CHANGING THE RATE OF GST: FISCAL, EFFICIENCY, AND EQUITY CONSIDERATIONS

Purpose and structure of paper

This paper provides information on revenue, efficiency, and equity considerations of changing the rate of GST. It looks at three possible rates, for illustrative purposes: 15%, 17.5% and 20%. Any change to the rate of GST would be likely to be part of a broader package of tax reform; therefore any increase to the rate should be seen as a revenue-positive input that is available for inclusion if changes to other areas of the tax system are desired.

In principle, the overall effects of the package to equity and revenue should be considered together. However, this paper largely looks at the effects of an increase in GST in isolation because of the wide variety of possible other tax changes that might accompany a GST increase.

An increase in the rate of GST could either be used to raise additional revenue or as part of a broader tax reform package- for example, to lower income tax rates. Combining an increase in the rate of GST with a reduction in income tax rate could be used to increase the efficiency of tax collections provided the efficiency gains from lower income tax rates exceed the efficiency costs of a higher rate of GST, as well as contributing to improving the integrity of the system.

An important question when addressing the desirability of any such change will be the likely distributional consequences of an increase in the rate of GST. The purpose of this paper is to discuss these issues, as well as the revenue implications of an increase to the rate.

Fiscal revenue from change to GST

As noted in *GST facts and figures*, GST accounts for 27% of government tax revenue. Recent GST receipts are set out in Table 1.

Table 1: GST receipts[1]

	2008/09[2] ($ billion)	2007/08 ($ billion)	2006/07 ($ billion)
Gross revenue from private sector	22.248	20.61	19.54
Less Refunds	10.665	9.516	8.325
Net Private sector revenue	11.593	11.115	11.215
Public sector revenue	Data unavailable	4.141	3.901

Using BEFU 2009 data, the estimated additional revenue from an increase in the GST rate is set out in Table 2.

Table 2: Estimated increase in revenue from change to GST rate[3]

($ billion)	15%	17.5%	20%
Increase in net GST revenue:			
Increase in revenue	2.890	5.660	8.310
Increase in revenue from private sector	2.150	4.200	6.170
Automatic flow through to benefits:			
Automatic benefit adjustments[4]	(0.250)	(0.480)	(0.720)

These estimates rely on a number of assumptions. Importantly they are static costings and ignore any change in behaviour as a result of the increased rate, or any change in refund patterns. They represent a purely 'mechanical' revenue effect of the increase in the tax rate. Possible behavioural changes that could reduce this effect are explored below.

Behavioural changes: impact on revenue received

Possible behavioural changes that could result from an increase in the GST rate include:

- substitution between goods and services which are subject to GST and those which are not;
- a decrease in consumption as a proportion of expenditure; and/or
- increased avoidance of GST through the 'black economy'.

The extent to which these will occur will depend on the extent to which an increase in GST is reflected in prices, and the underlying price elasticity of consumption of items in the GST base.

[1] Information taken from http://www.treasury.govt.nz/government/financialstatements
[2] This is the forecast 2008/09 year revenue. The actual amount received as at 31 May 2009 is tracking behind forecasts by 5%.
[3] This assumes that there is a 1% increase in consumption, and that consumers are budget constrained (e.g. that their nominal consumption is unchanged, but their real consumption falls).
[4] These include the automatic adjustments to benefits and to NZS; but do not include adjustments to Working for Families. This is because Working for Families does not update annually for price level changes- see Appendix Six.

There is little empirical evidence on behavioural changes that result from changes in the rate of consumption taxes, or of price elasticities of consumption. Income elasticities of consumption taxes were addressed by Creedy and Gemmell (2003), who estimated that the revenue elasticity of GST in New Zealand was around 1 (i.e., if disposable income rises by 1%, GST revenue will rise by 1% so long as income growth is treated as equiproportionate). However, as this relates to income, rather than price, elasticity of consumption taxes, this is not directly relevant to the impact of behavioural change as a result of changes to GST rates.

If the estimates in Table 2 above are seen as the purely 'mechanical' effect of the change, it is possible to estimate how much revenue may be lost from this mechanical effect due to behavioural changes. How much of this mechanical effect is lost will largely depend on the elasticity of GST expenditure with respect to the GST rate (as well as the ability to avoid GST)[5].

Given the relative size of the GST base relative to those items which are excluded from the GST base, a range of elasticities can be calculated in terms of their impact on revenue and change in non-GST expenditure for each possible rate change. The relative size of the GST base to those items excluded from the base makes substitution between bases more difficult.

The Household Economic Survey (HES) data from 2006/07 is used in Table 3 to show the impact of varying elasticities at a 15% rate, and what this would mean for levels of GST expenditure, and non-GST expenditure (assuming there is a substitution toward non-GST expenditure):

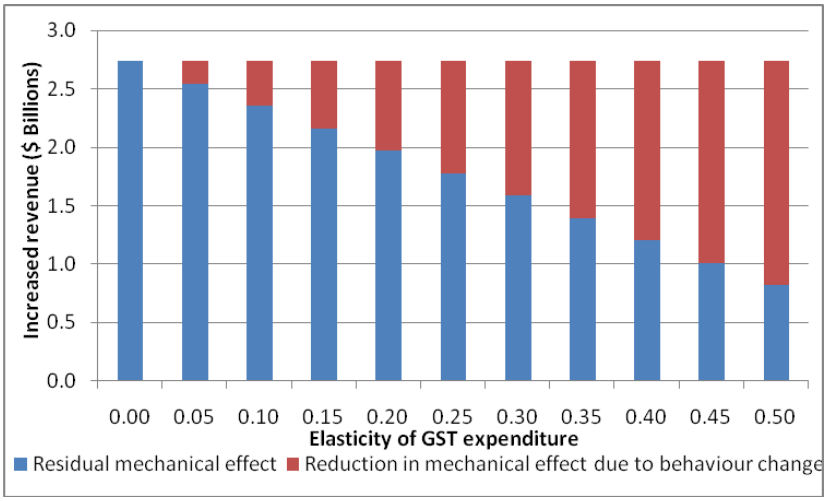
Table 3: Impact of a 15% rate at varying elasticities of expenditure on GST items[6]

Elasticity of GST expend	Amount of Non-GST expenditure	Amount of GST expenditure	% change in size of Non-GST base	% change in size of GST base	GST revenue received at new rate	% change from 12.5% revenue
0.0	16,795,512,608	54,693,122,296	0%	0%	8,203,968,344	20%
0.1	17,889,375,054	53,599,259,850	7%	-2%	8,039,888,978	18%
0.2	18,983,237,500	52,505,397,405	13%	-4%	7,875,809,611	15%
0.3	20,077,099,946	51,411,534,959	20%	-6%	7,711,730,244	13%
0.4	21,170,962,392	50,317,672,513	26%	-8%	7,547,650,877	10%
0.5	22,264,824,838	49,223,810,067	33%	-10%	7,383,571,510	8%

Figure 1 shows the impact of varying elasticities at the 15% rate. The blue part of the columns show the residual amount of the mechanical effect of the increase received (which reduces as the elasticity of expenditure on GST items increases). The red part of the columns shows the impact of behavioural changes in reducing the mechanical revenue effect as elasticities increase.

[5] See also *Integrity issues associated with raising the GST rate and/or introducing multiple rates*.
[6] This assumes that expenditure is maintained at current levels, but that there is a degree of substitution toward non-GST items. It is also possible that there could be an increase in savings behaviour as a result of these taxes.

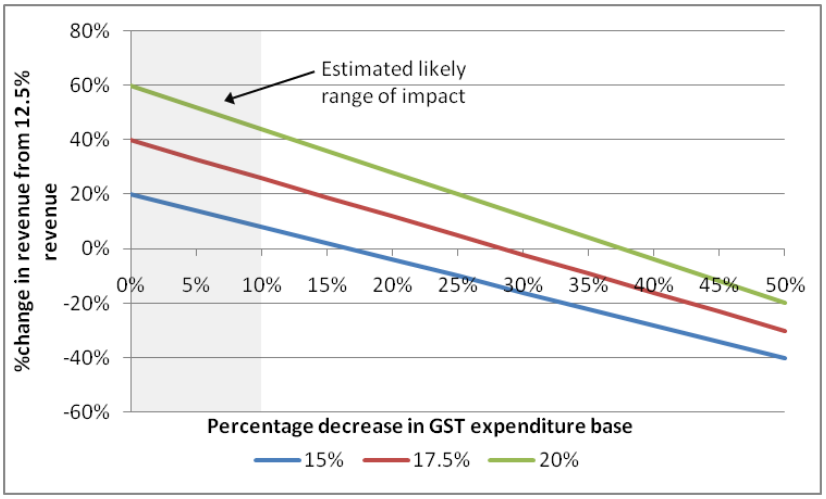
Figure 1: Impact of a 15% rate at varying elasticities of expenditure on GST items



If one assumes an elasticity of GST expenditure of 0.2 or 0.4 (this is roughly comparable to that of income at the upper levels, and probably represents an upper bound for the relevant elasticity), an increase in the GST rate from 12.5% to 15% would result in increased revenue of 15% or 10% respectively. An elasticity of 0.4 would represent an increase in expenditure on goods and services to which GST does not apply of 26%, which seems high given the broad base of GST, and represents a drop in GST expenditure of 8%. Intuitively, this seems to be a significantly higher elasticity than is probably the case, but there is no available data on the likely responsiveness of GST expenditure to changes in the GST rate in New Zealand. Similar tables and graphs for a change in the rate to 17.5% and 20% are presented in Appendix Two.

The change in GST expenditure can also be used to demonstrate the impact of a reduction in the size of the GST expenditure base on revenue (regardless of whether this is caused by substitution away from GST items, changes in expenditure patterns, or avoidance). Figure 2 shows the impact of a decrease in the GST expenditure base at 15%, 17.5% or 20% on the additional revenue from a change in a rate.

Figure 2: Impact of a decrease in GST expenditure base on additional revenue



Mechanical increases to revenue resulting from each of the rates are shown in Table 2. The behavioural reduction resulting from changes to the size of the GST base are set out below.

Table 4: Impact of reduction in GST base on mechanical effect of increase

($ billion)		15%	17.5%	20%
Mechanical effect(additional revenue):		+2.01	+3.94	+5.78
Behavioural effect leading to a reduction in	0%	0	0	0
GST base of:	5%	-0.60	-0.69	-0.77
	10%	-1.21	-1.38	-1.54
	15%	-1.81	-2.07	-2.31
	20%	-2.41	-2.75	-3.08
	25%	-3.02	-3.44	-3.85
	30%	-3.62	-4.13	-4.62
	35%	-4.22	-4.82	-5.39
	40%	-4.82	-5.51	-6.17
	45%	-5.43	-6.20	-6.94
	50%	-6.03	-6.89	-7.71

Efficiency of GST relative to income taxation

GST can be viewed as an indirect tax on income from labour together with a lump-sum tax on wealth on the day that the tax is introduced. To see why the GST is an indirect tax on labour income, consider an individual who earns $100 in year 1. If there were a 20% tax on all income or on labour income only, the individual would pay $20 in tax and could consume $80 in that year. Likewise, if instead there were a GST of 25% of the net-of-tax price, the individual could spend $100 in year 1 on consumption in which case $20 would go to the government as GST revenue leaving the individual able to enjoy $80 of real consumption goods. Whether there is a tax on all income, on labour income only or on consumption, the taxes reduce the return from labour by 20%.[7]

In addition to the tax on labour income, the GST also imposes a tax on any wealth at the time the tax is introduced, as whenever the wealth (together with any accumulated interest) is spent, it will be taxed. Similarly, increasing the rate of GST would have an impact on any wealth held at the time of the increase, as whenever this wealth is spent, it will be taxed at a higher rate than expected.

Broad based consumption taxes are generally seen to be a more efficient form of tax than income taxation (see for example Johansson, 2008). There may be a number of possible reasons for this. First, income taxes are normally progressive whereas a GST is a proportional tax on expenditure. Progressive taxes may often be less efficient than proportional taxes. Auerbach and Kotlikoff (1987) argue that broad based consumption taxes are significantly more efficient than proportional income taxation. A second reason that broad base consumption taxes are seen as more efficient is that unlike a general income tax, a GST does not discourage saving. A third reason is that a GST includes a lump-sum tax on existing wealth.

[7] For an example of how income and consumption taxes impact the returns from investments and savings, see Appendix Three.

A shift from income taxes to consumption taxes may increase incentives to work by decreasing effective tax rates, although any compensation package (discussed later in this paper) designed to offset impacts on vulnerable groups would be likely to worsen work incentives for the groups to whom compensation is targeted. The work incentives created by a shift from income to consumption taxes, without compensation, promotes economic growth at the expense of making the tax system less progressive (Johansson, 2008).

An important source of inefficiency can be the way in which taxes affect firm and household decisions, and consequently, GDP. Growth studies have generally found income taxes have a smaller impact on GDP than broad based consumption taxes. Johansson *et al* (2008) states that:

> "Taxing consumption and property has less adverse effects on GDP than taxing income, and property taxes are less distortionary than consumption taxes. Therefore increasing the use of consumption and property taxes without changing overall revenue could have gains to long-run GDP."

Creedy (2009) notes that consumption taxes are a relatively efficient way to raise revenue, as the welfare costs per dollar of tax raised, at mean total expenditure, are substantially lower than those for income tax revenue where there is an increasing marginal rate structure. Crawford (2009) argues that:

> "The appropriate mix of direct and indirect taxes may be primarily a matter of administration and compliance. Running a broad-based consumption tax in parallel with taxes on income reduces the risk of revenue losses by spreading it across a number of sources each of which is to some degree independently enforced."

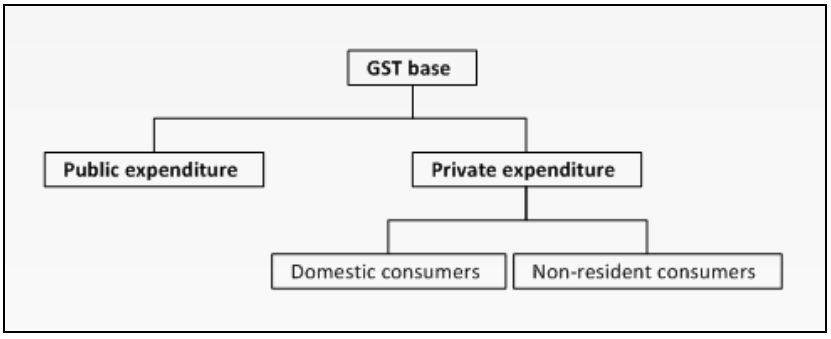
Equity considerations

Incidence of GST

Legal incidence

GST is paid by both the private and public sector. Within the private sector, it is paid by businesses (who, if registered, can be refunded for input costs), domestic consumers, and non-residents who consume in New Zealand. Figure 3 sets out the composition of GST payees in New Zealand.

Figure 3: GST base



Using 2006/07 data, the proportion of GST that was paid by the public sector, relative to the private sector was 25.8%. Of GST paid by the private sector, 94.5% was paid by resident households, against 5.5% paid by non-resident households. Figure 4 shows the proportion of GST paid by the public sector, and domestic and non-resident households.

Figure 4: Approximate public GST Revenue to Private GST Revenue (domestic and non-resident)

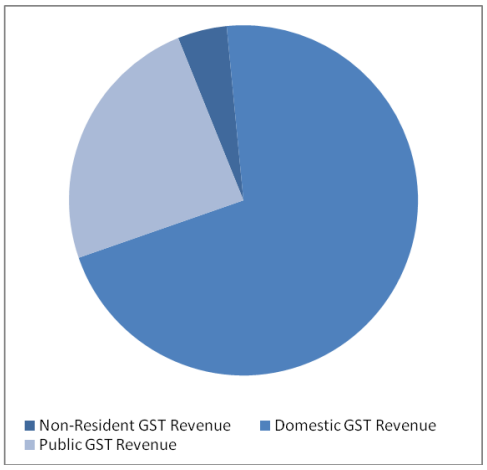
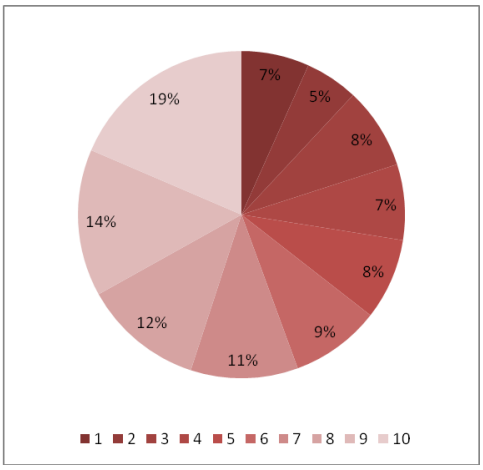


Figure 5: GST paid by NZ households (deciles of equivalised disposable income)



Of the GST paid by domestic households, deciles (of equivalised disposable income)[8] pay a progressively increasing share of GST revenue (in absolute terms) received from domestic households, as shown in Figure 5 above.

Final incidence of GST

The final incidence of GST is designed to fall on domestic household consumers, and overseas visitors (but not overseas residents)[9]- those who last consume the good or service. The design of the tax, and the refund structure, are designed to ensure that businesses do not pay the GST; and the destination principle ensures that non-resident consumers are not charged (Warren, 2005).

The final incidence of any increase to the rate of the tax will depend on the extent to which businesses can raise the price of their goods or services to incorporate the increased tax payable on that good and service. If they cannot do so- for example, due to highly elastic demand- this will effectively reduce business's margins as they will have to pay the increased tax without a compensating increase in their revenue. The extent to which the tax rate is born by business will depend on the individual business

[8] Deciles of disposable income represent households organised into groups by their annual disposable income, with those in the first decile representing those on the lowest 10% of disposable incomes, and those in the highest representing those with a disposable incomes in the highest 10%. The data has been equivalised to adjust both expenditure and income for the number of adults and children in the household.
[9] Because GST is paid by overseas visitors (although a small percentage of revenue), its impact on the competitiveness of our tourism industry may need to be investigated further if an increase is recommended- particularly if a large increase is recommended.

model; and it is therefore possible that the increase could be borne partially by businesses, particularly in the short run.

Although rent and housing payments are outside the GST tax base and GST is not directly payable on rent or housing payments, these payments may indirectly include an element of GST. This is because GST will apply to the cost of building new houses, implicitly raising the cost of housing stock to include an indirect element of GST which will be reflected in higher rent or housing payments. Also any switch of spending towards rent and housing payments (when GST rates rise) that causes the prices of these items to rise, will mean that GST is partly incident on these 'GST-exempt' items.

Distributional impact of consumption taxes

GST, in common with other consumption taxes such as VAT, is widely perceived to be regressive. If GST paid is measured as a share of gross or disposable income, savings and dissavings effects are captured, and impact the proportion of gross or disposable income that is spent (and thus GST paid). As those on higher incomes save more, they spend less of their total incomes. Similarly, those on lower incomes, on average, dissave, leading to expenditure that is greater than disposable income. To compound this, the HES data, on which the analysis below is based, tends to overstate this dissaving for the reasons outlined below.

The literature suggests that estimation of the distribution of GST inclusive of savings and dissavings tends to overstate the regressivity of income taxes (Creedy, 2009; Sabelhaus, 1993). Similarly, the distribution impact of consumption taxes is seen to be more regressive if based on an annual rather than lifetime basis. Money saved in one year will typically be spent in the future; and as those who save also pay interest tax, savers typically pay more lifetime tax than non-savers.

Therefore, it is important to examine the lifetime incidence of a consumption tax; rather than solely its annual impact on distribution. OECD (2008) notes that where annual income is adopted as the basis for assessing the distribution of consumption taxes:

> "The distinction [between annual and lifetime measurement of distributional impact] is important, as while consumption taxes appear to be regressive based on annual income, they are likely to be less regressive and even progressive when their effect is assessed over an individual's life time."

OECD (2008) reports three ways of measuring the life time impact of consumption taxes:

- Using annual expenditure data as a proxy.
- Approximating lifetime annual expenditure; and
- Using age distribution of GST as a proxy. This involves mapping the current distribution of GST paid across households based on the age of the household.

Annual expenditure is a better proxy for lifetime impact of consumption taxes due to the fact that it is less variable across lifetimes than income. In addition, all income earned during a lifetime, in the absence of bequests, is spent; and saving and dissaving can be seen as a smoothing mechanism across life times. Even when wealth is passed on by way of bequests, beneficiaries of an estate will eventually be subject to GST when the wealth is spent, which makes GST less regressive than may commonly be thought. If there are concerns about equity due to bequests, there are likely to be more effective ways to address these concerns.

Gross income should not be used to assess regressivity of GST: if those on high incomes pay more income tax due to a progressive income tax structure, a uniform rate of GST will appear regressive as a result.

Distribution of GST in New Zealand

HES data

2006/07 HES data is used to estimate the distribution of GST paid in New Zealand. This provides detailed income and expenditure information across approximately 2,500 households.[10] However, care must be taken in regard to the bottom decile of this data, as a number of households have either abnormally low incomes (either negative, zero, or below the minimum level of social support), or expenditure that is significantly higher than incomes, or both. For example, Perry (2009) notes that 75-80% of households that have an expenditure to income ratio of 3:1 or higher are in this decile. Similarly, between a quarter and a third of households in the first decile have a high expenditure to income ratio- significantly more than any other decile. The average household in the first decile spends 2.5 times more than they earn.

Perry (2009) states that this apparent discrepancy between income and expenditure can possibly be explained by:

- A number of self-employed, who have low incomes;
- Those in receipt of loans, or gifts, or who have drawn down previous savings to use to spend; and/or
- Underreporting (either deliberate or accidental) of income.

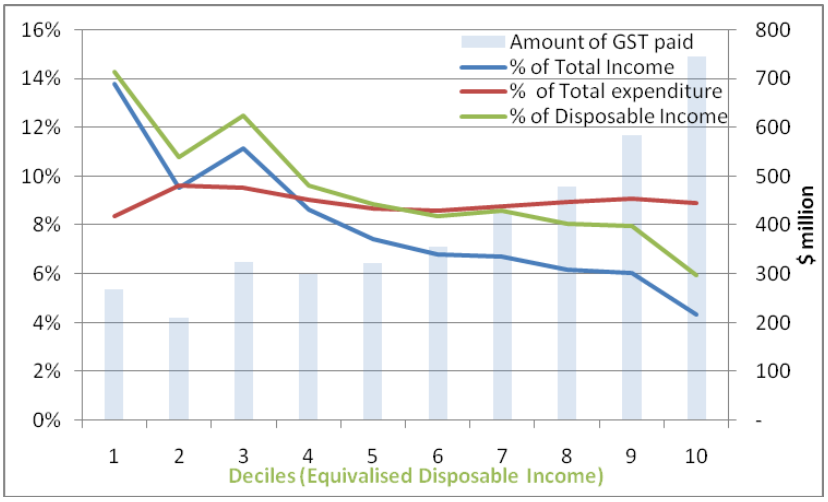
Taken together, these factors mean that those households in the bottom decile cannot be assumed to have the lowest living standards (Perry, 2009). Several approaches have been used to address this in other countries and NZ studies; including using deciles 2 and 3 as the bottom quintile, or the elimination of any household with a negative income and where expenditure to income is greater than 3:1. In this paper, households with negative or zero incomes have been removed; although the bottom decile should still be treated with scepticism as a number of households have a very high expenditure to income ratio.

Results from HES data

Based on the 2006/07 HES data, GST is currently paid by households as set out in Figure 6. As Figure 6 shows, if GST paid by decile is measured as a proportion of either total or disposable income, it falls more heavily on those on lower incomes. If GST is measured as a proportion of total expenditure, it is flatter across the distribution. This is because total expenditure is more constant across deciles and across lifecycles than income; and also demonstrates the saving/dissaving effect that is captured in the total and disposable income curves.[11]

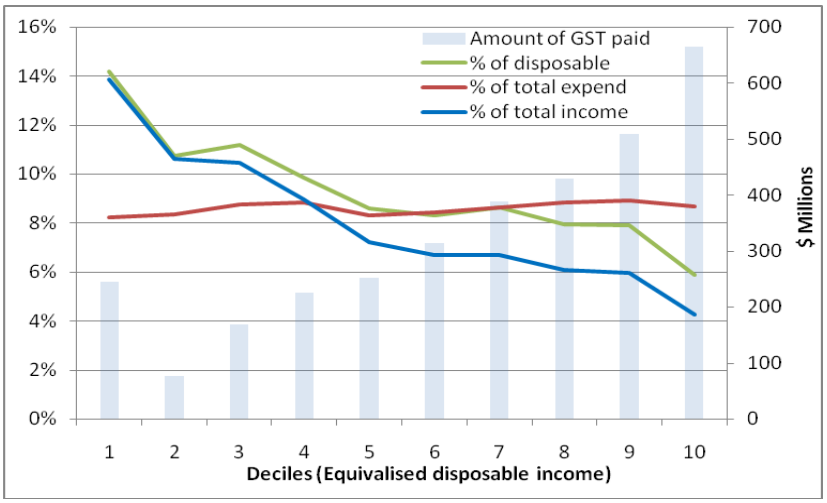
[10] Some statistics for this data are set out in Appendix One.
[11] For a breakdown of GST and non-GST expenditure, see Appendix Four.

Figure 6: Amount of GST paid as a percentage of total income, total expenditure, and disposable income



This graph also shows the amount of GST paid by decile in absolute terms, with a generally increasing profile across deciles, but exceptions in that decile 2, and 4 pay less GST than the decile preceding them. The lower proportion of GST paid as a total of disposable and total income by the second decile is the impact of those in receipt of NZS. The impact of removing NZS recipients from the data is shown in Figure 7.

Figure 7: Amount of GST paid as a percentage of total income, total expenditure, and disposable income- non NZS recipients



Figures 6 and 7 also demonstrate the impact of the savings and dissavings effects in assessing the incidence of GST. Effectively, savings and dissavings are shown as the gap between the red line (total expenditure) and the green line (disposable income); with the area above the red line representing dissaving, and the area below representing savings. This is shown more clearly in Figure 8.

Figure 8: Savings and dissavings: Total expenditure as a proportion of disposable income

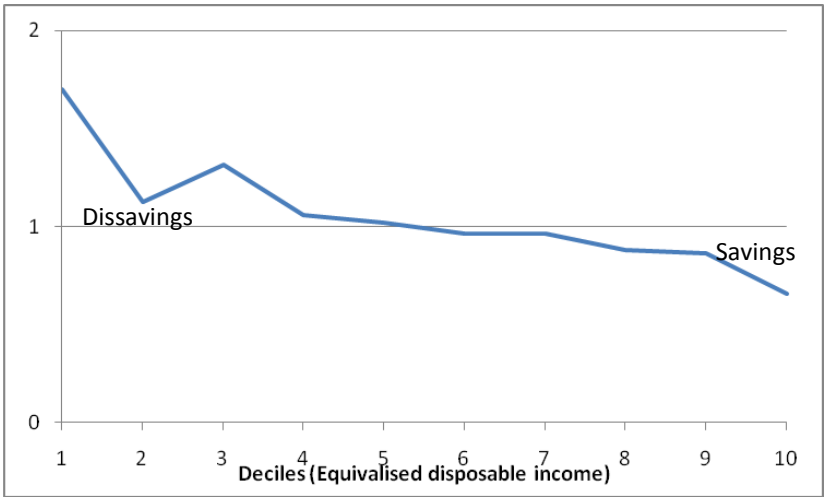
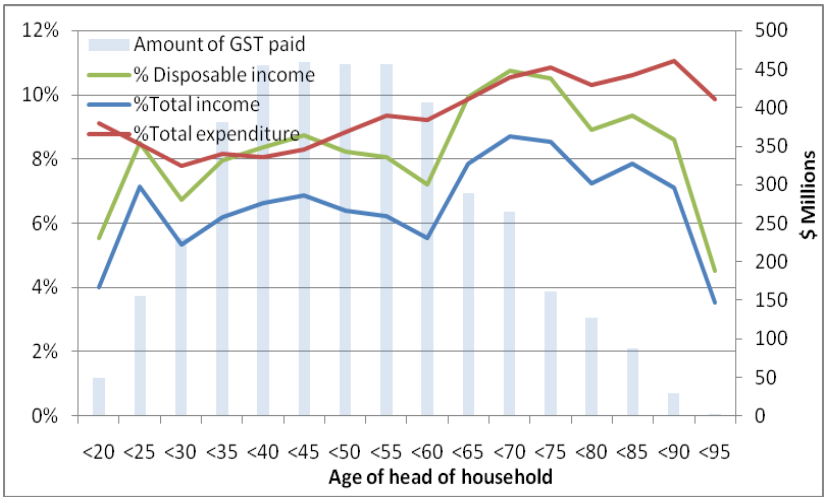


Figure 8 demonstrates that there is a significant element of dissaving at lower deciles, and saving in the upper deciles. Therefore, Figures 7 and 9 demonstrate that as suggested by the literature, the element of saving and dissaving across deciles has a large impact on the distribution of GST across deciles. Similarly, they also demonstrate that GST is less regressive as a proportion of total expenditure than if measured as a proportion of income.

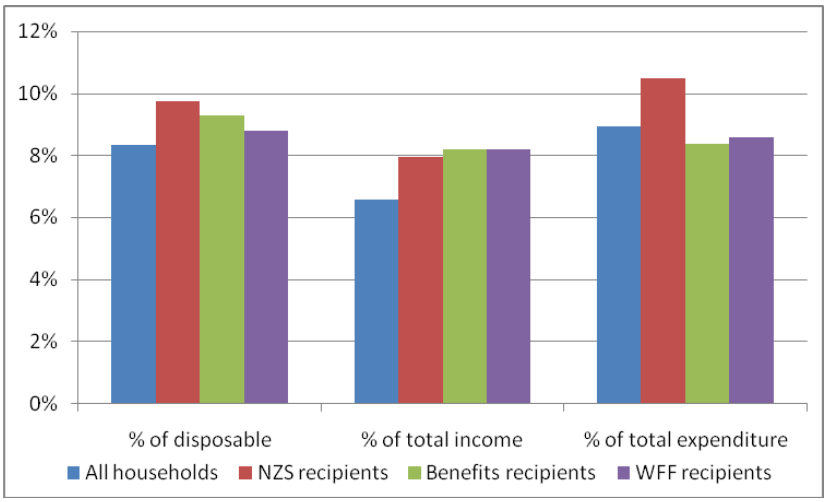
Figure 9 shows the average GST paid distributed according to the age of the head of the household and shows that GST paid as a proportion of expenditure is more stable across the age distribution than GST paid as a proportion of total or disposable income, and generally increases with the age of the head of the household. The reason for this may be a decreasing proportion of rent and house payments to expenditure as the age of the head of household increases. GST paid as a proportion of income is highest for those in the 65-69 bracket, with a varying profile over the other age groups.

Figure 9: Amount of GST paid as a percentage of total income, total expenditure, and disposable income- by age of head of household



Another way of measuring the impact of GST is to measure the impact of GST paid by different groups. Figure 14 shows the percentage of GST paid by recipients of Working for Families, NZS, and benefits. It demonstrates that on average, NZS, WFF, and benefit recipients pay a higher proportion of both their total and disposable incomes as GST than the "average household". Similarly, NZS recipients also pay a higher proportion of their total expenditure as GST; however WFF and benefit recipients pay a slightly lower proportion of their total expenditure as GST than the average household.

Figure 14: Percentage of GST paid by benefit recipients



The impact of an increase in the GST rate on retirees should also be given thought if any increase is considered. Retirees may not benefit from other changes recommended at the same time (e.g. personal income taxes), and as a group tend to have a larger degree of existing wealth that has been accumulated under higher income taxes, and will be taxed at a higher rate when spent due to an increase in GST.

Appendix Five shows the proportions of total income, disposable income, and total expenditure paid by households by the number of adults and children in that household.

Exclusion or zero-rating of food

It is sometimes proposed on distributional grounds to exempt food (or other necessities) from the base. However, exempting food on distributional grounds is seen to be of limited benefit in terms of addressing distributional inequities (Creedy, 2009). It is also a fairly blunt way of addressing distributional concerns as it gives more benefit, in absolute terms, to those on higher incomes (Creedy, 2009; Crawford, 2009; Johansson, 2008; OECD, 2008). Further, those on higher incomes also have a greater ability to increase the proportion of their expenditure on items that are exempted from GST.

OECD (2008) notes that if food or necessities are to be exempted on distributional grounds, this must be weighed against the reduced efficiency as a result of doing so. To exempt food from the base increases administrative and compliance costs, legal uncertainty and opportunities for fraud. It also has a greater potential to lower revenue due to the increase in the relative size of the GST base to non-GST base.

The literature reviewed notes that there are a number of other ways of addressing distributional concerns that arise from GST or increases to the rate, including increased transfer payments, benefit payments, or other government expenditure. However, it should be noted that these approaches in turn represent trade-offs to the efficiency effects of the reforms, which can include reduced work incentives for some groups, and additional administration and compliance costs. However, this approach is more targeted towards those in need than a general reduction in the GST rate. For example, Crawford (2009) argues, in the case of the UK VAT:

> "One clear implication of this line of analysis, however, is that the case for using preferential rates of VAT to help the less well-off is weak: there are better redistributive instruments available to the UK government than fine-tuning rates of commodity taxation."

Using the HES data, in 2006/07 food comprised 20.1% of the GST base. This would mean that to exclude food from GST is likely to result in a similar decrease in GST revenue. Therefore, more revenue would be gained by retaining the existing rate and base than by increasing the GST rate to 15% but excluding food from the base.

Although the proportion of expenditure and income spent on food decreases slightly as income increases, removing food from the GST base would have little impact on equity, particularly in lower income deciles. Figures 10 and 11 show the impact of removing food from the base on the amount of GST paid by deciles (with GST at 12.5%).

Figure 10: GST paid as % of total expenditure at 12.5% rate with food removed from base

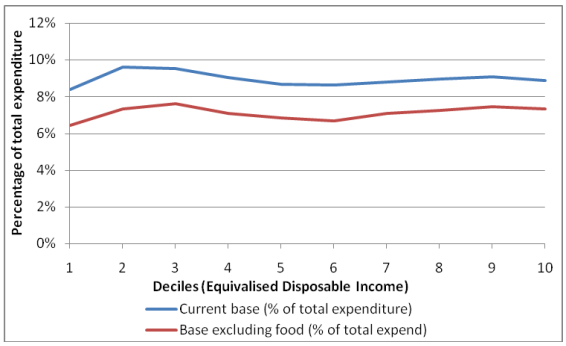
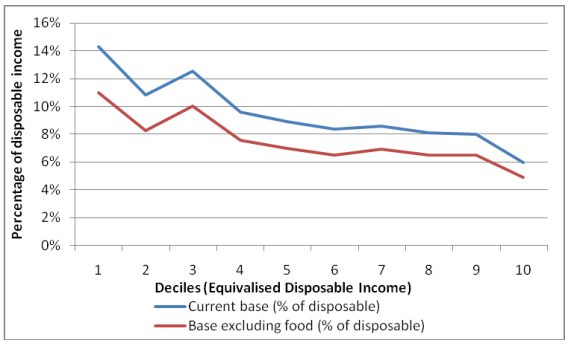


Figure 11: GST paid as % of total expenditure at 12.5% rate with food removed from base



Figures 12 and 13 show the impact of removing all food other than takeaways and restaurant meals. This would reduce the tax base by 15.3%. Although removing all food other than takeaways and restaurant meals has a greater impact on equity than removing all food, it does not significantly impact the distribution of GST as a proportion of either total expenditure or disposable income.

Figure 12: GST paid as % of total expenditure at 12.5% rate with food (excluding takeaways and restaurant meals) removed from base

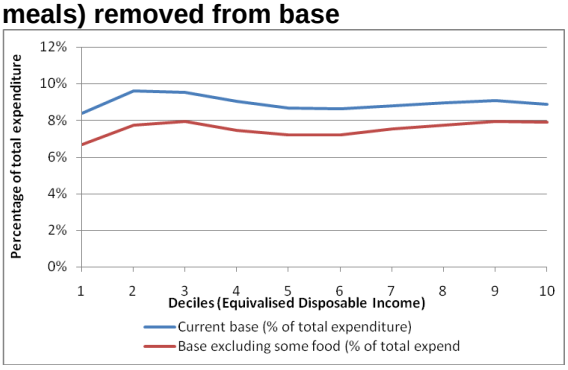
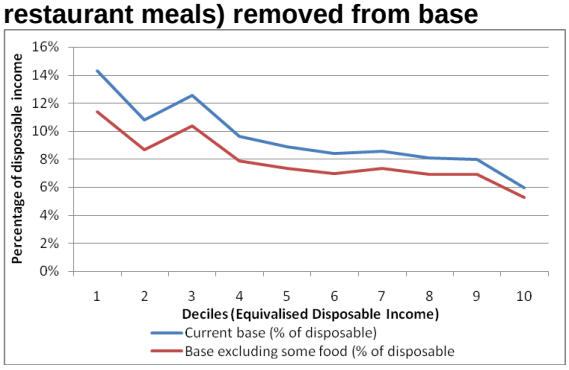


Figure 13: GST paid as % of total disposable income at 12.5% rate with food (excluding takeaways and restaurant meals) removed from base



This supports the conclusion suggested by the literature that exempting food from the GST base would be costly, inefficient, and ineffective at addressing distributional concerns. [12]

Effect of increased GST rate on households[13]

Increased GST paid by households

Increasing the rate of GST would increase the GST paid by households at every income level (assuming no change to their expenditure or savings patterns; and that the increase is incorporated into higher prices). Using the HES data, and assuming that consumers are budget constrained (i.e. that real consumption falls), the proportion of the additional revenue paid by a decile or group will be the proportion of total GST revenue paid by that decile or group. Table 5 details the proportion of the additional revenue that would be borne by different equivalised deciles. This gives an indication of the amount of additional revenue (see Table 3 earlier) that would need to be foregone in order to adequately compensate these groups.

Table 5: Additional GST payable by deciles (household disposable income) as percentage of total additional revenue[14]

	% of increased revenue				
Decile	**WFF recipients**	**NZS recipients**	**Benefit recipients**	**No WFF, NZS or Benefit**	**Total population**
1	0.24%	1.80%	1.37%	0.91%	4.03%
2	0.86%	1.69%	1.95%	0.63%	4.35%
3	1.68%	1.39%	2.87%	1.35%	6.23%
4	2.57%	1.66%	1.84%	2.76%	7.14%

[12] This measure is also proposed on health grounds. The extent to which a reduction in GST on "healthy" foods would result in increased expenditure on healthy foods and decreased expenditure on "unhealthy foods" would depend on the relative elasticities of these foods, and other consumption items, to changes in prices.

[13] This assumes that the increase has been immediately incorporated into prices.

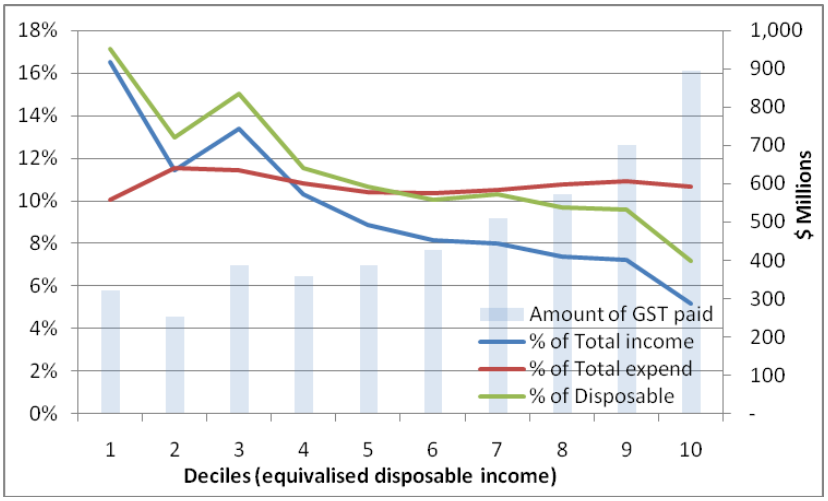
[14] Household disposable figures, rather than equivalised, are used as this measures the actual impact on households rather than the adjusted impact for the number of children or adults.

5	3.01%	1.28%	2.11%	3.22%	8.46%
6	4.88%	1.93%	0.91%	2.89%	9.24%
7	4.00%	0.93%	0.72%	5.29%	10.64%
8	2.97%	1.15%	0.80%	8.50%	12.89%
9	1.78%	1.34%	1.69%	11.68%	15.58%
10	1.00%	0.57%	*[15]	18.88%	21.45%
Total	23.00%	13.75%	15.43%	56.13%	100.00%

As an example only, as NZS recipients in the second decile pay 2.31% of an increase, 2.31% of additional revenue would be needed to adequately compensate this group for the change in the GST rate, relative to the status quo.

An estimate of the impact on deciles of an increase in the GST rate to 15% is shown in Figure 15.

Figure 15: Amount of GST paid at 15% as a percentage of total income, total expenditure, and disposable income



Possible compensation for impact of increase

The current benefit and transfer system has a number of adjustments that automatically update a number of benefit amounts, thresholds, and abatements for changes in prices. Main benefit levels, as well as several other benefits (including disability and childcare allowances) adjust for inflation on an annual basis. NZS also adjusts for price levels annually, within a floor and ceiling determined by average wages. Working for Families (the Family Tax Credit) adjusts when inflation reaches 5%. A few benefits (e.g. the accommodation supplement and some hardship assistance) do not adjust. A more detailed summary of adjustments of benefits and other financial assistance for changes in prices can be found in Appendix Six.

Therefore, many of the social assistance payments paid through the tax and benefit systems will adjust automatically to any increase in prices that result from an increase

[15] Data withheld due to sample size

to the GST rate.[16] However, due to timing differences (as most of the benefits above are adjusted in April), there could be a delay of up to a year before the increased benefits are paid to recipients. Also, because the measure used is generally the 'headline CPI' for all groups, it is possible that the incidence of GST will affect vulnerable groups and those on lower incomes differently to those on higher incomes, and that the compensation provided through CPI adjustment of financial assistance will either be too little or too much.

The timing delay, in conjunction with those benefits that do not adjust, and the possibility that headline CPI will not sufficiently capture the impacts on vulnerable groups, mean that if any increase to the rate of GST is considered, thought will also need to be given to compensation of lower income households or other vulnerable groups despite the eventual flow-through provided by the social assistance system.

There are a number of possible mechanisms that could be used to construct a compensation package. The timing issue could be handled by increasing rates of primary assistance (benefits, family tax credit and New Zealand Superannuation) by an amount estimated to cover the additional impact of GST on the CPI. Other "second tier" and hardship supports might also be adjusted in the same way, and there may be a case for special adjustments to payments that are not normally increased in line with CPI. The additional increase could be removed from the rates at the time that the actual impact of the GST increase is captured by the next CPI adjustment. Compensation for those on lower incomes when GST was introduced in 1986 included increases to benefit levels to compensate for the expected changes in price levels, and by the introduction of Family Support. Compensation for lower income households the increase in 1989 was not as direct, and was also undermined by the cuts to benefit levels in 1991 (St John, 2009).[17]

Establishing whether the CPI measure adequately captures the impact of an increase in GST on vulnerable groups would require further work and analysis to establish.

While it is possible to make changes to compensate a particular group that are either more heavily impacted than other groups, or less able to adjust to a higher rate it is important that the difficulties of finding an adequate measure of compensation are not underestimated. Compensation will also raise important trade-offs in its own right – in particular increasing rates of financial assistance will reduce the changed incentives and efficiency, and may increase administration and compliance costs. These trade-offs will alter the balance of costs and benefits achieved by changes to the consumption and income tax regimes.

Finally, the dynamic benefits of any package should be taken into account along with the short run effects. Any overall tax packages may have longer term impacts on the living standards of all groups. Therefore, when assessing any overall packages, care should be taken to identify both the short term equity costs, and also the longer term dynamic benefits that may result.

[16] Although beyond the scope of this paper, Government spending is generally perceived to be progressive in nature, and should also be considered in relation to overall impact of tax policy on households.
[17] See Appendix Seven for a brief history of GST in New Zealand.

Combination with other tax/transfer reforms

If any increase in the GST rate is proposed, it is likely to be part of a broader package with other changes to the tax and/or transfer system. If a broader tax reform package is to be implemented, careful attention will need to be given to the combined effect of the changes on economic efficiency, equity, revenue, and compliance costs. As an indication only, the additional revenue from an increase in the rate of GST could be used to reduce the top two tax rates to 27% or to reduce all tax rates by 2%.

Reference List:

Data

- Household Economic Survey data 2006/07 and 2007/08
- Financial Statements of the Government (available on Treasury website)
- Data sourced from Treasury and MSD, including Taxwell.

Key literature reviewed

Auerbach, A. (2008) *Income or Consumption Taxes?* Paper for Musgrave Conference

Auerbach, A., Kotlikoff, L. (eds) (1987) *Dynamic Fiscal Policy.* Cambridge University Press. Chapter 5: Tax reform - choice of the tax base.

Bollard, A. (1992) New Zealand's Experience with Consumption tax. *Australian Tax Forum.* 9, 4, 473.

Crawford, I., Keen, M., Smith, S. (2009) *Value Added Tax and Excises.* Chapter prepared for the Mirrlees Review (http://www.ifs.org.uk/mirrleesReview).

Creedy, J. (2009) *Distributional Properties of GST and other Indirect Taxes.* Paper prepared for NZ Treasury.

Creedy, J., Norman G. (2003) *The Built-in flexibility of income and consumption taxes in New Zealand.* Treasury Working paper 03/05.

Ebrill, L., Keen, M., Bodin, J-P., Summers, V. (2001) Is the VAT a particularly effective and efficient tax? Chapter in *The Modern Vat.* IMF: Washington.

Fullerton, D., Rogers, D., (1993) *Who Bears the Lifetime Tax Burden?* The Brookings Institution: Washington.

Johansson, A., Heady, C., Arnold, J., Brys, B., Vartia, L. (2008) *Taxes and Economic Growth.* OECD Working paper, (2008) 28.

Krever, R., White, D. (2006) *GST in retrospect and prospect.* Brookers: Wellington.

Newhouse, D., Zakharova, D. (2007) *Distributional Impacts of the VAT reform in the Philippines.* IMF Working Paper, 07/153.

OECD (2008b) *A Review of studies on the distributional impact of consumption taxes in OECD countries.* OECD Social, Employment and Migration Working Papers No 64.

OECD, (2008) *Consumption Tax Trends 2008: VAT/GST and Excise Rates, Trends and Administration Issues*

Perry, K. (2009) *Household incomes in New Zealand: trends in indicators of inequality and hardship 1982 to 2008.* Ministry of Social Development; available at www.msd.govt.nz.

Sabelhaus, J., (1993) What is the distributional burden of taxing consumption? *National Tax Journal,* 46,3.

Saez, E., Slemrod, J., Giertz, S. (2009) *The elasticity of taxable income with respect to marginal tax rates: a critical review.* NBER Working Paper series, 15012.

St John, S., Rankin, K. (2009) *Escaping the Welfare Mess?* University of Auckland: School of Economics: Working paper 267.

Stephens, R. (2007) The Economic and Equity Effects of GST in New Zealand. In Krever, R., and White, D., (eds) *GST in Retrospect and Prospect.* Brookers: Wellington.

Warren, N., Harding, A., Lloyd, R. (2005) GST and the changing incidence of Australian taxes :1994-95 to 2001-02. *eJournal of Tax Research*, 3, 1.

APPENDICES

APPENDIX ONE: HES DATA STATISTICS

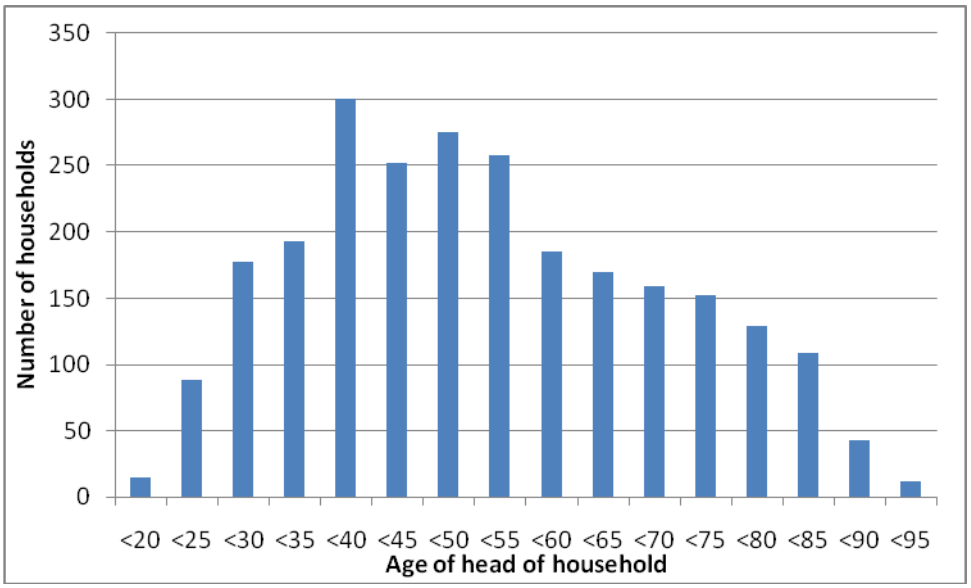
Sample number used: 2519 households

Sample period: 2006/07

Table 1-1: Average income, expenditure, benefit receipts, and children and adults per household (by deciles of equivalised disposable income)

Decile	Total income	Disposable income	Total Expenditure	GST Expenditure	Non-GST Expenditure	NZS	Benefits	WFF	Children	Adults
1	12,837	10,937	18,012	14,839	3,607	6,887	2,937	227	0.06	1.14
2	20,953	18,503	22,552	18,349	4,579	10,234	4,098	1,072	0.29	1.37
3	27,262	24,202	29,563	25,107	5,239	9,527	3,820	1,590	0.45	1.56
4	36,079	31,787	35,374	27,895	8,074	5,927	2,129	2,256	0.58	1.67
5	46,952	40,264	44,073	35,533	9,363	4,118	1,174	2,784	0.67	1.79
6	57,492	48,223	46,006	36,589	10,388	2,677	822	2,911	1.01	1.92
7	70,712	56,292	52,856	42,384	11,976	1,745	543	1,620	0.91	2.02
8	86,304	67,188	62,148	49,408	14,088	1,089	849	1,051	0.99	2.18
9	109,953	83,568	77,339	59,690	19,128	1,586	571	676	0.87	2.23
10	189,193	137,495	94,684	77,134	20,159	1,460	60	214	0.68	2.40
Total	65,766	51,854	48,293	38,715	10,670	4,507	1,691	1,447	0.65	1.83

Table 1-2: Number of households in sample in age groups by head of household



APPENDIX TWO: VARYING ELASTICITIES OF GST EXPENDITURE FOR A 17.5% OR 20% RATE[18]

Table 2-1: Impact of a 17.5% rate on elasticities and GST expenditure:

Elasticity of GST expend	Amount of NonGST expenditure	Amount of GST expenditure	% change Non-GST	% change GST	GST revenue received at new rate	% change from 12.5% revenue
0.0	16,795,512,608	54,693,122,296	0%	0%	9,571,296,402	40%
-0.1	18,983,237,500	52,505,397,405	13%	-4%	9,188,444,546	34%
-0.2	21,170,962,392	50,317,672,513	26%	-8%	8,805,592,690	29%
-0.3	23,358,687,283	48,129,947,621	39%	-12%	8,422,740,834	23%
-0.4	25,546,412,175	45,942,222,729	52%	-16%	8,039,888,978	18%
-0.5	27,734,137,067	43,754,497,837	65%	-20%	7,657,037,121	12%

Table 2-2: Impact of a 20% rate on elasticities and GST expenditure:

Elasticity of GST expend	Amount of NonGST expenditure	Amount of GST expenditure	% change Non-GST	% change GST	GST revenue received at new rate	% change from 12.5% revenue
0.0	16,795,512,608	54,693,122,296	0%	0%	10,938,624,459	60%
-0.1	20,077,099,946	51,411,534,959	20%	-6%	10,282,306,992	50%
-0.2	23,358,687,283	48,129,947,621	39%	-12%	9,625,989,524	41%
-0.3	26,640,274,621	44,848,360,283	59%	-18%	8,969,672,057	31%
-0.4	29,921,861,959	41,566,772,945	78%	-24%	8,313,354,589	22%
-0.5	33,203,449,297	38,285,185,607	98%	-30%	7,657,037,121	12%

[18] This assumes that expenditure is maintained at current levels, but that there is a degree of substitution toward non-GST items.

APPENDIX THREE: COMPARISON OF INCOME AND CONSUMPTION TAX EFFECTS ON INVESTMENTS AND SAVINGS

Consider the case where rather than spending the income immediately, an individual chooses to save any after-tax income and spend this in year 2. Suppose that there is an interest rate of 10 percent. Under a labour income tax, the individual would pay $20 of tax in year 1 on the earnings and could save $80. This would generate interest income of $8 and allow consumption of $88 in year 2. (Note that if only labour income were taxed, there would be no tax on the $8 of interest income in year 2). Under a tax on all income, the individual would once more pay $20 of tax in year 1 and save $80. But in this case the interest of $8 earned in year 2 would be taxed leaving $86.40 available for consumption in year 2. Under a GST, the individual would pay no tax in year 1 and could save $100. In this case $10 of interest would be earned in year 2, leaving $110 available for consumption in this year. However, in this case $22 would be paid in GST leaving only $88 of real consumption goods to be purchased in year 2.

Like a tax on labour income, the GST allows the individual to consume $80 of real consumption goods in year 1 or $88 of real consumption goods in year 2. By contrast a general income tax allows the individual to consume $80 of real consumption goods in year 1 or $86.40 of real consumption goods in year 2. Under either a labour income tax or a GST the benefits of forgoing consumption are the 10 percent pre-tax interest rate (forgoing $80 of consumption in year 1 leads to $88 of consumption in year 2). By contrast under a general income tax the benefits of forgoing consumption are the 8 percent after-tax interest rate (forgoing $80 of consumption in year 1 leads to $86.40 of consumption in year 2). Like a tax on labour income only, the GST drives no wedge between the pre-tax and the post-tax return to saving. By contrast, with a general income tax the after-tax interest rate is less than the pre-tax interest rate. Details of these cash flows are recorded in Table X below.

Table 3-1: Example of income and consumption tax effects on investments and savings

A. Consume Immediately

	Comprehensive income tax	**Labour income tax**	**GST**
Income	100.00	100.00	100.00
Tax	20.00	20.00	20.00
Consumption	80.00	80.00	80.00

B. Consume Year 2

	20% comprehensive income tax		**20% labour income tax**		**20% GST**	
	Year 1	*Year 2*	*Year 1*	*Year 2*	*Year 1*	*Year 2*
Income	100.00		100.00		100.00	
Tax	20.00		20.00		0.00	
Saving	80.00		80.00		100.00	
Interest		8.00		8.00		10.00
Tax		1.60		0.00		22.00
Consumption		86.40		88.00		88.00

APPENDIX FOUR: COMPOSITION OF EXPENDITURE

Composition of expenditure by decile groups

The proportion of expenditure on GST items to non-GST items is relatively constant across decile groups, as shown in Figure 4-1. Similarly, there are minor changes in the composition of expenditure on items within the GST base across deciles, although there are slight increases in expenditure on transport, clothing, and housing services as income increases, with a slight reduction in expenditure on food. The absolute amount of expenditure by deciles is shown in Figure 4-2.

Figure 4-1: Composition of household expenditure on GST items

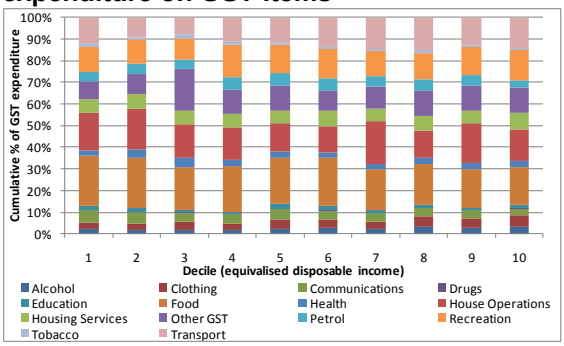
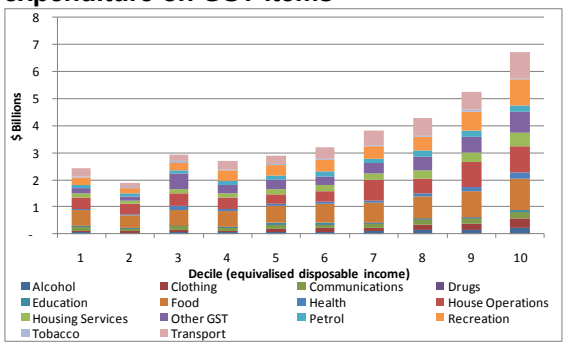


Figure 4-2: Composition of household expenditure on GST items



However, the composition of expenditure on non-GST items varies significantly across deciles as shown in Figures 4-3 and 4-4. There is a significant decrease in rent payments as a proportion of expenditure as income increases. Housing payments vary across deciles, and represent a particularly large share of incomes of those in decile 7, but generally increase as income increases. There is also a significant increase in credit services, and 'other expenditure' as income increases.

Figure 4-3: Composition of household expenditure on non-GST items by decile of equivalised disposable income

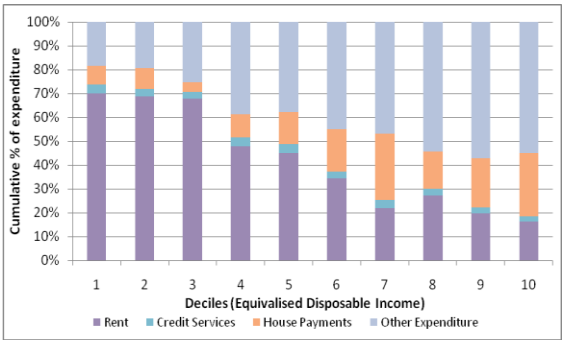
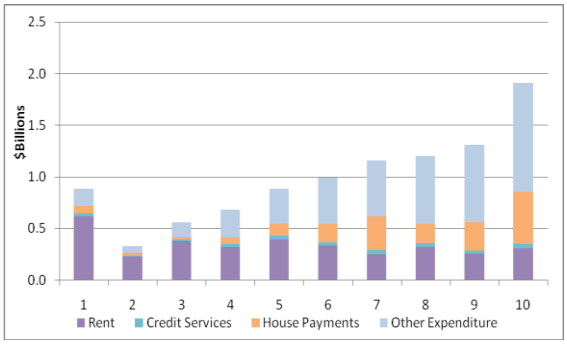


Figure 4-4: Composition of household expenditure on non-GST items by decile of equivalised disposable income



"Other expenditure" includes expenditure on interest payments, gifts, overseas expenditure, and a component of savings. The amount of money spent on overseas expenditure and gifts is relatively constant, or decreasing across the deciles; whereas the amount of savings increases across deciles. Figures 4-5 and 4-6 show the composition of "other expenditure".

Figure 4-5: composition of "other expenditure"

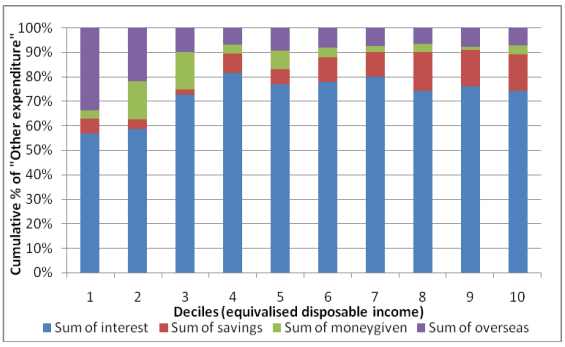
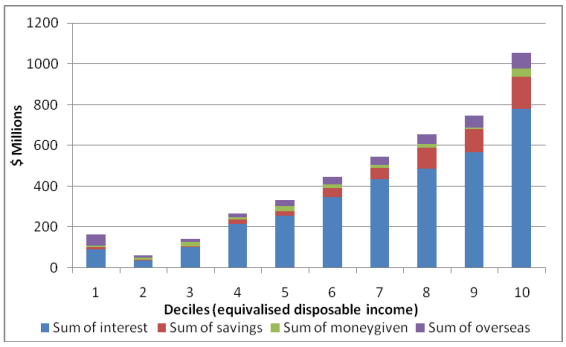


Figure 4-6: composition of "other expenditure"



Composition of expenditure by age of head of household:

The composition of expenditure also varies across an age distribution of households. Notable features include an increased proportion of expenditure on education in the under 25 age group, with increased house operation expenditures, and decreased transport expenditures in the 85+ age groups. Expenditure on housing services as a proportion of total expenditure is highest in households where the head of the household is under 20. The composition of expenditure is shown in figures 4-7 and 4-8.

Figure 4-7: Composition of household expenditure on GST items by age of head of household

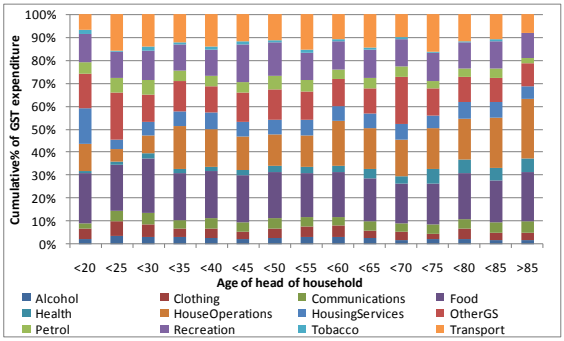
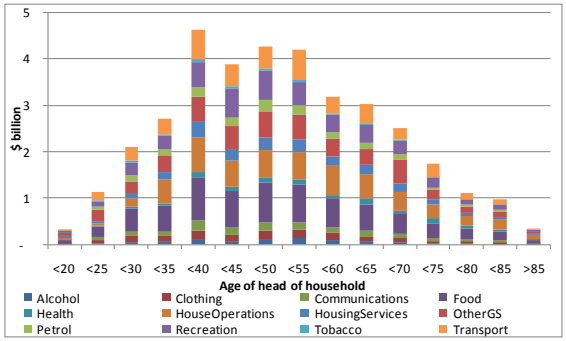


Figure 4-8: Composition of household expenditure on GST items by age of head of household



The composition of non-GST expenditure also changes with age, as shown in figures 4-9 and 4-10. Rent and housing payments decrease as a proportion of non-GST expenditure between the ages of 35 and 80, before increasing again. "Other expenditure" has the reverse profile.

Figure 4-9: Composition of expenditure on non-GST items by age

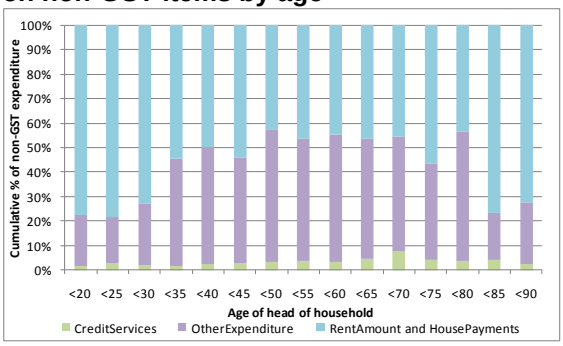
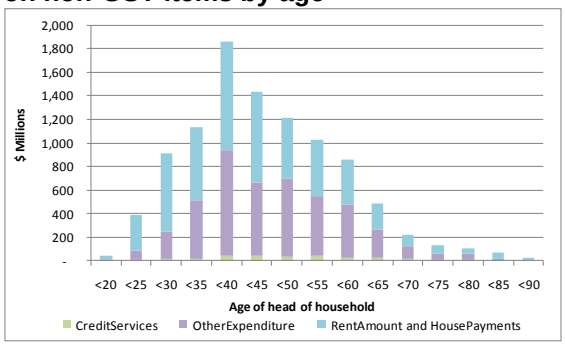


Figure 4-10: Composition of expenditure on non-GST items by age



APPENDIX FIVE: GST EXPENDITURE BY NUMBER OF CHILDREN AND ADULTS IN HOUSEHOLD

Figure 5-1: Percentage of GST paid as a proportion of total expenditure by number of adults in household

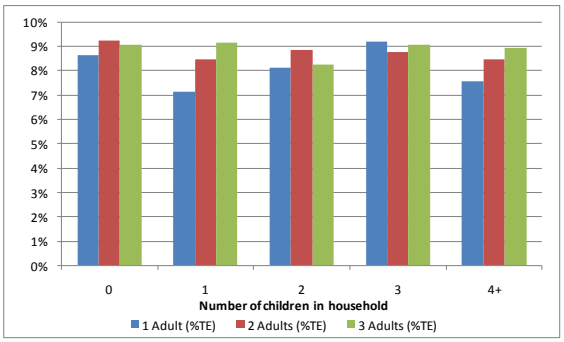
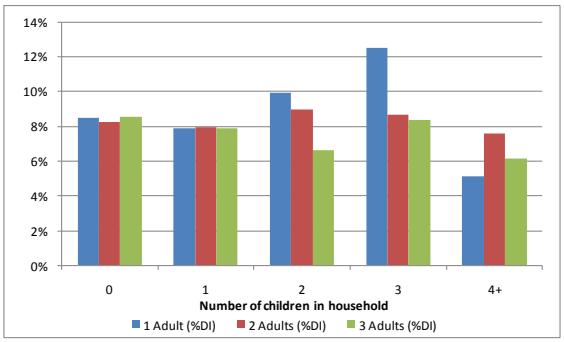
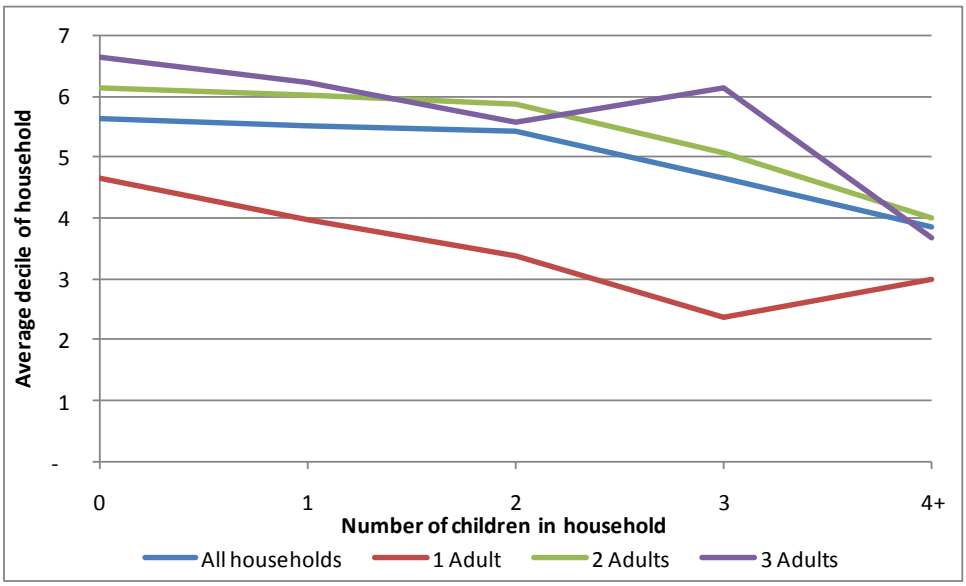


Figure 5-2: Percentage of GST paid as a proportion of disposable income by number of adults in household



These graphs suggest that one-adult households pay more of their disposable income as GST than two or three-adult households; but that they pay less of their total expenditure, at least for 0, 1 or 2 children as GST than two or three-adult households.

Figure 5-3: Average decile (equivalised disposable income) of households by number of adults and children in household



APPENDIX SIX: HIGH-LEVEL SUMMARY OF ADJUSTMENTS OF BENEFITS AND OTHER FINANCIAL ASSISTANCE FOR CHANGES IN PRICES

Table 6-1: High level summary of adjustments of benefits and other financial assistance for changes in prices

Type of benefit	Main rate	Income limits	Abatement Thresholds	Legislated
Annual adjustment to main rate (1April)				
Main benefits (includes unemployment benefits, invalids benefits, DPB, Widows benefit)	CPI Adjusted	Formula for adjustment	Not adjusted	No
Disability assistance (disability allowance, blind subsidy, special disability allowance, child disability allowance))	CPI Adjusted	CPI adjusted, where relevant	N/A	No
Childcare assistance (including Child Care Subsidy; out of school care subsidy)	CPI Adjusted	When cumulative CPI reaches 5%	N/A	Income limits only
Assistance into work/training	Usually CPI Adjusted (except for course participation allowance)	Where applicable, usually CPI adjusted	N/A	No
NZS	CPI adjusted, within 66% to 72.5% average wage	N/A	N/A	Yes
Adjustment to main rate when threshold is reached				
Family Tax Credit (Working For Families)	CPI adjusted when cumulative CPI increase of 5%	N/A	CPI adjusted when cumulative CPI increase of 5%	No
No adjustment to main rate				
In-Work tax credit (working for families)	Subject to periodic statutory review	N/A	CPI adjusted when cumulative CPI increase of 5%	Yes
Parental Tax Credit (working for families)	Subject to periodic statutory review	N/A	CPI adjusted when cumulative CPI increase of 5%	Yes
Accommodation benefit and supplement	No adjustment to maximum rates	Formula for non-beneficiaries	Flow-on for non-beneficiaries	No
Participation Allowance, Transition to Work Grant	No	CPI Adjusted	No	No
Hardship assistance	Mixture of non-adjustment, flow on, and a few that are adjusted	Where applicable, CPI adjusted	N/A	No

APPENDIX SEVEN: BRIEF HISTORY OF GST

The concept of a comprehensive consumption tax was first mooted soon after the 1984 general election; as an alternative to a retail tax that had also been proposed for New Zealand. Initially, there was concern about the introduction of a VAT equivalent due to the experience of other counties, particularly the United Kingdom, in implementing the tax. However, the debate was resolved by ensuring that the consumption tax proposed would have the broadest possible base to avoid these difficulties.

There were several reasons for the introduction of GST. First, it was introduced with a range of personal and business tax changes; and was seen as key to these reforms as the revenue raised by GST contributed toward the broader reforms. The second reason for introducing a comprehensive consumption tax was to replace the wholesale taxes that were levied at varying rates (from 10% to 60%) on a wide large of goods. Thirdly, the introduction of GST was seen as a way to reduce the fiscal deficit and debt issues facing the government of the day.

The tax was first brought to the attention of the public in the 1984 Budget speech, on 8 November, 1984. Following this, a white paper, and an information booklet were published, as well as other explanatory material and brochures. These examined the proposal in more detail, including the composition and development of the then current tax structure, and existing consumption taxes, alternatives to a GST, principles of the GST, and the revenue, administrative, economic, and household effects of the proposed GST. This was supplemented by extensive consultation with industry sectors, by specialist consultative groups, nationwide on the nature, operation, and inclusion in the base of the GST.

Following this consultation, GST was formally announced in the Statement on taxation and benefit reform, delivered by Roger Douglas on 20 August 1985. This outlined changes to business taxation, measures to reduce evasion and avoidance, and changes to personal taxes and benefits, as well as the introduction of GST. GST was introduced from 1 October 1986.

The changes introduced at the same time were:

- The introduction of imputation, and an increase in the company tax rate from 45% to 48%;
- A three step income tax scale (replacing the previous five-step scale, with a top rate of 66%), with rates of 15%, 30% and 48%
- The introduction of Family support, for those not on a benefit, from 1 October 1986, with a payment of $36 per week for the first child, and $16 a week for subsequent children; and a guaranteed minimum income of $294 per week for families with one child (inclusive of Family Support). Beneficiaries would receive Family Support at a reduced level in addition to their benefit.
- An increase in all basic benefits, including superannuation, of 5% from 1 October 1986 to compensate for the introduction of GST.

As a result of these measures, GST gained broad acceptance across the country. This acceptance probably resulted from the following factors:

- The broad base (and low rate), which meant that everyone was treated equally under the tax law, rather than having varying rates (e.g. under the previous wholesale taxes, or as a result of base exclusion);

- The consultation undertaken, including the lead time, the brochures distributed (e.g. "*GST: the key to lower income tax"* and *"A fairer deal"*), and the working groups with industry
- The changes to income taxes and to benefits, which were designed to compensate for the effect of the increased tax.

GST was increased from 10% to 12.5% in July 1989, primarily as a revenue raising measure, and this did not coincide with other major tax reforms. Although benefits were increased at this time, they were not immediately adjusted as they had been in 1986, and the subsequent reduction to benefits in 1991 adversely affected lower income groups (St John, 2009).[19]

Prior to the introduction of GST, retail sales increased 8% in the quarter preceding the introduction; and dropped 13% in the following quarter. The introduction of GST was seen to be inflationary, with an impact of between 5.7% and 7%. This inflationary impact was likely caused by a number of mechanisms, including:

- The direct impact on retail prices (with some offset by changes in margins and removal of wholesale taxes);
- The effect of increased disposable income due to the other measures at the same time;
- Cross elasticities of goods and services;
- Indirect effects of changing consumption patterns; and
- The impact on inflation expectations.

In 1989, the impact of the increase of GST was marked- resulting in a one-off inflationary increase of 2.3% (Stephens, 2006), and tight monetary controls from the Reserve Bank. Bollard (1992) notes that the increase delayed economic recovery, and that after experiencing signs of a pick-up, the economy dropped back to recession the following year.

[19] For further information on the introduction and previous increase to the GST rate, see the first five chapters of Krever and White (2006).