$ . This will increase value of  $AR = AC @ MR = MC$  and firms in perfect competition will make normal profits ( $AK = AC @ MR = MC$ ) in the long run, where return is sufficient to keep the firm in current operation. However, it is true that the marginal firm will make a normal profit in the long run. In reality some firms do make supernormal profits in the long run because of Ricardian rents. This is where a firm faces lower cost structure if they are able to purchase capital at a price below the market price. Because New Zealand is reaching a point where "further intensification or extension will not be physically possible" due to scarcity the price of dairy land would have been very high prior to dairy price falling. The \$1.40/kg prices would have attracted many new entrants to the dairy industry, paying premium price for land. If some farmers had bought the land prior to DairyNZ success, they would have paid less and will have paid off

more of their mortgages. These farms may still be able to make supernormal profits in the long run. However increasing costs and reducing dairy prices from \$8.40/kg last season to \$74.40/kg this season (Source E) makes this unlikely.  $\checkmark$

Reduced world price for \$74.40 is dramatic and significant. Since many firms need \$6/kg to cover working expenses (Source D) many firms will be making significant losses. This will determine which firms leave the industry. A firm will decide to leave or not based on their point on the MC curve (Supply curve) and their costs.



When  $MC = AC$  it is break-even,

when all variable costs and fixed

costs are covered. Between

$MC = AC$  and  $MC > AC$  all variable

costs are covered. A firm will remain

open in the short run as they only need

$\rightarrow$  to find extra funds to cover remaining

fixed costs, whereas if they shutdown they must pay all fixed costs from another source. When  $MC > AC$  it is

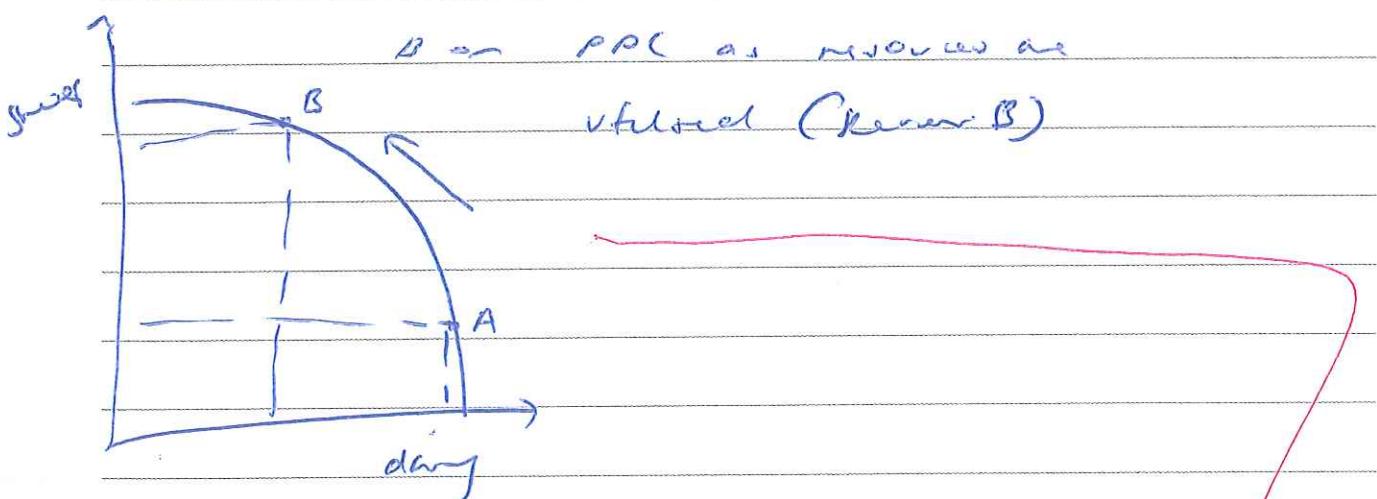
shutdown point. At this point firms are indifferent about staying open or shut down. Below  $MC = AC$  firms will shutdown immediately as they are covering no fixed

costs and some variable costs, so have to find  $VC$  and  $FC$  from other sources, so are better off shutting down and just paying fixed costs. Since more than a third of

debt was held by Dairy farmers that were repelable

at current dairy prices, (Keene F) many firms will find the average cost of debt servicing too high so will leave the industry. Those ~~making~~ operating below break even will leave in the long run as return is insufficient to keep them in ~~current~~ operation. Those with high debt are more likely to make a substantial profit and exit the industry. Those with low debt may make a normal profit and remain in the industry. They will benefit in the long run as those leaving the industry will help increase price. This occurs because despite Ultra Fortuna only producing ~~less~~ <sup>Dairy</sup> six of the world's ~~total~~, it is 40% of Dairy traded internationally.

\* The Reserve Bank said he must减持 10% of shares he had converted to sheep, so they would convert back again the due to opp want. (Keene F) result in a market point A to point



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## QUESTION TWO: EXTERNALITIES AND SUGAR-SWEETENED DRINKS

There has been increasing evidence published relating to the negative effects of sugar on the human body, and discussion of whether some form of government intervention is necessary to address these issues. Sugar-sweetened drinks are particularly noted for their part in raising the sugar intake in people's diets.

Use information from Resources H to K, and your knowledge of micro-economic theory, to answer this question.

Analyse the externalities associated with the consumption of sugar in sugar-sweetened drinks. Evaluate the case for government intervention in this market, and possible options for intervention as a means of addressing these externalities. Use appropriate economic models to support your answer.

In your answer:

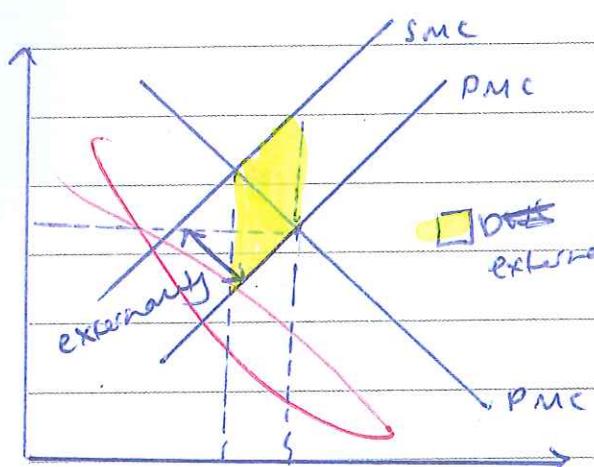
- explain the externalities associated with excess dietary sugar consumption, and how market failure occurs in the market for sugar-sweetened drinks
  - evaluate the case for government intervention in the market for sugar-sweetened drinks, including the place of consumer sovereignty
  - explain and analyse different types of government intervention possible in the market for sugar-sweetened drinks to reduce sugar consumption
  - evaluate the effectiveness of these government interventions in achieving efficiency in the market for sugar-sweetened drinks, and make a justified recommendation.

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

## PLANNING

- health
- growth
- animal sensitivity
- elasticity
- Adultery

externality are a spillover effect on a third party not involved in the original transaction. Sugar consumption has a negative externality of consumption where the social cost of consumption is higher than the private cost of the sugary goods.



This is because sugary beverages and foods and sugar excess consumption are linked to negative health implications by being high in calories but low in nutritional value.

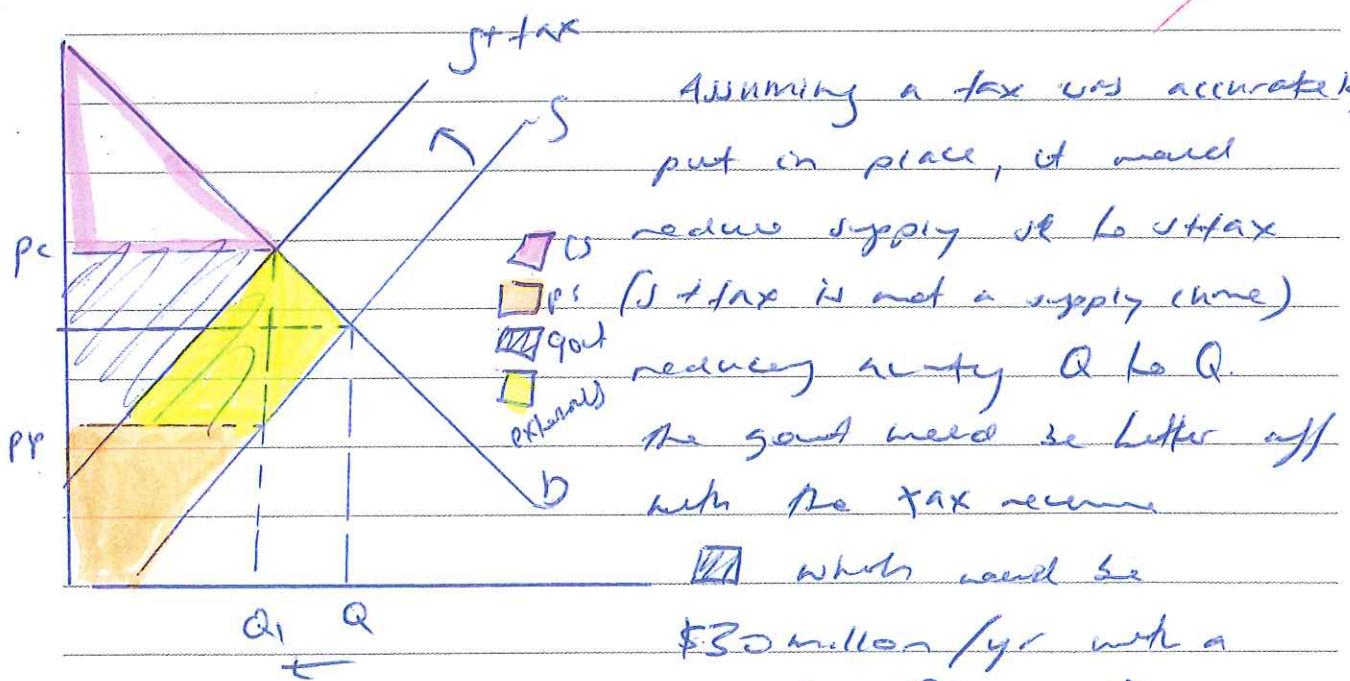
and they have an effect on obesity, diabetes, heart disease, and related diseases (source H). They have a negative externality as they cause extra healthcare, which is funded out of taxpayer money, so the taxpayer is the third party. This results in an opportunity cost of other spending the government could engage in, such as education.)

A ~~efficient~~ market failure occurs in the market for sugar sweetened drinks because it only takes into consideration the private marginal cost and private marginal benefit to the consumer of the drink. When these are considered the market is allocatively efficient, sum of producer surplus and consumer surplus is maximized. However when the spillover effects are considered the harm done to society is greater than the satisfaction gained by the individual consumer.

This means price is lower and quantity is higher than is socially desirable. To fix this market failure (internalise the externality) the government could intervene and impose a tax on sugary drinks. This would be advocated on the basis that ~~over 67 deaths~~ would be avoided or postponed (Revenue!).

By introducing a Jovis tax, it arguably would improve the health of New Zealanders and reduce spending on the health sector. This ↗

However, the limitation is that externalities are very hard to calculate, and to be fully effective the tax would have to be equal to the externality. ↗



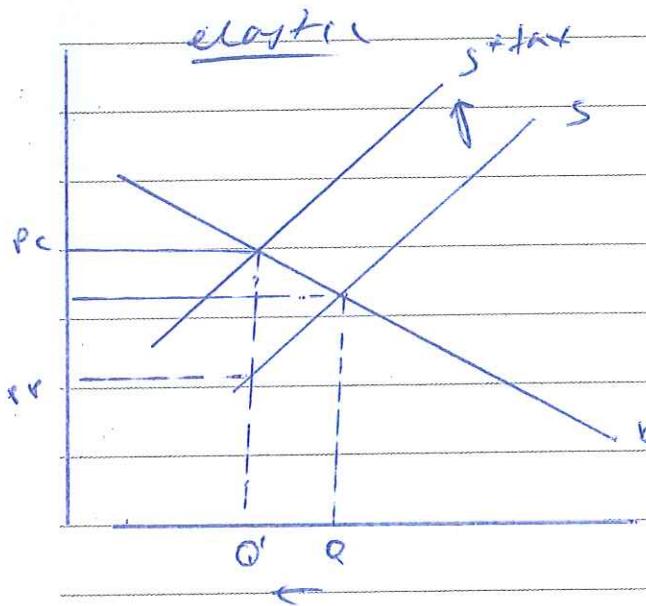
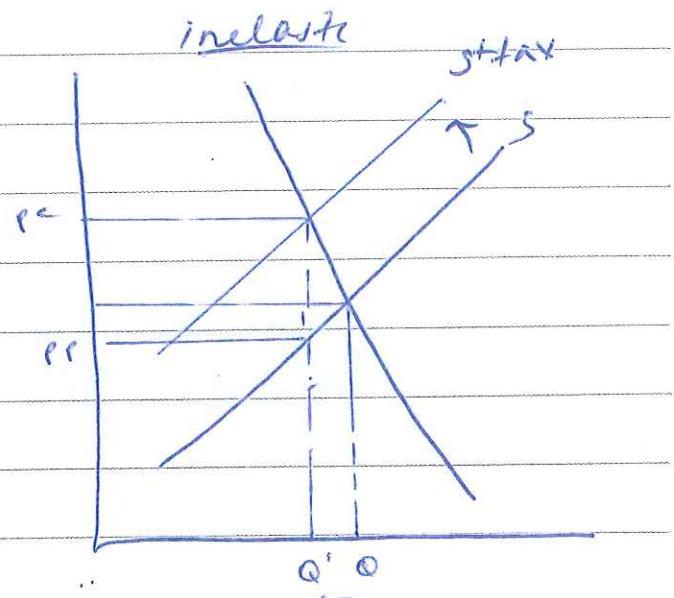
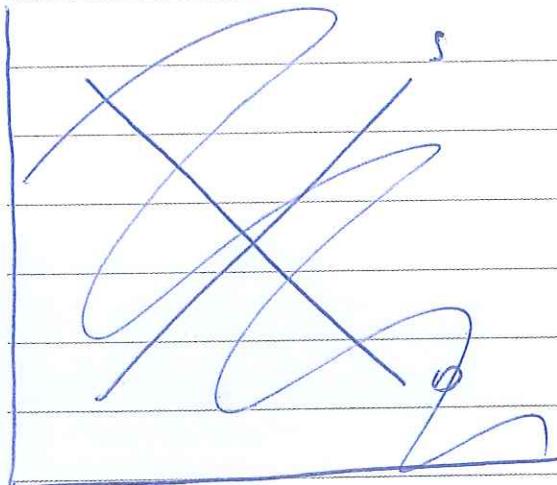
This would be spent in healthcare. Consumers no longer buy at the higher price per pc, and have reduced consumer surplus with less difference between the maximum price they are willing to pay and the price they actually pay, and less units upon which to derive a surplus.

Products we also move off as they receive a lower price and less producer surplus. The market however is now allocatively efficient as the externality is removed and there is a gain in total surplus. Producer surplus and consumer surplus is maximized.)

However there is the issue of consumer sovereignty, the right for consumers to decide for themselves what to ~~choose~~ consume. This will often be the role of a "nanny state" who gets involved too much, sacrificing its population's freedom. Voters may object on democracy grounds.)

There is also the issue of elasticity. Studies have found elasticity for sugar sweetened  $\rightarrow$  0.8 to 2.4. This varies from inelastic (below 1) to <sup>very</sup> elastic (greater than 1). Elasticity would influence the effectiveness and distribution of a tax. Some H <sup>states</sup> ~~advocates~~ that sugary drinks are "addictive" which is generally indicative of an inelastic good, where quantity demanded is less than proportional to change in price. Other qualities of inelastic goods are that it is a necessity (which sugary drinks are not), it is a small portion of income (which they are) and are not easily postponed (debateable, depends on how addictive they are) and have no or few substitutes (sugary drinks do have some substitutes).)

If sugar drinks are inelastic



- If it were inelastic the incidence of tax would fall <sup>more</sup> heavily on the consumer as they are less able to adjust quantity demanded.
- If it were more elastic incidence of tax would fall more heavily on producer, as consumers chose quantity demanded.

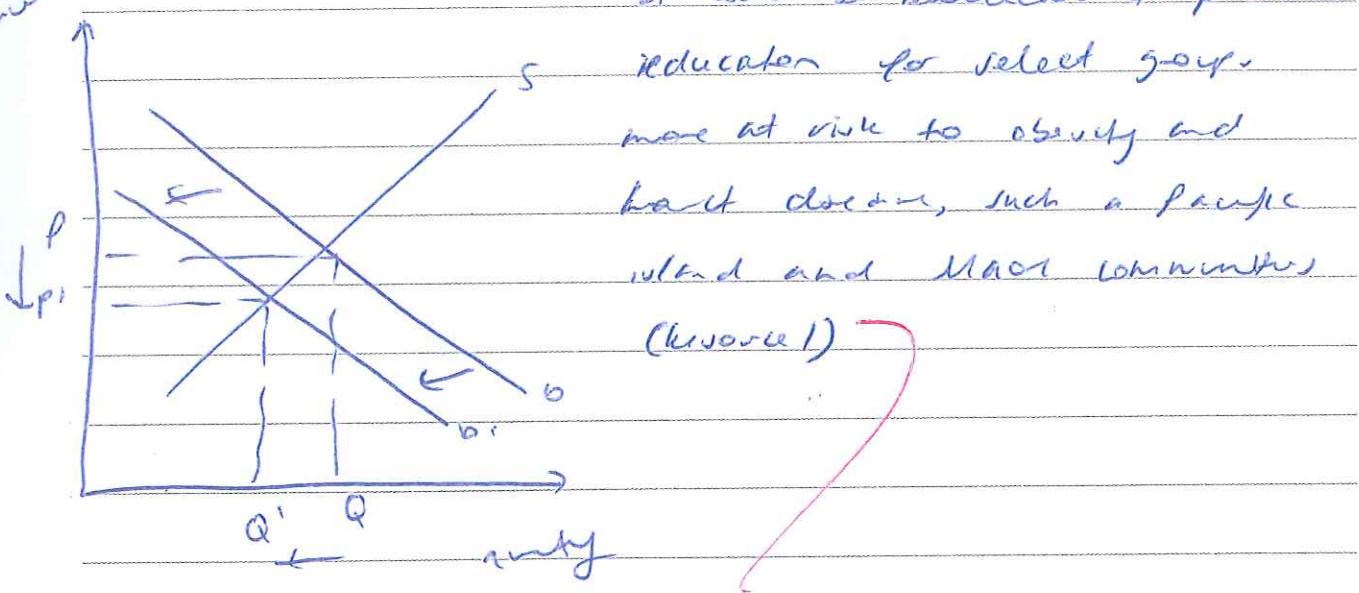
would reduce quantity by a greater amount, which is the goal. A tax would be effective if the good is elastic, however this is debatable, evidence is conflicting, so C would not recommend this policy. The government has likely rejected it as 42% of people felt it was a bad idea (Source J) (re-election which could foul re-election chances.)

Another potential strategy is government spending on education around healthy eating and exercise. However this results in the opportunity cost of that

government spending in other areas such as defence or school education sector. This would aim to reduce demand for sugar food in favour of healthy alternatives.

If would be beneficial to provide

education for select group more at risk to obesity and heart disease, such as Pacific Island and Maori communities (Kiwis).

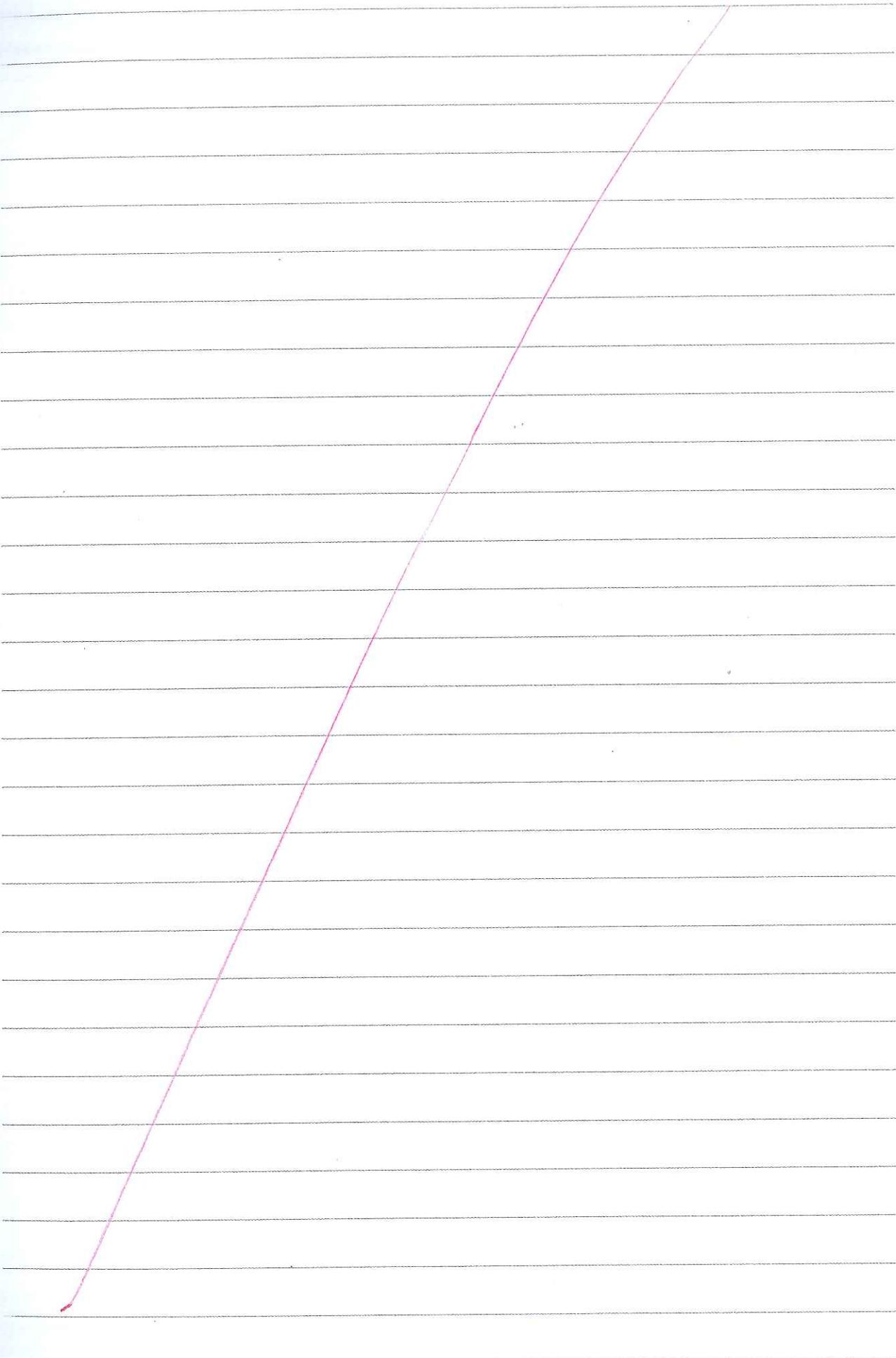


Another option is legislation around nutrition rules and advertising (which would reduce demand for required labelling, restrictions in workplaces products) and around providing warning labels, which would also act to reduce demand. These would come with much less cost to the govt, or just the cost of regulation and monitoring to ensure guidelines are followed. I would recommend these policies as a low cost way to reduce consumption, reducing externality here are used with cigarettes, which are highly inelastic.)

An alternative to taxes could be a subsidy on healthy foods. Healthy foods generate a positive externality of consumption as the spillover benefit to society is greater than the cost built to the individual (private marginal benefit). A subsidy on healthy food would reduce the cost and increase quantity consumed, while internalizing

the externality, imposing allocative efficiency in the market. However, it would ~~also~~ result in a significant opportunity cost for the government of the spending. I would not recommend the govt do this as it would be highly expensive, and could have its effectiveness reduced byinelastic demand for sugary food due to additiveness. This would improve efficiency but the cost is too high.)

A more unorthodox approach could be to apply a limited production, following the idea of 'carbon credits' used to control pollution. This would limit the production and sale of sugary beverages and food items in New Zealand. 'Sugar credits' would be bought and sold, ensuring only the most popular companies are allowed to produce sugary food, and those in making advertised 'Healthy' foods would be required by law to keep sugar content low. As a result of the limitation, scarcity would ensure price increased, reducing quantity demanded as it becomes relatively less affordable. This again runs into the issue of a 'nanny state' ~~however~~ it would <sup>regardless of</sup> restrict quantity and increase price, elasticity internalising the externality. It would force companies to act to reduce sugar use in goods to reduce costs, resulting in both greater efficiency and greater health of the New Zealand people. (would suggest this option.)



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**QUESTION THREE: MIGRATION AND THE NEW ZEALAND ECONOMY**

Economists are unsure about the effect on the New Zealand economy of the record level of positive net migration. An important question is the likely impact that positive net migration might have on the economy's level of potential output, and therefore the extent of and the type of output gap. This will challenge policymakers in determining the most appropriate monetary policy settings in order to control inflation in the near future.

Use information from Resources L to S, and your knowledge of macro-economic theory, to answer this question.

Analyse and evaluate the impact that a high level of positive net migration might have on New Zealand's output gap and inflationary pressures, and how this might impact on the Reserve Bank's monetary policy decisions in 2016. Use appropriate economic models to support your answer.

In your answer:

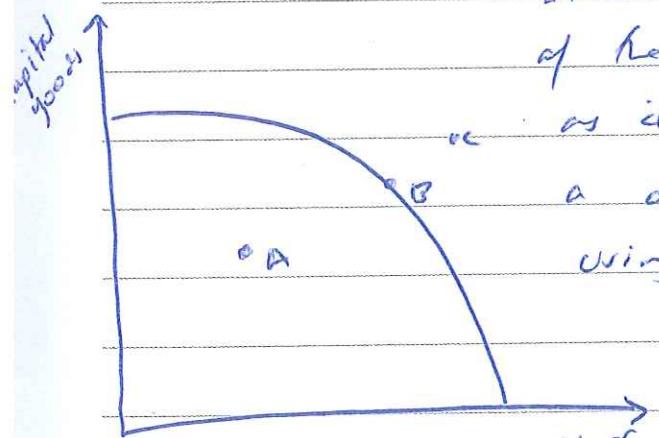
- describe an economy's potential output, and outline why this is not easy to determine
- use the aggregate demand/aggregate supply model to illustrate the connection between output gaps and inflationary and recessionary gaps
- explain why New Zealand has experienced a record level of positive net migration, and discuss how this might affect the economy's potential output
- analyse why the effect of positive net migration on inflation is described as 'ambiguous' or uncertain
- evaluate how positive net migration and other current economic factors might influence the Reserve Bank's monetary policy settings for 2016 and beyond.

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

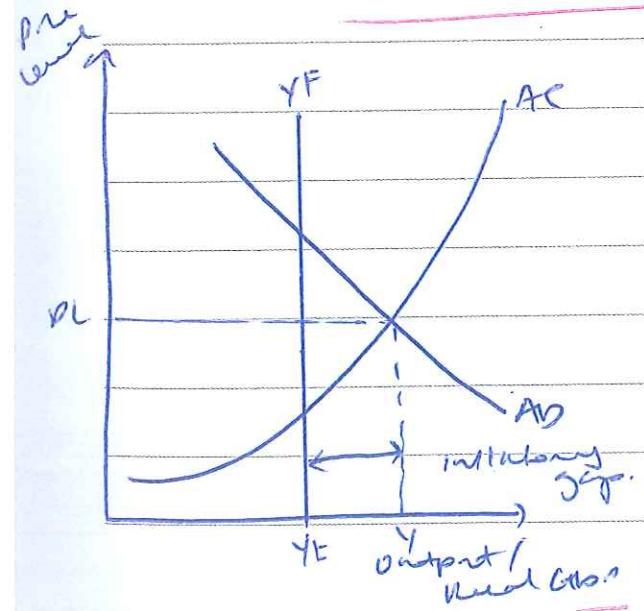
**PLANNING**

Potential output is what an economy could produce if all economic resources are utilized, future productive capacity. This is not easy to determine because it is "unobservable" (Source N) so must be estimated by looking at other economic indicators such as the sum of growth in capital inputs, labour inputs and productivity. So the inputs (purchasing of capital goods, goods used in production of other goods and services,) human capital, and using current resources more productively.

Output is often depicted by a production possibility frontier curve

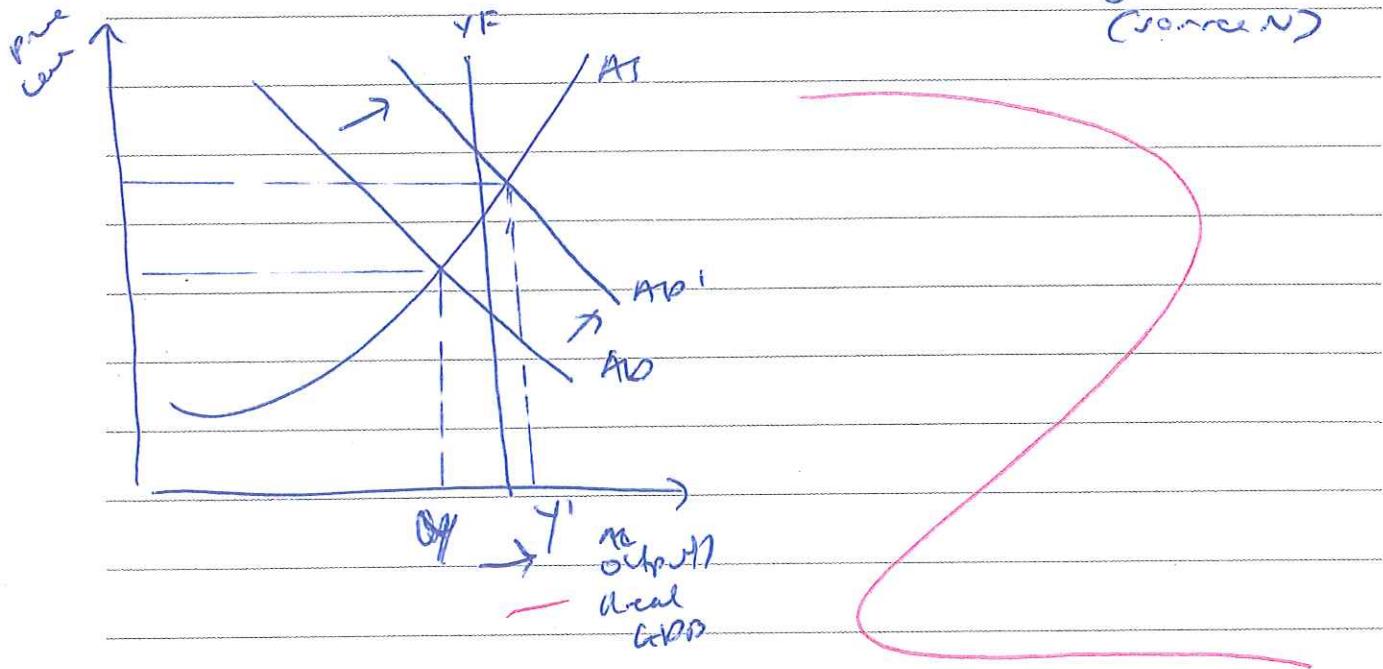


If shows maximum possible output of the economy. How it is limited as it is a static model not a dynamic model. It is calculated using a fixed level of resource and technology. Point A represents underutilisation, point B represents productive capacity, and point C represents an unattainable position

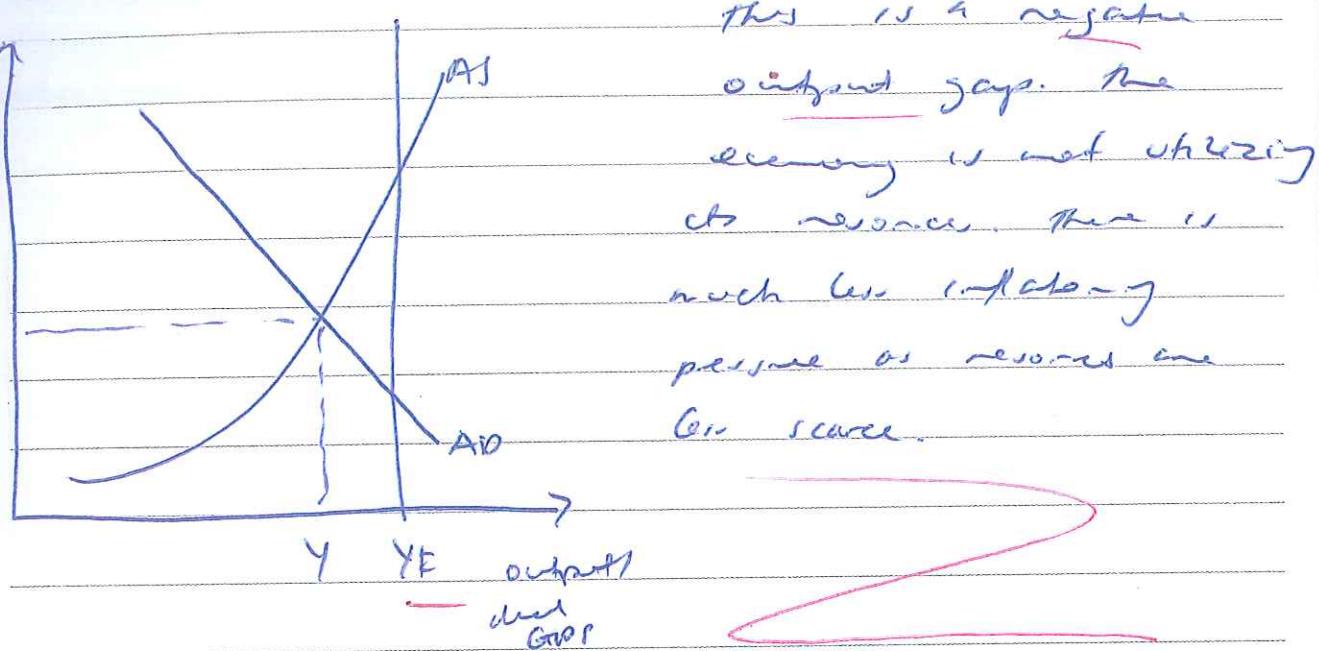


AC Inflationary gaps are when actual output is more than the full capacity output (equilibrium exceeds  $Y_F$  line) (Source L). This is a positive output gap. This results in inflationary pressure as demand increases so does inflation

a rise in the general price level, as the economy is operating beyond full capacity. This means that output / Real GDP is high, so there is economic growth. With significant production there are many workers needed so employment is high, and with more people working and paid working more, incomes are higher. This increased material standard of living. The Reserve Bank Governor says NZ has a positive output gap, with positive net migrants swelling aggregate demand (through consumer spending) and strong consumer confidence, future increasing consumption rapidly. <sup>(Source M)</sup> As consumers feel positive about future employment and income, improved business confidence means businesses feel positive about future levels of production and profit, increasing ~~affected by~~<sup>of</sup> <sup>especially in construction</sup> ~~output~~ output.



Recovering gap are where actual output is less than full capacity output <sup>(Source L)</sup>



poor migration has been exceedingly high recently with 56,800 arrivals, up 8.2% from a year earlier (source P) this is fuelled by fewer NZ's going to Australia (source P) with Australia's mining economy (this has been large slow down in mining, a significant contributor to Australia GDP) and NZ's strong economy with growth in the construction sector especially after the Christchurch earthquake as job opportunities and 'high standard of living' (source P).

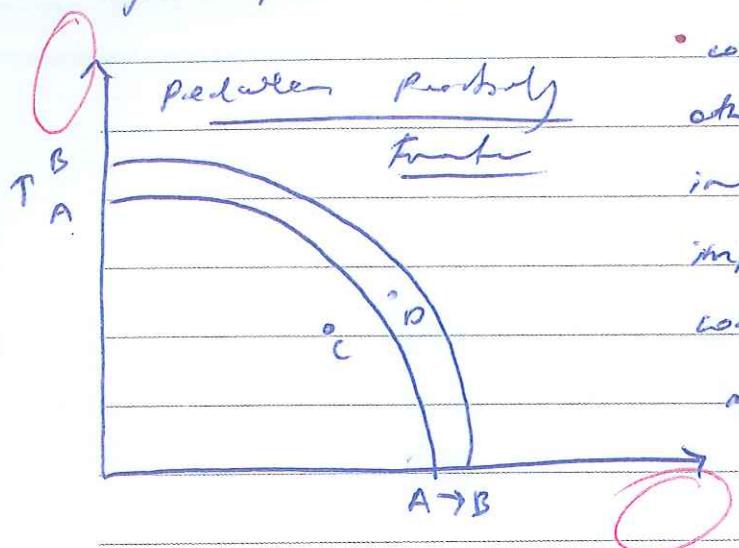
The government has also focused on attracting international students as explained in source P, increasing export receipts and encouraging an influx of migrants looking for educational opportunities.

This will act to increase the New Zealand economy's potential output by increasing the quality of human resources available (shown by shift towards ~~equilibrium~~ (outward of the PPC))

Curve

Curve

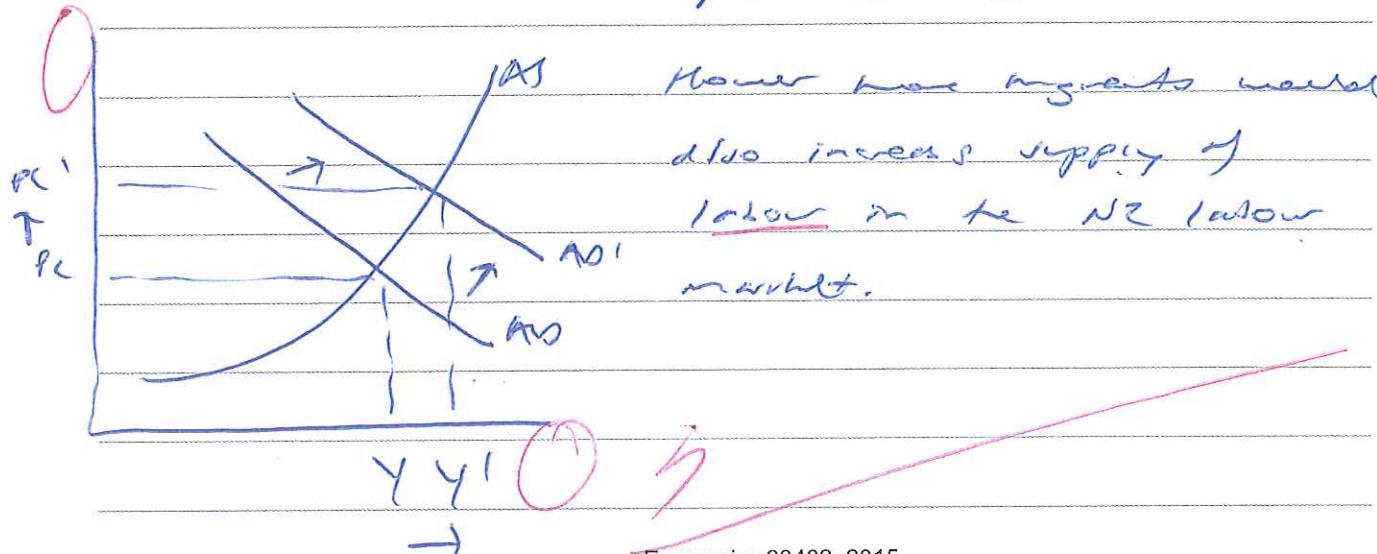
few point A to point B as more people



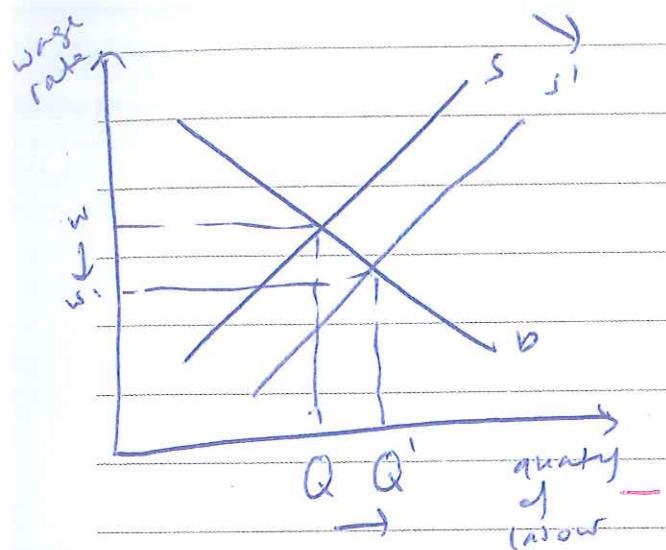
- come from Australia and other nations. Attracting more international students and improving educational services could also improve the quality of human resources and freedom
- new productivity if they

are better educated which would move the NZ economy from point C to point D.

The impact on inflation is described as ambiguous or uncertain because more migrants increase consumption spending (food, furniture) especially in essential goods or necessities. There would also be greater government spending if some receive benefits or healthcare or with greater pressure on public services. This would ~~reduce~~ aggregate demand with money  $C, G$ , and  $X_M$ . ( $AD = C + I + G + X - M$ ) increasing inflationary pressure. ( $P_1$  to  $P_2$ ) (Demand pull inflation)

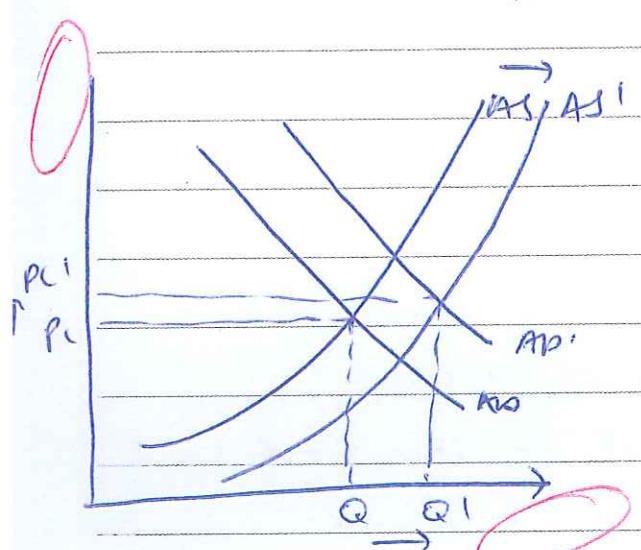


More immigrants would also increase supply of labor in the NZ labour market.



increasing quantity of labor and reducing wages w to w<sub>1</sub>.

This would reduce production costs for firms, increasing aggregate supply as production becomes relatively more profitable. This would reduce inflationary pressure.



The overall impact on inflation depends on the magnitude of the changes. However, I would assume that with a positive output gap and the demand effects now dominate, increasing inflationary pressure. This is supported by source S, citing a ~~fictional~~ ~~monetary~~, and only ~~greatest~~ "robust spending".

P.

positive net migration and lower oil prices provide an increase in aggregate demand and increase in aggregate supply (oil price mean reduced production costs for firms) both of which increase inflationary pressure. Rising house prices (Source S) also fuel consumption spending because of the 'wealth effect' people feel better off as their equity rises in value. The Christmas rebound is also expected to peak in mid 2016, many high incomes for building and new construction. These contribute to inflation.

increase in Aggregate Demand, increasing inflationary pressure. So much so that "2016 will mark the high point of economic growth". The goal of the Reserve Bank is price stability: Keeping the rate of inflation below 1 and 3% on average over the medium term with a focus on the Tr. midpoint. The 2016 indicators would suggest that ~~the tight~~ <sup>OK are headline market</sup> monetary policy (increasing interest rates) to slow economic activity and inflationary pressure.

Following 2016 NZ could experience an economic slowdown with slowing Christchurch rebuild, slowing migration and an impairment in the Australian market. This could indicate no need for loose monetary policy (reducing the official cash rate to reduce market short rates, reducing the money supply) to encourage economic activity and decreasing inflationary pressure to keep healthy inflation and prevent a recession.

Increasing OK reduces household spending.

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