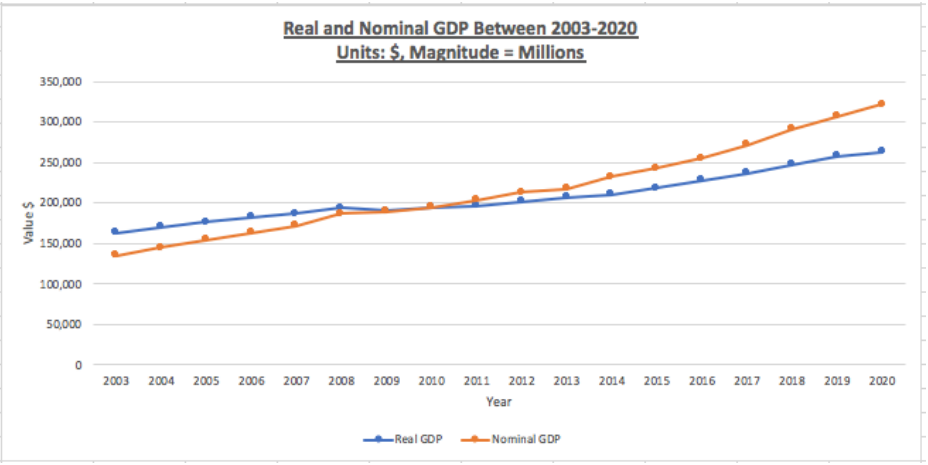
Part 1
Question 1

YEAR	Real GDP	Nominal GDP
2003	163,066	135,181
2004	170,494	144,502
2005	176,059	154,559
2006	181,946	162,937
2007	186,505	172,004
2008	193,442	186,673
2009	190,383	189,406
2010	194,306	194,306
2011	196,063	203,342
2012	201,268	213,025
2013	206,507	217,489
2014	210,804	232,792
2015	218,546	242,670
2016	228,240	255,340
2017	236,903	271,422
2018	247,336	291,264
2019	257,566	306,721
2020	262,866	321,985



Question 2
I) Nominal GDP Growth (2003-2020)= (NGDP 2020 - NGDP 2003)/NGDP 2003 * 100%
Nominal GDP Growth (2003-2020)= (321985-135181)/135181 * 100%
Nominal GDP Growth (2003-2020)= 138.19% (2 d.p)

II) Real GDP Growth (2003-2020)= (RGDP 2020 - RGDP 2003)/RGDP 2003 * 100%
Real GDP Growth (2003-2020)= (262866-163066)/163066 * 100%
Real GDP Growth (2003-2020)= 61.20% (2 d.p)

Question 3
Nominal GDP is a measurement of GDP in current dollar whereas real GDP takes into consideration for inflation. This means that if inflation is positive the growth in real GDP will be lower than the growth in nominal GDP (as observed in the period between 2003-2020) and vice-versa.

Question 4
RGDP per capita = RGDP year / Population year

Year	Population	RGDP	RGD per Capita
2003	3,970,000	163066000000.00	**41074.55919**
2004	4,044,900	170494000000.00	**42150.36218**
2005	4,101,300	176059000000.00	**42927.60832**
2006	4,148,000	181946000000.00	**43863.5487**
2007	4,196,700	186505000000.00	**44440.87021**
2008	4,235,300	193442000000.00	**45673.74212**
2009	4,271,000	190383000000.00	**44575.74339**
2010	4,317,900	194306000000.00	**45000.1158**
2011	4,362,800	196063000000.00	**44939.71761**
2012	4,392,500	201268000000.00	**45820.83096**
2013	4,417,700	206507000000.00	**46745.36524**
2014	4,461,500	210804000000.00	**47249.57974**
2015	4,541,900	218546000000.00	**48117.74808**
2016	4,638,200	228240000000.00	**49208.74477**
2017	4,742,200	236903000000.00	**49956.34937**
2018	4,837,700	247336000000.00	**51126.77512**
2019	4,922,200	257566000000.00	**52327.41457**
2020	5,013,200	262866000000.00	**52434.7722**

I) Compound annual growth rate of RGDP per capita between 2003 and 2008
CAGR 2003 to 2008=(RGDPC 2008/RGDPC 2003)^(1/2008-2003) - 1
CAGR 2003 to 2008=(45673.74/41074.56)^(1/5) - 1
CAGR 2003 to 2008=2.15% 2 d.p

II) Compound annual growth rate of RGDP per capita between 2008 and 2013
CAGR 2008 to 2013=(RGDPC 2013/RGDPC 2008)^(1/2013-2008) - 1
CAGR 2013 to 2008=(46745.37/45673.74)^(1/5) - 1
CAGR 2013 to 2008=0.46% 2 d.p

Question 5
The annual growth rate between 2003-2008 of 2.15% was below the average of 3.8% this suggest that the business cycle is likely to be in the early stages of a recession. Between 2008-2013 the annual growth rate slows down to 0.46%. it is likely that during this period the economy experienced a bust. During recessions the population loses confidence about the future.

Thus they reduce their spending (growth increase at decreasing levels) until it reaches the bust where growth is negative and output does not rise.

Part 2

Question 1

Equation =(investment*magnitude)/population

Year	Population	Real Private Investment (ex inventories)	Private investment per capita	
2003	3,970,000	25,229	$	6,354.91
2004	4,044,900	29,539	$	7,302.78
2005	4,101,300	32,242	$	7,861.41
2006	4,148,000	32,933	$	7,939.49
2007	4,196,700	33,478	$	7,977.22
2008	4,235,300	36,303	$	8,571.53
2009	4,271,000	31,871	$	7,462.19
2010	4,317,900	27,013	$	6,256.05
2011	4,362,800	28,194	$	6,462.36
2012	4,392,500	30,985	$	7,054.07
2013	4,417,700	34,489	$	7,807.00
2014	4,461,500	37,642	$	8,437.07
2015	4,541,900	41,117	$	9,052.82
2016	4,638,200	42,866	$	9,241.95
2017	4,742,200	44,298	$	9,341.23
2018	4,837,700	47,167	$	9,749.88
2019	4,922,200	50,723	$	10,304.94
2020	5,013,200	51,385	$	10,249.94

Question 2

Growth rate 2003-2008 =(PIPC 2008 - PIPC 2003)/PIPC 2003 * 100%
Growth rate 2003-2008 =(8571.53 - 6354.91)/6354.91 * 100%
Growth rate 2003-2008 =34.88% (2 d.p)

Growth rate 2008-2013 =(PIPC 2013 - PIPC 2008)/PIPC 2008 * 100%
Growth rate 2008-2013 =(7807- 8571.53)/8571.53 * 100%
Growth rate 2008-2013 =-8.92% (2 d.p)

As a component of AE investments directly effect its increase and decrease. Between 2003-2008 investments grew 34.88%, thus AE increased during this period (assuming other components remained constant) whereas between 2008-2013 investments decreased by 8.92% this means AE decreased during this period (assuming other components remained constant).

Question 3

Equation = (government investment*magnitude)/population

Year	Population	Real Government Investment	Government investment per capita	
2003	3,970,000	8,557	$	2,155.42
2004	4,044,900	9,127	$	2,256.42
2005	4,101,300	9,567	$	2,332.68
2006	4,148,000	11,338	$	2,733.37
2007	4,196,700	9,975	$	2,376.87
2008	4,235,300	10,519	$	2,483.65
2009	4,271,000	11,642	$	2,725.83
2010	4,317,900	12,186	$	2,822.21
2011	4,362,800	12,480	$	2,860.55
2012	4,392,500	12,166	$	2,769.72
2013	4,417,700	11,073	$	2,506.51
2014	4,461,500	12,221	$	2,739.21
2015	4,541,900	12,779	$	2,813.58
2016	4,638,200	13,109	$	2,826.31
2017	4,742,200	13,097	$	2,761.80
2018	4,837,700	14,372	$	2,970.83
2019	4,922,200	14,334	$	2,912.11
2020	5,013,200	14,512	$	2,894.76

Question 4

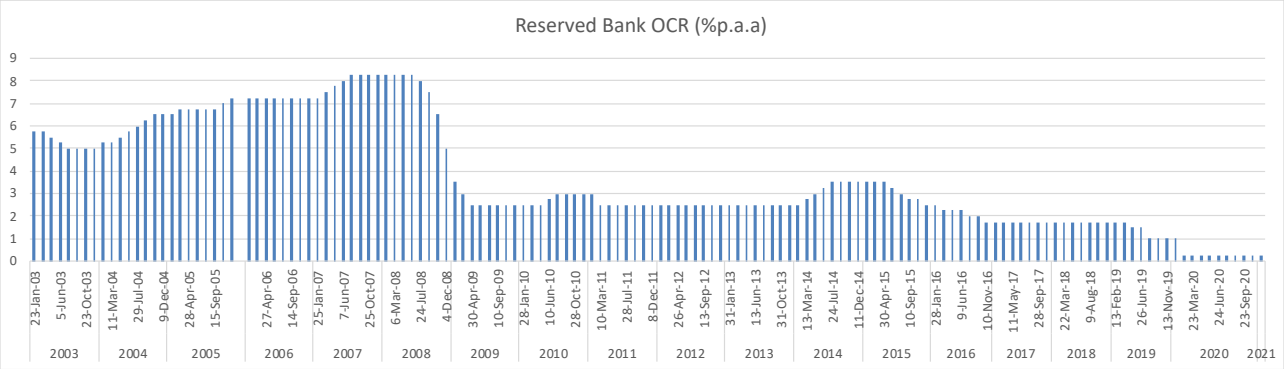
Stabilisation policy is a strategy enacted by a government which aims to maintain a healthy level of economic growth and minimise price changes. It is observed that government investment increased between the period 2008-2012 and private investment decreased between 2008-2012. Private investments is a component of AE, IS and AD, when private investment decrease the AE, IS and AD shifts to the left decreasing price and quantity at every level.

To combat this, government investment, a component of AE, IS and AD is increased, the AE, IS and AD curve then shifts to the right. This stabilises the effect of the event on AE, IS and AD as it minimise the impact of a decrease in private investment caused by the economic slowdown. Thus we can assume that increasing government investments is a stabilisation policy as it is used to maintain economic growth and minimise price change.

Question 5

When government increases spending without changing current taxes, and pays for the expenditure by issuing debt. This adds to demand to loanable funds, as a result there is a shortage of loanable funds as at the original equilibrium. As a result interest rates increase. Because the cost (interest rate) of loaning funds has increased - private investors who cannot afford the new interest rates are 'crowded out' as a result of increased government debt and thus private investment decreased. The relationship between government spending and private investment is negative. As G rises, PI falls.

Question 6



Between 2002-2008 interest rates held a positive trend. However, after mid 2018, we observe that the interest rates significantly decrease. This rate remained relatively consistent until 2014/2015 where it began to adopt a negative trend and then it reached a new low in early 2020.

Question 7

Exogenous variables are those which occur outside of the model. Often exogenous variables have the power to influence endogenous economic variables (inside the model). This is observed mid-late 2008 where a global financial crisis negatively impacted the New Zealand economy. These occurrences are unexpected and this shock has the power to influence various facets of the economy. The type of shock which best describes the events materialising mid-late 2008 is a financial shock as the crisis originated as a liquidity crisis in the USA. This event lead the reserve bank to make a significantly cut in interest rate which impacted various industries in the NZ economy.

Question 8

If government spending were to increase then interest rates would also increase. An increase in government spending is a expansionary fiscal policy hence output will rise as the economy is infused with more money through government contracts. to maintain inflation the central bank will raise interest rates in response to increased output. Additionally, when the government increases spending without changing current taxes, and pays for its expenditure by issuing debt. The result is an increase in the demand for savings. Because the demand curve for loanable funds has shifted to the right at the original equilibrium there is a shortage (Demand>Supply). As a result interest rates increase to attract more savings , and the quantity of borrowings increase (as for each one extra dollar of Government debt leads to a reduction in private investment of less than one dollar).

Question 9

I) Assuming prices remain fixed, when interest rates increase consumers more likely decrease the proportion of disposable income that they allocate to discretionary spending. Instead they will increase their investments as it becomes more profitable due to returns on investments rising

after the 2008 period. As more people are more likely to invest their income the investment function will increase and shift upwards.

II) Interest rates began to rise in from early 2014, this means when compared to 2013 it would have been relatively more expensive to borrow during this period. As a result private investment would have decreased in 2014 as higher rates means decrease profitability and increase risk for investments (higher repayment).
As the interest rates began to decline after 2014, we would observe an increase in private investment between the period 2015-2020 as lower rates means increase profitability and decrease risk for investments (lower repayment).

Question 10
Monetary policy is reflected in the OCR which is determined by the central bank. These rates then indirectly influence interest rates for lending and borrowing. From 2008 it is observed from the data that there was a significant decrease in OCR - this would stimulate an increase in private investment as it becomes less profitable to save and more profitable to spend.
Crowding out occurs when fiscal policy increase government expenditure which creates a shortage in the loanable funds market. The result of this shortage is increased interest rates which lowers private investment.
This means that the monetary policy (decrease in OCR) counteracts the effects of crowding out which result from fiscal policy (government spending). As lowering OCR decreases interest rates and increases private investments whilst increased government spending increases interest rates and decreases private investments.