The Economics of a Reduction in VAT

Ray Barrell and Martin Weale

National Institute of Economic and Social Research,
2, Dean Trench Street,
London SW1P 3HE

National Institute Discussion Paper No 325

March 2009

ABSTRACT

We explore the effects of a temporary cut in VAT, identifying three possible effects: an income effect as people benefit from a lower cost of living during the period of the reduction, a substitution effect as people bring their consumption forward and an arbitrage effect as people buy non-perishable goods before the end of the period of low VAT for consumption after the VAT rate as been raised. International evidence suggests a clear overall impact on consumption, although the nature of the pattern depends on the way in which the data are analysed. However, the key policy issue is the impact of the VAT change on output and to examine that a simulation model of the whole economy is needed. Evidence from the National Institute's Global Economic Model suggests that the impact of the recent VAT reduction is likely to build up during the course of 2009. The reduction in VAT from 17 ½% to 15% is likely to result in consumption being augmented by less than 1 per cent by the fourth quarter of 2009. However GDP is likely to be raised raised by less than half a per cent relative to what would have happened without the VAT increase. After the temporary reduction is over both consumption and GDP are depressed as a result of the policy.

JEL Codes: E620, E650, H310
Keywords: Temporary VAT Reduction, Income Effect, Substitution Effect, Consumer Behaviour.

Introduction

The reduction in VAT in December 2008 the UK to fifteen per cent is temporary. In the November Budget the Chancellor announced that the rate would be increased again to seventeen and a half per cent from 1st January 2010. Thus the policy combines a VAT reduction which was not pre-announced and may be regarded as unanticipated and an increase in VAT which will be anticipated for over a year. The policy is not the only example of a pre-announced VAT increase in Europe but, so far as we can tell, it is the only example of a temporary reduction.

In this note we examine the effects of VAT changes on aggregate consumption, first from a theoretical perspective and secondly in the light of the experience of those countries which have made such changes. We then provide estimates of the overall effect of recently-announced VAT change in the UK on both consumption and on output.

Background Issues

We discuss the theoretical effects from the perspective of a temporary reduction in VAT. Thus we have to distinguish those which arise from the VAT rate being low from the impact of the prospective increase. There are three effects that a temporary VAT reduction should be expected to have, with the first arising from the reduction and the next two from the anticipated increase. First there is an income effect as consumers benefit from the temporary reduction to the cost of living although this may be offset in part or full by expectations of possible increases in other taxes to pay for the cut. Secondly, there is an arbitrage effect as consumers buy, but do not consume non-perishable goods ahead of the announced increase. Thirdly there is a substitution effect. The cost of consumption after the anticipated increase rises relative to that before the increase, encouraging consumers to substitute consumption ahead of the increase for that afterwards. Since the income effect is driven by the temporary reduction in VAT and the other effects by the subsequent increase we talk about the first in the context of a reduction and the second and third in the context of an increase in VAT.

The Income Effect Economists have long believed that consumption will not be very sensitive to short-term fluctuations in income, because many consumers will add to or draw down their stock of assets to smooth their consumption, and others may be able to repay or add to their debts in order to do so. For example Keynes (1943) wrote "I doubt if it is wise to put too much stress on devices for causing the volume of consumption to fluctuate. A remission of taxation on which people could only rely for an indefinitely short period might have very limited effects in stimulating their consumption"- a view which found expression in Friedman's permanent income model.

This issue arises most obviously from a temporary reduction to VAT, as the United Kingdom is experimenting with. The argument that there is no income effect is that, with perfect capital markets, it makes no difference to consumers at what point in their lives income (arising from tax rebates or for any other reason) is received (Meade, 1971, Chapter 23 provides an early discussion of this issue). Since the government faces an inter-temporal budget constraint, a tax reduction now has to be

offset by higher taxes in the future, so, if everyone including the government faces the same interest rate, consumers receive no discounted net addition to their income and, on these grounds there should not be any income effect. This is a form of Ricardian equivalence (Ricardo, 1820).

There are a number of objections to this argument. First of all, capital markets are plainly not perfect. Borrowing and lending rates facing consumers differ significantly, and the margin between the two varies over time. It is also not clear to what extent consumers look forward and form rational expectations. Some consumers are borrowing constrained, and hence there will be an income effect from a temporary VAT cut. It is also clear, as Barrell Davis and Pomerantz (2006) show, that borrowing constraints rise very strongly during a financial crisis. Hence in order to evaluate the impacts of the recent temporary cut in VAT in the UK it is necessary to estimate the proportion of consumers who might be currently borrowing constrained.

Finally, people may have only finite horizons, so that a part of the impact of the subsequent tax increase falls not on them but on their descendents. Except in the rather special circumstances described by Barro (1974) where people are specifically concerned about the welfare of their descendents and want to leave them legacies rather than appropriate resources from them, this implies that as a result of a cut in taxes now financed by an increase in taxes in the future the spending of those currently alive will rise (see Blanchard, 1985).

The Arbitrage Effect If an increase in VAT is anticipated, purchases of consumption goods rise ahead of the event and fall afterwards. However, since all that has happened is that the timing of purchases has changed, in all probability the effect on final demand will be small, because the temporary rise in consumption purchases, which are shown as consumption in statistics will be offset by a fall in the level of stocks. Production patterns will continue unchanged. But we should expect to see a rise in consumption expenditure followed by a fall of similar magnitude. Crossley and Low (2009) do not consider the possibility of arbitrage, although it is plainly possible.

The Substitution Effect. Unconstrained individuals who optimise will change the timing of their consumption in relation to the path of expected real interest rates because these affect the current price of consumption in future periods relative to the present. An anticipated rise in VAT rates will reduce the expectation held in the decision period immediately before the increase in the VAT rate of the real interest rate. The expectation of the real interest rate is the nominal interest rate in that period adjusted for the expected rate of inflation between that period and the next one. Reliable data on aggregate consumption behaviour in the UK are available only at a quarterly frequency, and hence this is the decision period we should examine[1]. In the context of the UK VAT change we should therefore expect a noticeable increase in consumption in the last quarter of 2009. The scale of the shift of consumption into this quarter depends, amongst other things, upon the inter-temporal elasticity of substitution in consumption. Crossley and Low (2009) consider that the inter-temporal elasticity might be one, and assume that the consumers decision period is

[1] Aggregate consumption data are available on a monthly basis in US, and hence it would be possible to look for higher frequency effects there in our context. However, there is no national indirect tax rate.

one year implying that a one point reduction in the real interest rate raises consumption in the current year relative to future years by one percentage point. .

The Effect of a Temporary Reduction in VAT on Consumer Prices

Obviously the effect of a temporary VAT change depends on the extent to which businesses pass on the change to consumers. If the change is not passed on the income effect is likely to be delayed since it appears in profits rather than real wages. Nevertheless, it is likely that a rise in distributions to households will precede the eventual increase in taxes needed to finance a temporary reduction in VAT.

In December 2008 the Retail Price Index excluding mortgage payments fell by 0.48% after a slightly smaller fall in November. The Office for National Statistics (2009) reports that "For those items that are subject to VAT, around two thirds of the prices collected from shops had been reduced either at the shelf or the till to reflect the lower rate of VAT". Nine percent of the prices it monitors are collected centrally and no account is given how far they were affected by the VAT reduction. The Bank of England (2009) assume that about half of the VAT reduction was passed on in December 2008, temporarily reducing retail prices by 0.75%[2].

The Evidence on VAT and Consumption: The International Experience

A history of VAT rates is provided by European Commission (2009). We look only at the changes to VAT in the long-standing members of the European Union, using data from 1992[3]. We have also looked only at changes to standard rates of VAT. Since the consumption data are quarterly we can, in any case, only examine the effects of changes which took effect at the start of a calendar quarter and we have assumed that all of these, with the exception of the increase in VAT in the UK from 15% to 17.5% which took effect on 1st April 1994, were announced in advance. The changes that we study are shown in table 1

Table 1 VAT Changes Studied

Country	Change	Date
Belgium	19.5% to 20.5%	1/1/1994
Belgium	20.5% to 21%	1/1/1996
France	20.6% to 19.6%	1/4/2000
Germany	14% to 15%	1/1/1993
Germany	15% to 16%	1/4/1998
Germany	16% to 19%	1/1/2007
Ireland	21% to 20%	1/1/2001
Netherlands	17.5% to 19%	1/1/2001
Spain	15% to 16%	1/1/1995

We use these data in two ways. First of all we carry out some non-parametric tests, looking at the growth rate of consumption in the period preceding and immediately following the VAT change as compared to growth over a slightly longer period. This

[2] They note that in Germany some businesses began raising prices in the months ahead of the 3 percentage point increase in VAT introduced in January 2007. Such businesses would be unlikely to reduce their prices as a response to a reduction for a period of fifteen months.

[3] From the table it is not possible to identify those changes which are announced well in advance from those which, as is traditional in the United Kingdom, take effect at short notice. Wikpedia (2006).describe the circumstances surrounding the German increase on 1st January 2007.

analysis removes the effects of other relatively short-term influences on consumption, Secondly we use a regression analysis looking at the effects of VAT changes on the growth of consumption in a longer run of data. The first method is likely to be more robust to outliers than the second, while the latter is a standard approach.

For our first test, we calculate four measures of consumption growth all measured at quarterly rates:-

G1 The growth rate in the quarter preceding the VAT change relative to the previous quarter.
G2 The growth rate in the quarter at the start of which the VAT change was introduced relative to the preceding quarter.
G3 The average growth in the two quarters centred round the VAT change measured relative to the preceding two quarters.
G4 The average growth in the four quarters up to and including that of the VAT change.

For an increase in VAT we expect to see G1 minus G4 positive as people anticipate the VAT increase. G2 minus G4 should be expected to be negative as a result of accelerated purchases of non-perishable goods ahead of the VAT change and therefore fall-off in consumption afterwards. G3 minus G4 should, however, be positive since looking at the effect over the half year only acceleration of perishables should be expected to cancel out- or come close to it. Inter-temporal substitution effects will be present on top of these and should have led to accelerated growth in consumption in the two-quarter period. For VAT reductions the signs should be reversed. We have indicated in bold type those values for G1 minus G4, G2 minus G4 and G3 minus G4 which conform to the hypotheses that positive values of G1 minus G4 and G3 minus G4 should be associated with VAT increases while negative values of G2 minus G4 should be so associated.

Table 2 Consumption Growth and VAT Changes

% per quarter	Belgium 1	Belgium 2	France	Germany 1	Germany 2	Germany 3	Eire	Nether-lands	Spain
G1 Growth preceding VAT quarter	0.72%	0.55%	0.97%	3.31%	0.71%	1.41%	1.59%	0.33%	0.46%
G2 Growth in VAT Quarter	0.95%	-0.32%	0.66%	-2.35%	-0.16%	-2.14%	1.24%	0.48%	-0.81%
G3 Growth in 2 quarters to VAT quarter	0.69%	0.38%	0.95%	1.03%	0.50%	0.18%	1.16%	0.51%	0.20%
G4 Growth in year to VAT quarter	0.58%	0.37%	1.04%	0.14%	0.05%	-0.07%	1.24%	0.35%	0.38%
VAT increase	1	0.5	-1	1	1	3	-1	1.5	1
G1 minus G4	**0.1%**	**0.2%**	**-0.1%**	**3.2%**	**0.7%**	**1.5%**	0.4%	-0.0%	**0.1%**
G2 minus G4	0.4%	**-0.7%**	-0.4%	**-2.5%**	**-0.2%**	**-2.1%**	0.0%	0.1%	**-1.2%**
G3 minus G4	**0.1%**	**0.0%**	**-0.1%**	**0.9%**	**0.4%**	**0.2%**	-0.1%	**0.2%**	-0.2%

Seven out of nine values of G1 minus G4, and five out of nine of G2 minus G4 are correctly signed. Eight of the nine values of G3 minus G4 are correctly signed. In the sample as a whole G1>G4 191/366 times G2>G4 190/366 times and G3>G4 186/372 times. Thus, using the normal approximation to the binomial distribution, we can

accept, in all three cases the hypothesis that positive and negative signs are equally likely for these three variables. Given this, the probability of at least seven correct signs arising at random in a sample of nine is 46/512=8.98% while for five correct signs it is only slightly over 50%. At a ten per cent level we can therefore say that there is evidence that a VAT change affects consumption in the quarter before implementation and also that, looking at the two quarters surrounding the change, the pattern is consistent with inter-temporal substitution[4]. The evidence for anticipatory purchases of perishable goods is, however, not clear-cut. But equally these figures suggest that it would be foolish to lead people to expect any clear and visible consequences as a result of a VAT change.

Our regression work is carried out using a pooled SUR regression over the period 1987q2 to 2007q4 to investigate whether there are clear anticipatory effects ahead of changes to VAT followed by further effects immediately after the changes.. We regress the change in the log of consumption (DlogCons) on a country specific intercept, a common anticipation of VAT effect and a current period VAT effects as well as a common change in the log of real personal disposable income (DlogRPDI). We report results without and with the Spanish increase in VAT in 1994. This was part of a major package of tax increases, benefit reductions and labour market reforms and its impact in the first quarter of implementation conflates all of these, and they have a large negative effect on consumption.

The VAT effect is entered as the percentage points increase or decrease in the standard rate. The basic model is that of Campbell and Mankiw (1991), and if we drop the term in the change income we recover results in line with Hall (1978). In the more general model both VAT coefficients are significant at the 5 per cent level, and the anticipation effect which combines the arbitrage and substitution effects is clearly positive in that in these five countries on average a 1.0 percentage points rise in VAT increases consumption by around one third of a per cent in the quarter before the increase. Including Spain reduces the significance slightly but does not affect the size of the coefficient on the anticipation effect. It does however raise the size and significance of the current effect, much as we would expect given the size of the package. However in all cases the reduction in consumption following the increase is larger than the anticipation effect, and the overall effect is significantly negative. A negative effect is expected in this period from the arbitrage but not from the substitution effect. However, the sum of the two effects is significantly below zero in all cases.

[4] It is questionable whether one should count the result for the Netherlands since the change in consumption in the quarter ahead of the VAT increase relative to the four-quarter growth rate is wrongly signed. But since the data are subject to other influences as well, these can be attributed to short-term noise whose impact is reduced by looking at the two-quarter changes.

Table 3 Regression results on VAT changes 1987q3 2007q4
(t statistics in brackets)

	VAT anticipation	VAT effect	DlogRPDI	Chi square test of zero sum on VAT
DlogConsn (without Spain)	0.00344	-0.00487	0.27337	12.95
	(2.10)	(2.94)	(7.22)	Prob 0.0003
DlogConsn (without Spain)	0.00347	-0.00565		12.64
	(1.89)	(3.08)		Prob 0.0004
DlogConsn (with Spain)	0.00281	-0.00678	0.20987	19.37
	(1.81)	(4.35)	(6.31)	Prob 0.0000
DlogConsn (with Spain)	0.00290	-0.00677		16.85
	(1.73)	(4.02)		Prob 0.0000

A rise in VAT reduces real incomes, although the effect on consumers who are both forward looking and not borrowing constrained must be small. If we include the change in the log of income it has a positive coefficient of around a quarter, Following Campbell and Mankiw (1991) this suggest that around this proportion of consumption is by borrowing constrained households over this period and in these countries. However, this is an average effect. The model does not fully take account of anticipations, and the effects of a known and understood rise in VAT may have more impact on consumption than that picked up through the change in real disposable income since income is observed *ex post* and always has an element of uncertainty surrounding it.

Thus the negative impact of a definitive change to income such as that occasioned by a VAT increase may be larger than that of typical income changes. This may explain why the negative sign on VAT in the quarter of the change is larger than it could be if it were explained entirely by the arbitrage effect.

Pulling the components together, the regression suggests that we can expect that a temporary reduction in VAT will lead to an immediate increase in consumption as a result of the income effect. If VAT falls on about half consumer expenditure, then a 1 point reduction to VAT will raise consumption by about 0.14 per cent in each quarter while the VAT rate is low. In the quarter before the increase this will be augmented by an effect of about 0.34 per cent. But in the quarter following the increase consumption will fall by 0.49% so that, beyond the quarter of the increase consumption is effectively unchanged compared to before the temporary reduction.

However, it must be remembered that the effects of a regression like this can be affected by outliers. In particular the strong evidence for the arbitrage effect needs to be contrasted with the very weak evidence offered by the non-parametric analysis. With the small number of VAT changes available the evidence on the arbitrage effect cannot be viewed as definitive despite its statistical significance.

VAT, Consumption and GDP in the UK

The consumption functions presented above are convenient to estimate for a range of countries, but can be criticised on the grounds that they omit dynamic effects and also do not represent wealth effects satisfactorily. In more detailed work specific to the UK Weale (1990) suggested that in the UK 34% of labour and grant income was spend

immediately while, in a more flexible specification Barrell and Davies (2007) found that short-term influences of real personal disposable income had declined as a result of financial liberalisation. 1 per cent growth in disposable income raised consumption by 32% in 1980 but by only 13% in 2001. However, their equation is quarterly and includes an error-correction term. Thus a 1% increase in income in the first quarter of the year which is sustained throughout the year has the direct effect on average consumption during the year of raising it by 0.27%, coincidentally equal to the income effect shown in table 3. They also found significant statistical evidence for inter-temporal substitution, with an elasticity of inter-temporal substitution of about ½ in 2001 while in 1980 there was no significant effect. Short term dynamic effects from changes in real financial wealth, and real housing wealth were also found with the latter effect being noticeably larger. Since they did not focus on the effects of anticipated VAT changes, they obviously did not explore arbitrage effects.

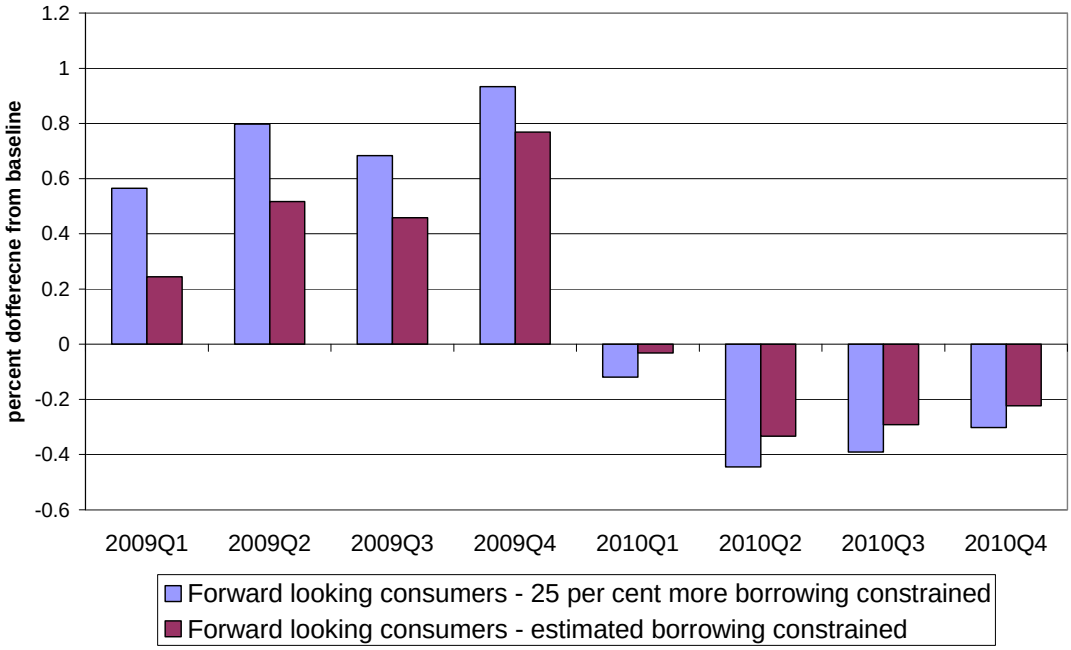
However, while the impact of a VAT change on consumption depends on the consumption function, a partial analysis built round that nevertheless fails to answer the key policy question associated with the VAT reduction which concerns its effect on economic activity as represented by GDP. If the VAT cut increases consumption it will also raise real personal incomes, and if consumption does not rise as a direct result of the VAT change then real net personal financial wealth will rise. In both cases consumption may be additionally affected. Conversely, some of any increase in consumption will be absorbed into imports, and without allowing for this it is not possible to evaluate the effects of the VAT cut on output.

The National Institute Global Model, NiGEM, uses consumption functions of the form reported in Barrell and Davis (2007) and takes account of the general equilibrium nature of the problem. Barrell, Fic and Liadze (2009) report on output multipliers for indirect tax cuts in a number of countries, and demonstrate they are generally well below one. The indirect tax multiplier in the UK may be as low as 0.25, but if more consumers are borrowing constrained it might be as high as 0.36. It will also depend upon the assumptions made about the structure of the economy and policy makers reactions when the experiment is undertaken. Barrell, Fic and Liadze (2009) show that in more open economies multipliers are smaller as imports absorb more of an increase in demand. The NiGEM results are consistent with the VAR based evidence in Blanchard and Perrotti (2003), but because the economies in question have been becoming more open the NiGEM multipliers are now lower.

Figure 1 reports on the quarterly path for consumption in an experiment on the UK. It is assumed that consumers are forward looking in setting their permanent income expectations but that an estimated proportion are borrowing constrained, and all react with inertia. They know that the government will raise taxes to return the deficit to target after this experiment, but that no direct tax increases will take place until 2011. The experiment requires assumptions about monetary policy and the behaviour of financial markets. These markets (for bonds, equities and foreign exchange) are all assumed to be forward looking and rational. Market participants know that the Bank of England will not raise interest rates in response to the tax cut starting in 2009 Q1, and that from 2011 it will increase rates to meet the inflation target. As a result the exchange rate jumps up and the equity market jumps down, both by a small amount in the first period of the experiment and then they follow arbitrage paths. The long term interest rate rises marginally in the first period of the experiment. All these effects

help crowd out the impact on GDP of the increase in consumption and lead to the decline in consumption and GDP after the temporary VAT reduction is reversed.

Figure 1 Changes in consumption in response to the UK VAT cut



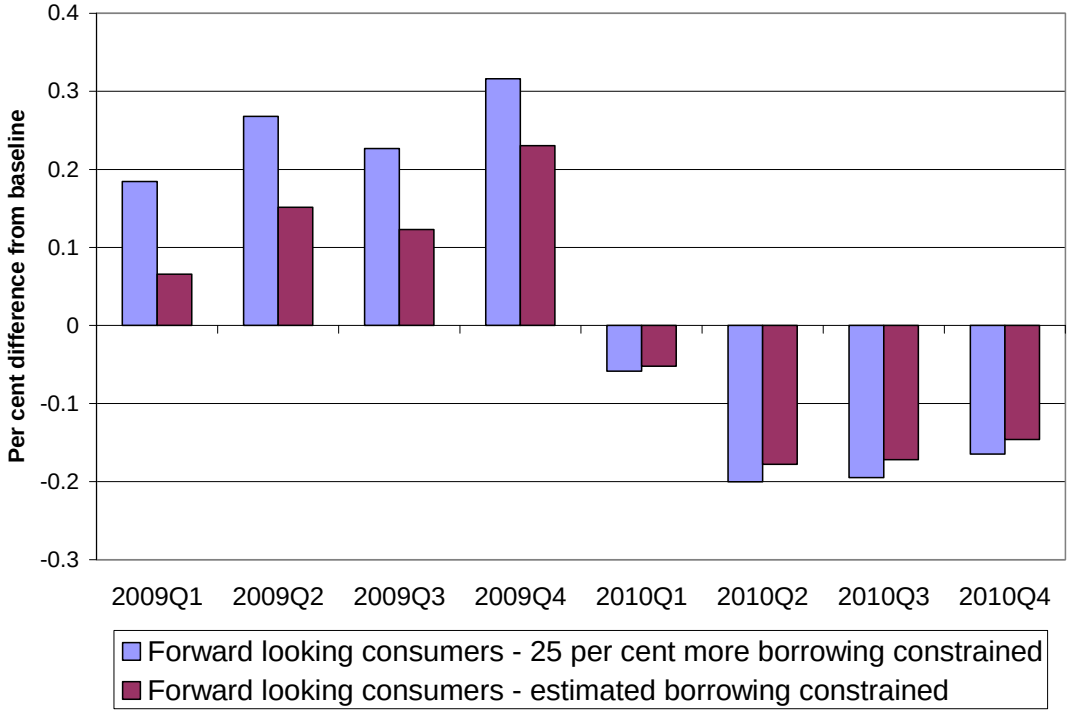
The responses of the economy are not immutable, and the impacts of a VAT cut may depend upon the proportion of liquidity constrained consumers in the economy. Figure 1 also reports on the potential quarterly path of consumption in response to the recent temporary cut in VAT on the assumption that the proportion of borrowing constrained consumers has not changed recently. Consumption initially rises as constrained consumers find they have higher real incomes. In the last quarter of 2009 there should be a significant rise in consumption. However, in a financial crisis many more people than usual may face borrowing constraints, and the consumption response may have a different pattern. As we can see from figure one if a quarter more of consumption is by borrowing constrained households then the impact on the path of consumption will be different, with a larger increase overall but a relatively smaller peak in the last quarter of 2009.[5]

Figure 2 plots the effects on GDP, which are noticeably lower as much of the increase in consumption spills over into imports. In addition investment is marginally crowded out by the increase in long term interest rate and hence in the user cost of capital that influences the investment decisions of forward looking firms.[6]

[5] These results are consistent with the experiments reported in Al Eyd and Barrell (2005) which investigates the impacts of liquidity constraints on tax and benefit multipliers in Europe

[6] Labour markets are assumed to be forward looking when deciding upon the wage bargain, and firms adjust their capital in relation to expected trend output 16 quarters ahead to allow for time to build responses.

Figure 2 Changes in output in response to the UK VAT cut



Fiscal policy in a financial crisis

It is hard to doubt that a cut in VAT will raise consumption now, given that the period of low VAT is set to last for over a year, but a case nevertheless has to be made for implementing such a policy. The government budget constraint requires that future taxes be increased by an amount whose capitalised value is equal to the value of any current tax reduction (discounted to the present if the reduction is sustained for more than one period). If the tax cut has a favourable income effect, the future tax increase, whenever it comes, must be expected to have an unfavourable impact. If the economy displays the same parameters and linear structure in all time periods, the benefits of the tax cuts can be expected to balance out the discounted costs of the future tax increases. If the tax change merely reallocates consumption across time with no income effect then, too, it might be questioned. For a social planner with a discount rate equal to the government interest rate taking a long-term view, there is no net welfare benefit and therefore no point to the exercise. Consumers may be keen on tax cuts as a result of a failure to understand this, but that does not provide a reason why the government should indulge them.

The justification for fiscal expansion during the current recession is that in such circumstances the assumption that the same parameters and linear structure applies in all time periods is invalid. In particular in the current circumstances the cost of capital to business is unusually high relative to market rates of interest on government debt. In such a situation the welfare gain from a stimulus to consumption and the extra income it creates for business more than offsets the burden of the resulting increase in future taxation since this can be assumed to be faced when the cost of capital has fallen back to more normal levels. This effect is represented in our model.

Of course it is not possible to say with complete certainty that the current situation is indeed one in which labour and goods markets are not clearing, as opposed to the alternative in which our problems arise from wages being too high. Even if that is only the balance of probability, the case for fiscal expansion still exists. The argument is that, if, after all, the economy is at full employment, the policy simply redistributes consumption, while if, as we believe, it is suffering from recession, there is an increase in overall consumption, and hence welfare.

References

Al Eyd, A., Barrell, R., (2005) 'Estimating Tax and Benefit Multipliers in Europe' *Economic Modelling* vol 22 pp 759-776

Bank of England (2009). *Inflation Report*. January p. 31.

Barrell, R. and E.P. Davies. (2007). "Financial Liberalisation, Consumption and Wealth Effects in Seven OECD Countries". *Scottish Journal of Political Economy*. Vol 54. pp. 254-267.

Barrell, R., Davis, E.P., and Pomerantz, O., (2006) "Costs of Financial Instability, Household-Sector Balance Sheets and Consumption", *Journal of Financial Stability* Vol. 2, Issue 2, pp 194-216

Barrell, R., Fic, T., and Liadze, I., (2009) 'Fiscal Policy Effectiveness in the banking crisis' *National Institute Economic Review* no. 207 pp 43-50

Barro, R. (1974). "Are Government Bonds Net Wealth?". *Journal of Political Economy*. Vol 82. pp 1095-1118.

Blanchard, O. (1985). "Debt, Deficits and Finite Horizons". *Journal of Political Economy*. Vol 93. pp. 223-247.

Blanchard, O., and Perotti, R., (2002) 'An Empirical Characterisation of the Dynamic Effects of Changes in Government Spending and Taxes on Output' *Quarterly Journal of Economics.*

Campbell, J and Mankiw, G., (1991) 'The Response of Consumption to Income: A Cross-Country Investigation, *European Economic Review* 35, 1991, 723-767.

Crossley, T, H. Low and M. Wakefield. (2009). "The Economics of a Temporary VAT Cut". *Fiscal Studies.*.

European Commission. (2009). "VAT Rates applied in the Member States of the European Community". DG Taxation and Customs Unions.. Doc/2041/2009. http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/how_vat_works/rates/vat_rates_en.pdf

Hall, Robert E., 1978, Stochastic implications of the life cycle-permanent income hypothesis: Theory and evidence, *Journal of Political Economy* 86, 971-987.

Keynes, J.M. (1943). *Activities 1940-46: Shaping the Post-War World: Employment.*

Collected Works of J.M. Keynes. Vol XXVII. p 319.

Meade, J.E. (1971). *The Growing Economy* Allen and Unwin. London

Mundell, R.A. (1962). "The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability". *IMF Staff Papers*. Vol 9. pp 70-77.

Office for National Statistics (2009). "Consumer Price Indices". First Release. 20th January 2009.

Ricardo, D. (1820). *Essay on the Funding System.* http://oll.libertyfund.org/?option=com_staticxt&staticfile=show.php%3Ftitle=1395&chapter=83021&layout=html&Itemid=27

Weale, M.R. (1990). "Wealth Constraints and Consumer Behaviour". *Economic Modelling*. Pp 165-`178.

Wikpedia (2006). Am 1. Januar 2007 steigt die Mehrwertsteuer in Deutschland auf 19 Prozent. http://de.wikinews.org/wiki/Am_1._Januar_2007_steigt_die_Mehrwertsteuer_in_Deutschland_auf_19_Prozent