Anton Burger

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REASONS FOR THE U.S. GROWTH PERIOD IN THE NINETIES: NON-KYEINESIAN EFFECTS, ASSET WEALTH AND PRODUCTIVITY

Anton Burger*

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Abstract

This paper investigates several possible reasons for the exceptional period of growth in the nineties in the US. These years can be characterised as a case of an expansionary fiscal consolidation as strong growth and structural surpluses were observed. Five different channels, the literature suggests for relationships between government spending and consumption are investigated. There are hints that the economy did not work in a Keynesian way but there is no proof of the existence of a Non-Keynesian effect. Expectational effects could not be separated empirically from asset wealth. Whereas standard consumption estimations failed, a model adding a factor containing asset wealth and expectations was finally able to explain consumption from 1996 onwards. This has important implications for policy. Moreover, compositional effects were found to be important. The two main findings of the paper, namely an asset wealth/expectations effect and compositional effects support the interpretation of a positive link between public savings, asset values and growth.

Keywords: fiscal policy, non-keynesian effects, budget consolidation, consumption, asset wealth

JEL-Code: H 30, H 31, E 60, E 62

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1 Introduction

The nineties, especially the second half of it, were a remarkable period in the United States. GDP growth was high for several years in a row, low inflation, high productivity growth, high investments and high asset prices were to be observed as well. Another exceptional feature was that public households were in surplus. The fact that the current primary budget balance was positive could be attributed to strong GDP growth. Not so the structural surplus which shows that there would have been surpluses even without the strong growth episode. To put it differently: the net impact of fiscal policy should have been contractionary. From the political point of view it was the Clinton Administration which started a steady consolidation course based on a combination of tax increases and cuts in government spending from 1992 onwards.

Surpluses which are independent from the business cycle and strong growth at the same time are unusual - so there is good reason to investigate this further. According to the line of reasoning of a growing strand of literature on Non-Keynesian effects there can be a systematic relationship between deficit reductions and GDP growth. In what follows, methods proposed in the literature will be used to test whether there was a Non-Keynesian effect at work. The first part of this paper will offer a review of existing theoretical approaches and models followed by an overview of empirical results. In the second part, a case study for the United States will be performed. The third part offers further interpretations of the current case and the last part concludes and suggests ideas for further research.

2 Literature Review

2.1 Five Channels from Government policy to Consumer Spending

The first four possible effects of government spending on consumption depend on whether one emphasizes the role of the intertemporal or momentary budget constraint or income effects due to productivity enhancements.

In the traditional Keynesian world an increase in government spending increases output - not only by the government spending itself but also by in-
ducing people to spend the newly generated income. This relationship is common knowledge in economics. How could an increase in government spending have no or even a negative effect on output? Government policy could affect investment or consumption although the literature on Non-Keynesian effects focuses on consumption. What is the impact economic policy has on the consumption decision of a consumer?

Keynes (1936) and Ricardo (1812), who was rediscovered by Barro (1974), both focused on the budget constraint that consumers face but with a different viewpoint. The theorem of the Ricardian equivalence states that the intertemporal budget constraint of consumers cannot be changed by a government which accumulates debt and spends the money as consumers are aware of the fact that they will have to pay for the debt by higher taxes in the future. Given that wealth and preferences do not change, rational consumers should save money now, in order to be able to pay the future taxes. In a Ricardian world an increase in government spending is exactly offset by a decrease in private consumption. Table 1 offers an overview of different assumptions.

Table 1 Assumptions leading to the first four channels from fiscal policy to consumer spending

<table>
<thead>
<tr>
<th>Income Effect</th>
<th>Shift of the Budget Constraint?</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Ricardian theorem</td>
</tr>
<tr>
<td>No</td>
<td>Keynesianism</td>
</tr>
<tr>
<td>Yes</td>
<td>neoclassical view</td>
</tr>
<tr>
<td>Yes</td>
<td>expectational view</td>
</tr>
</tbody>
</table>

People can have good reasons to deviate from the Ricardian theorem. In an open economy the savings of households need not be equal to newly issued government debt so consumers can save later, especially if they are liquidity constrained, finitely lived or if they do not expect to have to pay back the debt themselves. I find it worth mentioning that at the time when Keynes wrote his "General Theory" a significant proportion of households faced serious liquidity constraints.

From the neoclassical point of view the validity of the Ricardian theorem is presupposed so a fiscal expansion is not expected to have an effect on the intertemporal budget constraint. But there are several arguments brought
forward how an increase in income can arise due to a decreased public share. Such cases are distortionary taxes, a shift from public to private activities (which are assumed to be more productive), or a reduction in “unproductive” public spending like government wages or transfers. Alesina and Ardagna (1998) stress an effect on labour markets. The argument is that higher income taxes will reduce the labour supply by shifting the decision between spare time and work towards spare time as taxes reduce wages. This theory was developed further by Alesina and Ardagna (1999) where a link between labour costs, profits and investments is established. Bertola and Drazen (1993) offer a neoclassical model in which Ricardian equivalence holds if taxes are not high enough yet. Government consumption is considered to be pure waste and taxes are distortionary. At high levels of debt spending cuts would imply fewer taxes and less distortions in the future thereby increasing permanent income.

The expectational view of fiscal policy tries to incorporate effects of a shift in the intertemporal budget constraint and income effects government policy can have. Blanchard (1990) proposes a model in which consumers react to two effects. The first effect is a Keynesian one that depends on the strength of Ricardian equivalence which is influenced by the probability of death. The second effect takes into account how consumers assess the risk to have a period of budget consolidation in the future which lowers income by distortionary taxes. A model by Sutherland (1997) features consumers with finite horizons. At low levels of debt consumers know that a consolidation is still far away and will react in a Keynesian way to government spending. At high levels of debt however the effect can become Non-Keynesian. Perotti (1999) comes up with a three period model with liquidity constrained (who provide the Keynesian Effect) and unconstrained consumers. Distortions are a continuous convex function of the tax rate so a constant low tax rate in all three periods maximises overall income.

The fifth channel is somewhat different as it works via financial markets. A budget consolidation can improve the credibility of the financing policy of a government thereby reducing the default and inflation risk (Feldstein (1982)). This can lead to lower interest rates. According to McDermott and Wescott (1996) this can raise the value of consumer portfolios. In an empirical study they found that during successful consolidations interest rates tend to decline whereas the opposite is the case during unsuccessful consolidations. In a panel regression of OECD countries Ardagna et al. (2004) also found a positive relationship between government deficit and bond yields at high levels of debt.

1this is called a compositional effect in empirical studies
The relations between government spending and other macroeconomic variables predicted by different theories are roughly summarized in Table 2.

Table 2 Predicted reaction patterns of different macroeconomic variables to an exogenous increase in government spending

<table>
<thead>
<tr>
<th></th>
<th>G</th>
<th>Wealth</th>
<th>Budget</th>
<th>C</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keynesian Effect</td>
<td>↓</td>
<td>-</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Ricardian equivalence</td>
<td>↓</td>
<td>-</td>
<td>↑</td>
<td>↑</td>
<td>-</td>
</tr>
<tr>
<td>Neoclassical Theory</td>
<td>↓</td>
<td>↑</td>
<td>-</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>Expect. View</td>
<td>↓</td>
<td>↑</td>
<td>↓</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Interest Rates</td>
<td>↓</td>
<td>↑</td>
<td>-</td>
<td>↑</td>
<td>↑</td>
</tr>
</tbody>
</table>

2.2 Related Empirical Evidence

Was there any evidence of Non-Keynesian effects found yet? In the literature there are several approaches to investigate the problem: Case studies which focus on a small number of countries, literature on successful fiscal consolidations, cross country studies which try to identify circumstances under which a Non-Keynesian effect can occur and cross country studies which search for Non-Keynesian effects. Studies on fiscal consolidations and circumstances both use mainly binary dependent variable models.

Giavazzi and Pagano (1990) conducted case studies for Denmark (1983-86) and Ireland (1982-84 and 1987). They found that a consumption function which considers disposable income and asset wealth effects would have underestimated private consumption leaving room for expectational effects due to expectations of higher growth and thereby income in the future. In the case of a fiscal expansion in Sweden (Giavazzi and Pagano (1996)) an inverse relationship between the saving rate and the debt to GDP ratio was found and consumption estimations showed a large negative error in the relevant years (1990-93). Going through ten case studies Alesina and Ardagna (1998) found only weak evidence of for the "expectational view". What they found was that corresponding policies are important and that the composition of savings matters. By running a VAR Model De Castro (2003) found positive short, and negative long run multipliers of government spending and strong compositional effects.

2 The effects are symmetric so for every case the reverse pattern would arise in case of an increase in government spending.
Alesina and Perotti (1995)\textsuperscript{3} separate between expansionary and non-expansionary episodes and thereby identify asymmetries. The most important findings were that successful adjustments were characterized by expenditure cuts rather than tax increases and cuts in transfer payments and government wage expenditure increased the probability of success of a fiscal consolidation. McDermott and Wescott (1996) use a logit model to find out that the probability of an expenditure cut to reduce the debt to GDP ratio is higher than the probability of tax increases to do so. Alesina and Ardagna (1998) used a probit model to achieve their result that a fiscal contraction through expenditure cuts is more likely to be expansionary which is the same result Zaghini (1999) reached. Giudice et al. (2004) estimated a probit model for EU countries and found that a high debt level increases the probability for an expansionary consolidation whereas exchange rate depreciations, devaluations or decreasing interest rates are not a driving factor.

Non linear effects on consumption were explored by Giavazzi and Pagano (1996), Perotti (1999), Van Aarle and Garretsen (2003), Afonso (2001), Miller and Russek (2003), Hjelm (2002), Höppner and Wescue (2000). The findings are mixed. Giavazzi and Pagano (1996) estimate a consumption function with an interaction term for exceptional times and find that the persistence and credibility of a consolidation as well as the size of the initial debt are conditions for a deficit reduction to be expansionary. Van Aarle and Garretsen (2003) use the same setup for 14 EMU countries and found similar but ”less significant and smaller” effects. Actually they found only weak evidence on non linearities. It can be added here that the model that Giavazzi and Pagano (1996) used yields a lot less significant coefficients if it is estimated with robust standard errors which are recommended for panel estimations. Perotti (1999) uses the debt level to identify exceptional periods and achieves the result that the bigger the debt to GDP ratio the more likely is a Non-Keynesian effect. Contrary to others, Perotti (2002) and Blanchard and Perotti (1999) did not differentiate between normal and exceptional times, so they did not try to measure Non-Keynesian effects. They found that the effects of fiscal policy were getting weaker during the last 20 years. Afonso (2001) and Miller and Russek (2003) found non linear effects of fiscal contractions and no significant Non-Keynesian effects of fiscal expansions whereby the coefficients in the panel regression of Afonso are mostly insignificant. Miller and Russek (2003) admit that ”the findings cast some doubt on the possibility that unusual fiscal outcomes reflect some systematic relationships.

\textsuperscript{3}Other studies that followed the same approach are Alesina and Perotti (1997), McDermott and Wescott (1996), Alesina and Ardagna (1998), Alesina et al. (1998), Giavazzi and Pagano (1990), Zaghini (1999), Köhler-Töglhofer and Zagler (2005), Giudice et al. (2004)
in the macro economy. Rather special circumstances and conditions may dictate when and where unusual outcomes emerge.

3 The US Case Study

3.1 Structural Budget Deficit

How does one know that a deficit reduction increased GDP Growth and not the other way around? To solve this and to have an objective criterion when a fiscal consolidation took place we will rely on the method used by Blanchard (1993) to construct the structural deficit.

\[ p_t = s_t + g_t - \tau_t \]  

(1)

It is assumed that taxes \( \tau_t \) and social transfers \( s_t \) are fluctuating with the business cycle whereas \( g_t \) is set by political decisions. In order to obtain the value, taxes and social transfers would have if the economy would be at it’s potential output, revenues and expenditures are estimated as a function of the unemployment rate.

\[ \tau_t = \alpha_0 + \alpha_1 D + \alpha_2 u_t + \alpha_3 (1 - D) t + \alpha_4 D t + \epsilon_t \]  

(2)

and

\[ s_t = \beta_0 + \beta_1 D + \beta_2 u_t + \beta_3 (1 - D) t + \beta_4 D t + v_t \]  

(3)

The dummy variable \( D \) allows for a structural break in 1975. Revenues and social transfers are now computed on the assumption of an unchanged unemployment rate from the previous year.

\[ \tau_t(u_{t-1}) = \alpha_0 + \alpha_1 D + \alpha_2 u_{t-1} + \alpha_3 (1 - D) t + \alpha_4 D t + \epsilon_t \]  

(4)

and

\[ s_t(u_{t-1}) = \beta_0 + \beta_1 D + \beta_2 u_{t-1} + \beta_3 (1 - D) t + \beta_4 D t + v_t \]  

(5)

This gives the following measure of the structural budget deficit:

\[ p^*_t = s_t(u_{t-1}) + g_t - \tau_t(u_{t-1}) \]  

(6)

Figure 1 shows the Current Primary Deficit in comparison with the Structural Deficit. It can be seen that there would have been surpluses even without the strong growth episode.

The standard deviation of the percentage change of the structural primary deficit between 1980 and 2005 is 0.98. During the time before 1980 fiscal policy was much more volatile but wild policy swings in the sixties
and seventies should not affect the perception of fiscal policy in the nineties too much. According to different criteria (standard deviation of the percentage change of the structural deficit (Afonso (2001)), fiscal impulse (Köhler-Töglhofer and Zagler (2005))) the years 1993 to 1996 qualified as years of fiscal consolidation.

3.2 The Models

In the following, two regression models will be presented. The investigation started with a regression proposed by Afonso (2001) which can be seen as an ad hoc method which showed encouraging results.

\[ \Delta c_t = a_0 + a_1 \Delta y_t + (\alpha_1 \Delta g_t + \beta_1 \Delta \tau_t) + d_t (\alpha_2 \Delta g_t + \beta_2 \Delta \tau_t) \]

\( \Delta c_t \) is the growth rate of consumption, \( \Delta y_t \) is the growth rate of real output, \( \tau_t \) and \( g_t \) are public revenues and expenditures as a percentage of GDP. \( d_t \) is an interaction term which is equal to one during the exceptional period identified above. The data was taken from the AMECO database. The result of the model is shown in table 3.

Table 3 - an ad hoc Regression based on Afonso’s Model

<table>
<thead>
<tr>
<th>( a_0 )</th>
<th>( y_t )</th>
<th>( \Delta g_t )</th>
<th>( \Delta \tau_t )</th>
<th>( d_t \Delta g_t )</th>
<th>( d_t \Delta \tau_t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00205</td>
<td>0.98836</td>
<td>0.79281</td>
<td>-0.30533</td>
<td>-0.62694</td>
<td>-0.12819</td>
</tr>
<tr>
<td>(0.43193)</td>
<td>(7.08057)</td>
<td>(2.17241)</td>
<td>(-1.40526)</td>
<td>(-0.46234)</td>
<td>(-0.06261)</td>
</tr>
</tbody>
</table>

Periods: 1970 - 2005

\[ R^2 : \] D.W.:

yearly data 0.7870 1.74462
During normal times government spending increases and taxes decrease consumption. In the exceptional period the sign of the coefficient for government spending switched but is insignificant. The t-values featured in Afonso (2001) had the same problems.

To control for the impact of monetary policy, Taylor interest rates were used (see Taylor (2000), which turned out to be insignificant in the model (the t-statistic was -0.385 and the p-value 0.7027). So there seems to be no important impact of accompanying monetary policy. For that reason, monetary policy is not considered to be able to explain the exceptional growth period under investigation here. To account for possible multicollinearity, the model was estimated without taxes which yielded no results as well (results not given here).

The ad hoc regression showed encouraging results, as there was a switch in the sign of the coefficients during the exceptional fiscal period. In order to investigate the subject matter more carefully, the consumption function without the interaction term should satisfy some criteria. The consumption estimation which formed the basis for the ad hoc model had non normally distributed and auto correlated residuals and model parameters changed significantly with variations of the sample period. A more sophisticated consumption function with more explanatory variables (accounting for the international business cycle, lagged variables, and transfer payments) provides a baseline model with a better fit. Additionally, in order to get more data points during the fiscal episode quarterly data were used which were taken from the homepage of the Bureau of Economic Analysis.

Giavazzi and Pagano (1996) and Van Aarle and Garretsen (2003) used the following model to estimate the direction of fiscal effects.

\[
\Delta c_t = \alpha_1 c_{t-1} + \alpha_2 \Delta y_t + \alpha_3 y_{t-1} + \alpha_4 \Delta y_{OECD}^{OECD} \\
+ (\gamma_1 \Delta \tau_t + \gamma_2 \tau_{t-1} + \gamma_3 \Delta tr_t + \gamma_4 tr_{t-1} + \gamma_5 \Delta g_t + \gamma_6 g_{t-1}) \\
+ D_t(\delta_1 \Delta \tau_t + \delta_2 \tau_{t-1} + \delta_3 \Delta tr_t + \delta_4 tr_{t-1} + \delta_5 \Delta g_t + \delta_6 g_{t-1}) + \epsilon_t
\]

All variables are in real terms and logarithms. \( c \) denotes the growth of per capita consumption, \( y \) income and \( y^{OECD} \) income in the OECD area, which is supposed to control for the international business cycle. \( \tau_t \) stands for taxes, \( tr_t \) for transfer payments and \( g_t \) for government spending net of transfer payments. As the model is not used for a panel regression but for a case study, the fit was improved further by expanding the regression to an ADL form whereby scatter diagrams and heuristics were used to find
the lag structure of the variables. Furthermore insignificant variables were eliminated to end up with the baseline model which is to be found in Table 6 in the appendix. The fit is far better than in the previous regression. $R^2$, the residuals and the Durbin Watson statistics are good and there was no sudden change in parameter values given small variations of the sample.

The coefficients of government consumption, transfers and taxes look as predicted by Keynesian theory but change signs at higher lags. One way to interpret this is that it could be a crowding out/in effect via the interest rate. Given developed capital markets government savings can rise asset values which increase consumption and investments - a quicker and more direct form of crowding in. To get a better picture of this development a VAR Model would be needed (see De Castro (2003)). Another way to interpret this is that politicians tend to decrease public spending after they increased it - for example before and after an election. So what the baseline model says is that the Keynesian reaction of consumers still holds.

Introducing the interaction term showed that the signs of the coefficients switched again (Table 6) but the coefficients are not significant. A lot of studies on Non-Keynesian effects found switching coefficients but had problems with insignificant parameters for example Giavazzi and Pagano (1996) and Van Aarle and Garretsen (2003) who stated that the parameters are ”smaller and less significant than theirs [Giavazzi and Pagano´s]”. The switch of signs is a hint that the economy did not work in a Keynesian way but the assumption that there could have been a Non-Keynesian effect on consumption remains ambiguous. So it cannot be proven that the reaction of consumers is any different during exceptional episodes. Turning to theory again, the prediction of Ricardian equivalence - a negative correlation between government spending and consumption does not hold during normal or exceptional times. The prediction of the expectational view of fiscal policy - that there can be a switch in coefficients during exceptional periods cannot be supported either.

3.3 Asset Wealth and expectational Effects

Expectations can still matter though they do not need to cause a switch in the reaction of consumption to government spending as was tested above. Furthermore I will now test for the hypothesis of an asset wealth effect via the interest rate.

The baseline model showed considerable positive residuals from 1997 onward until 1999 which means that a traditional consumption regression would have underestimated consumption considerably. According to the expectational view of fiscal policy expectations can be influenced by the behaviour of government spending. For this reason it will be tested whether a crude mea-
sure of expectations, namely the consumer sentiment index helps to explain the growth in consumer spending.

To measure a wealth effect via the interest rate, a proxy for wealth is used. Taxes on capital gains, which can be expected to be a linear combination of asset wealth gains and the long run interest rate (which should increase the asset wealth of people if it falls) are used.

Adding variables for expectational and wealth effects at the same time should show whether one of the two channels can be ruled out or supported empirically.

A first regression with the new explanatory variables showed that they were all significant but there is a lot of redundant information in the series and problems with multicollinearity arose as the three variables were highly correlated. In a factor analysis there were three components found, only one of them had an initial eigenvalue greater than one (Table 4). This means that the three variables can be reduced to only one factor. The second factor lacked not only an eigenvalue above zero, but also and economic interpretation as it was correlated with the long run interest rate instead of expectations.

Table 4 - result of the factor analysis

<table>
<thead>
<tr>
<th>Comp.</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squ. Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total % Variance Explained</td>
<td>Total % Variance Explained</td>
</tr>
<tr>
<td>1</td>
<td>2.01</td>
<td>67.15</td>
</tr>
<tr>
<td>2</td>
<td>0.7</td>
<td>23.38</td>
</tr>
<tr>
<td>3</td>
<td>0.28</td>
<td>9.46</td>
</tr>
</tbody>
</table>

Theoretically there should have been two factors emerging from the factor analysis. One should have been highly correlated with the two variables for asset wealth effects and the other factor should have shown the impact of expectations. Obviously it is not possible to separate a wealth and an expectational effect at least with this simple method. The fact that the new variable $f_{t-1}$ is significant (see Table 6) suggests that consumers consider both aspects of personal wealth namely owned assets and expected lifetime income although it is not possible to separate them empirically. The new factor proved to be highly significant and explained most of the positive residuals between 1997 and 1999. Adding the interaction term showed that the sign of the new variable was not different during the exceptional period.

\footnote{extraction method: principal component analysis.}
though, which means that the personal wealth/expectations effect does not change during a fiscal episode.

Is the new variable which stands for personal wealth and expectations able to explain the unusual growth in consumption between 1996 and 2000? To test this, a Chow breakpoint test is performed to see whether the baseline model really fails after 1996. Another breakpoint test should show whether the model including the new factor can explain the growth in consumption. As can be seen in Table 5, the results are clear. After 1996 the baseline model fails whereas the null hypothesis that there is no change was not rejected for the new model. Additionally, both tests were performed for different points in time between 1995 and 1998 which showed that the baseline model begins to fail from 1995 onwards whereas the model including the factor proved robust.

<table>
<thead>
<tr>
<th>Table 5 - chow breakpoint tests for the first quarter of 1996</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
</tr>
<tr>
<td>baseline model</td>
</tr>
<tr>
<td>personal wealth/expectations</td>
</tr>
</tbody>
</table>

The new factor could explain the development of consumption satisfactorily. This gives rise to the assumption that the channel via interest rates is important and there is a certain role expectations played. It was not possible to measure effects of personal wealth or expected lifetime income separately.

3.4 Compositional Effects

Can different forms of government spending have a different effect on consumer spending? According to Giudice et al. (2004) an impact of government wage cuts on output indicates supply side effects thereby supporting the neo-classical view. The rationale behind this is that money can be spent for more or less productive things. It could be argued that for example, that a reduction in government wages which reduces the public share and makes funds free for - say investments in the private high tech sector increases incomes and thereby increases consumption. Another interpretation is a supply side effect via the labour market due to the income - spare time decision.

Two compositional variables, namely government wage spending $gw_{t-1}$ and defence spending $df_{t-1}$ were added to the baseline model (see Table 6). Again, scatter diagrams were used to identify the most significant lags.
The logarithms of government wages showed a significant negative impact on consumption growth whereas defence spending did not have any effect on consumption (also no positive one). So there are compositional effects to be found, adding an interaction term showed that they do not depend on regime switches due to fiscal episodes though.

4 A Growth Saving Feedback

Although there is only weak evidence that the multiplier of government spending changed, fiscal policy probably helped in raising asset values and thereby consumption and investments. At the beginning of the nineties there were tremendous investment opportunities in IT and telecommunications and investors were already waiting for the "announced industrial revolution". High government savings (which bridged low private savings) provided money to efficient capital markets. What happened on the asset markets was a quicker and more efficient form of crowding in than the traditional crowding in via interest rates. So what actually happened was a reallocation of capital toward productive investments. According to Lucke (1999) shifts from public to private spending increase growth if the marginal product of capital is higher in the private sector (and vice versa). What happened than was a so called "growth saving feedback" according to Caballero and Hammour (2002) in which the rise in market values of assets due to low long run capital costs (or government savings) increased investments along standard q-level theory.

The savings were mostly "foreign savings" which came in the form of an investor run. Advantageous returns attracted capital seeking for attractive "tech" investments until the marginal product of these investments was probably close to zero already and eventually continued further. Whether there was a bubble or not shall not be discussed here. It is very interesting though that in the article "Speculative Growth" (Caballero and Hammour (2002)) an asset bubble creates the only possible incentive to invest in a pure externality called "technology". From a foreign investors point of view a lot of capital was destroyed but in real terms investments in IT infrastructure, technology, fibreglass networks et cetera remained. At the end of the day the US experienced the biggest increase in capital stock in the post war period.

\footnote{An important difference to investor runs in other parts of the world is that in Asia for example the whole economy was liable for the debt as it had the form of mostly government bonds. In the US however share prices fell and the story was over.}
5 Conclusions and further Research

Due to structural surpluses and growth at the same time the period in question can be identified as an expansionary fiscal consolidation. A consumption regression found normal Keynesian multipliers so the theorem of Ricardian equivalence does not hold in the short run. We found a hint that the economy did not work in a Keynesian way during the growth episode of the US in the 90’s as the coefficients of reaction functions switched but a Non-Keynesian effect as described in the literature cannot be supported. Comparing the significance of my parameters with other studies we have to say that although there are expansionary fiscal contractions the general evidence of systematic Non-Keynesian multipliers predicted by the expectational view of fiscal policy is weak. Taylor interest rates showed no impact on consumption so it was obviously not monetary policy which caused the expansionary fiscal period. Adding variables to account for personal wealth and expectations to test for the channels of expectations and a wealth effect due to interest rates led to a problem of multicollinearity. Surprisingly, in a factor analysis it was not possible, to separate between interest rate and expectational effects. A factor containing both effects was finally able to explain consumption in the second half of the nineties satisfactorily. This has important implications for policy as asset wealth effects on consumption seem to play an increasingly important role.

Compositional effects were found as general government spending, spending on government wages and defence spending showed a different impact on private consumption. This means that it does matter on which things money is spent and supports supply side effects predicted by neoclassical theory.

As the government helped in financing the investment boom and fuelled asset values there is a positive link between a budget consolidation and private consumption established finally. The two main findings of this paper, namely an asset wealth/expectations effect and compositional effects fit nicely into the interpretation of Caballero and Hammour (2002). Estimating an investment function to explore the relation between public surpluses, foreign investments, asset values, investments and Tobin’s q is left for further research.
\[
\begin{align*}
\text{base model} & \quad c & y_{t-1} & \Delta y_t & \Delta y^{sec}_t & \tau_{t-1} & \tau_{t-2} & tr_{t-1} & g_{t-1} & g_{t-4} \\
& -0.082 & -0.0223 & 0.5409 & -0.0379 & 0.038 & 0.003 & 0.0661 & -0.0485 \\
& (-1.0055) & (-1.5459) & (10.8968) & (-2.5688) & (2.5782) & (0.9258) & (2.6467) & (-2.0555) \\
R^2 & \text{adj.} R^2 & \text{D.W.} & & & & & & & \\
0.4547 & 0.4321 & 2.164 & & & & & & & \\

\text{int. term} & -0.0764 & -0.0261 & 0.3824 & 0.3128 & -0.04748 & 0.0432 & 0.0084 & 0.077 & -0.0583 \\
& (-0.8691) & (-1.766) & (4.9153) & (2.3781) & (-3.1182) & (2.843) & (2.0832) & (3.0231) & (-2.3845) \\
R^2 & \text{adj.} R^2 & \text{D.W.} & & & & & & & \\
0.4867 & 0.4518 & 2.2248 & & & & & & & \\

\text{pers. wealth} & 0.3897 & -0.0886 & 0.4107 & -0.0555 & 0.0827 & 0.0204 & 0.0832 & -0.0848 & 0.0034 \\
& (2.57) & (-1.8131) & (5.1667) & (-2.0553) & (3.1398) & (2.7724) & (1.638) & (-1.9485) & (3.5315) \\
R^2 & \text{adj.} R^2 & \text{D.W.} & & & & & & & \\
0.5398 & 0.4926 & 2.4441 & & & & & & & \\

\text{comp. eff.} & -0.0522 & -0.065 & 0.3974 & 0.3225 & -0.0371 & 0.039 & 0.0052 & 0.1167 & -0.0566 \\
& (-0.4899) & (-3.13) & (5.2059) & (2.5103) & (-2.5276) & (2.655) & (1.1554) & (3.8856) & (-2.3841) \\
R^2 & \text{adj.} R^2 & \text{D.W.} & & & & & & & \\
0.4971 & 0.4666 & 2.2082 & & & & & & & \\
\end{align*}
\]

Table 5: Giavazzi and Pagano’s Model applied to the US
References


REFERENCES


