

Deficit spending versus balanced budget spending: macroeconomic effects

Resumé:

In this paper we make a comparison of the macroeconomic effects of deficit spending and balanced budget spending by governments.

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Keywords: Deficit spending, balanced budget spending, macroeconomic effects

Modelgruppepapirer er interne arbejdsrapporter. De konklusioner, der drages i papirerne, er ikke endelige og kan være ændret inden opstillingen af nye modelversioner. Det henstilles derfor, at der kun citeres fra modelgruppepapirerne efter aftale med Danmarks Statistik.

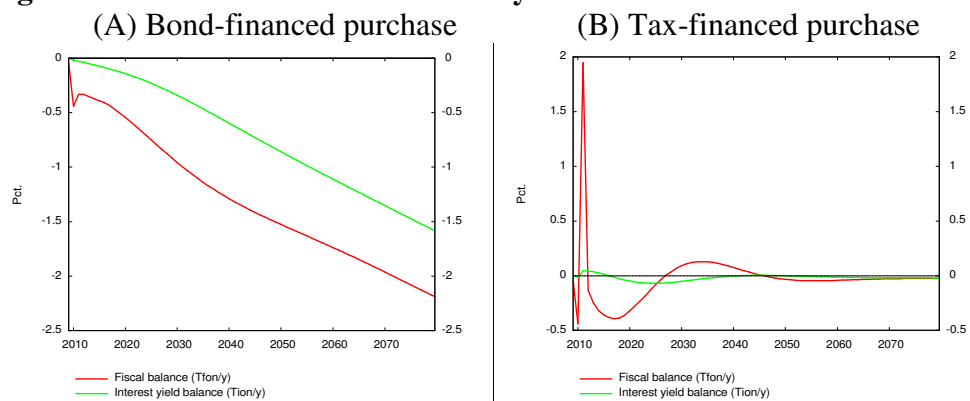
0. Introduction

A multiplier analysis of the macroeconomic effects of a change in fiscal policy is a common practice in ADAM. A classical example is an increase in government purchase of goods and services. Such analysis in ADAM assumes funds are raised by issuing bonds; however, the way government pays back debt is not determined in the analysis. As a result, fiscal deficits grow indefinitely in the future (see figure 1A). In this paper we take a step to finance government expenditures by raising income taxes. This practice ensures public budgets are balanced in the long run.¹ The effects in the economy will depend on the ways of financing. In the following, we demonstrate the differing macroeconomic effects of deficit spending and balanced budget spending. We explore alternative ways of financing in the appendix.

1. Effects on Public budget

The distinction between bond-financed and tax-financed government expenditure is easily understood by looking at the public budget balance ($Tfon$) and interest yield balances ($Tion$). Figure 1 reports the relative change in $Tfon$ and $Tion$ as a percentage of GDP . (A) corresponds to an increase in public purchase of goods and services, $fVmo$, of 10 bil. Krone financed by issuing bonds, and (B) corresponds to the case where the increase in public expenditure is financed by a corresponding increase in income taxes.² The increase in taxes is made in two steps: a year after the public purchase, income taxes are raised by 40% and as of the third year the rate is reduced to 12% as governments can return to current financing. These rates are determined in a way such that the change in budget balance and interest yield balance is zero in the long run.

Figure 1. Effects on fiscal and interest yield balances



The budget deficit grows continuously in the long run when funds are raised by issuing bonds and no attempts are made to pay back public debts. Consequently a macro-economic analysis without consideration into how deficits are financed could be misleading. In the following section we compare the macroeconomic effects of bond and tax financed government expenditures.

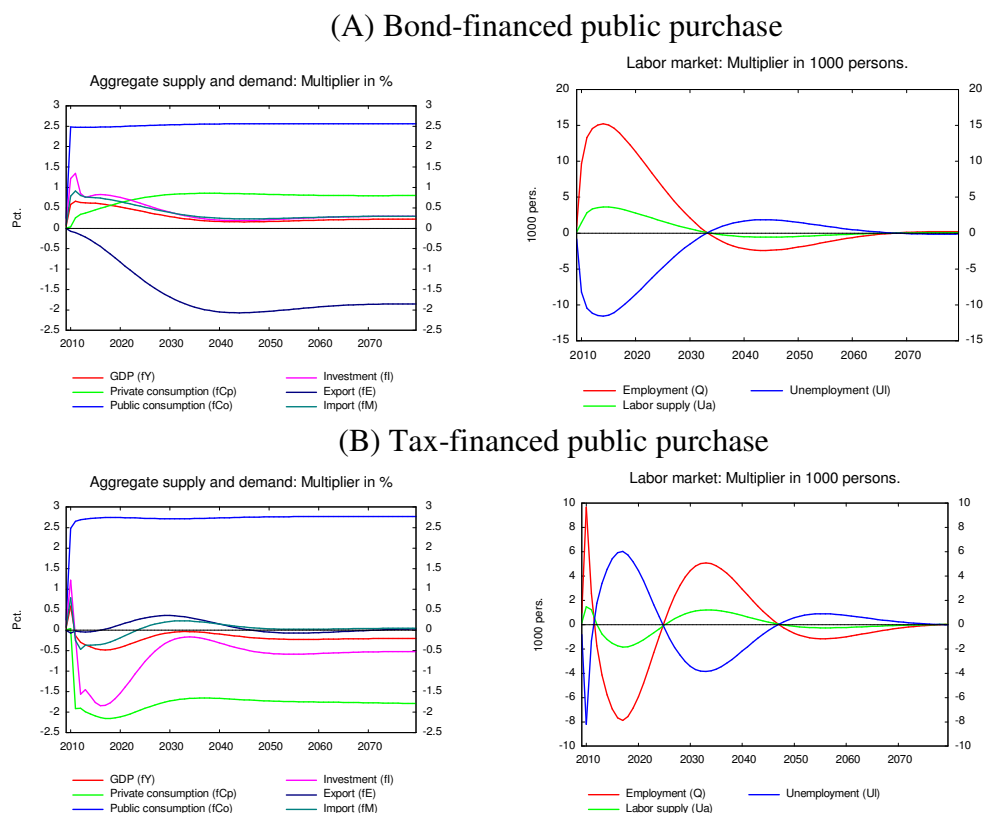
¹ The forth coming ADAM book (chapter 2 & 11) has a discussion of the macroeconomic effects of deficit and balanced budget spending; this paper is intended to complement that section.

² The ADAM variable name for income tax components is *tsysp1* and *tsysp2*.

2. Macroeconomic effects

The basic mechanics in ADAM is that in the short term the model behaves as a Keynesian model where demand determines production and in the long term it behaves as a neo-classical model where wages and prices change and crowd out any effect on output resulting from a change in aggregate demand. Thus, a first diagnosis of the bond and tax financed public purchase should focus on output and employment dynamics. Figure 2 reports these effects.

Figure 2 the macroeconomics dynamics



When public expenditures are bond-financed the macro-economic dynamics are easily understood. In the short run, an increase in public expenditure boosts aggregate demand there by output and employment. In the medium to long term, overheating and pressure in the labour market entails higher wage increase in the domestic market than abroad which leads to a loss in our competitiveness and exports decline so that the pressure from aggregate demand dies out. This is shown in figure 2A.

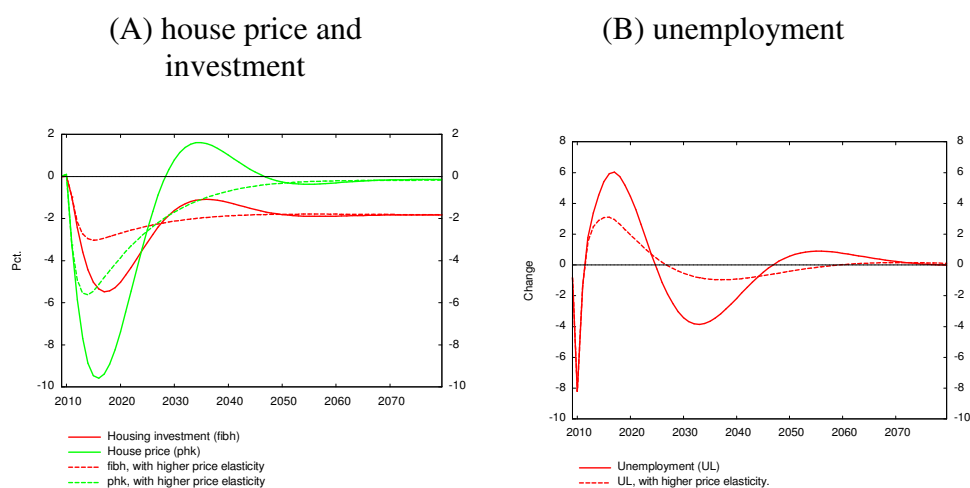
These macroeconomics dynamics are different when public expenditures are tax-financed. In the first year when government consumption is increased output increases and unemployment decreases which is the same as the bond-financed experiment, see figure 2B. In the second year income taxes are raised to finance public expenditures. This has the effect of reducing private consumption and hence aggregate output so that unemployment increases. Basically in the bond-financed case wages rise and reduce exports, and unemployment returns to the initial level. In the tax-financed case, rise in

income taxes reduce private consumption, and unemployment rises back to the initial level. However unemployment level swings up and down before coming back to equilibrium. In the following section we show how instabilities in the model can be improved.

3. Stability

Tax-financed public expenditure is inherently unstable, and mostly it is due to the reactions in the housing sector (the acceleration mechanism). One way of reducing the instability is to raise the price elasticity of housing stock which is the same as halving the response in house prices to changes in stock of houses, cf. JNR22610. Accordingly, we double the price elasticity of houses and figure 3 shows the effects of tax-financed public purchase with and without the change in house price elasticity.

Figure 3 stability and balanced budget spending



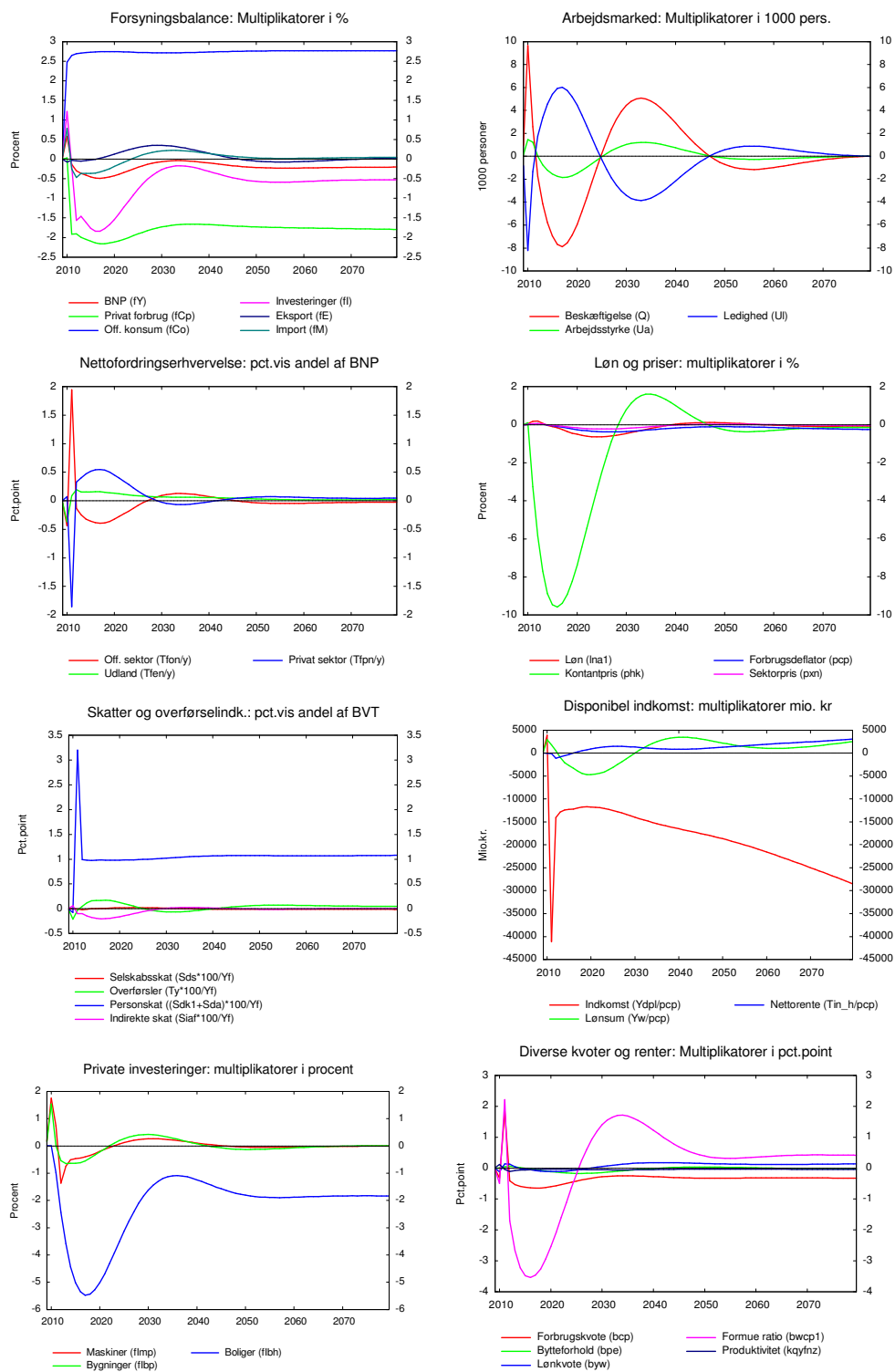
The solid lines corresponds to balanced budget expenditure and no change in the price elasticity, while the dashed lines represent the same experiment coupled with doubling of house price elasticity. As we can see from figure 3A, the increase in price elasticity slows down the response of house price to changes in housing stock. The stability in the housing market improves the stability of the overall model, this is shown in figure 3B where the responses in unemployment are more stable than the case in figure 2B above.

4. Conclusion

This paper is intended to complement chapter 2 & 11 of the forth coming ADAM book, where a distinction between a multiplier experiment of deficit spending and balanced budget spending is made. We showed how the fluctuations with tax-financed experiment can be improved by improving the stability in the housing sector. In the appendix we show that different ways of balancing public budget have different effects in the economy. Finally, we suggest chapter 11 of the new ADAM book should have a multiplier analysis of balanced budget spending.

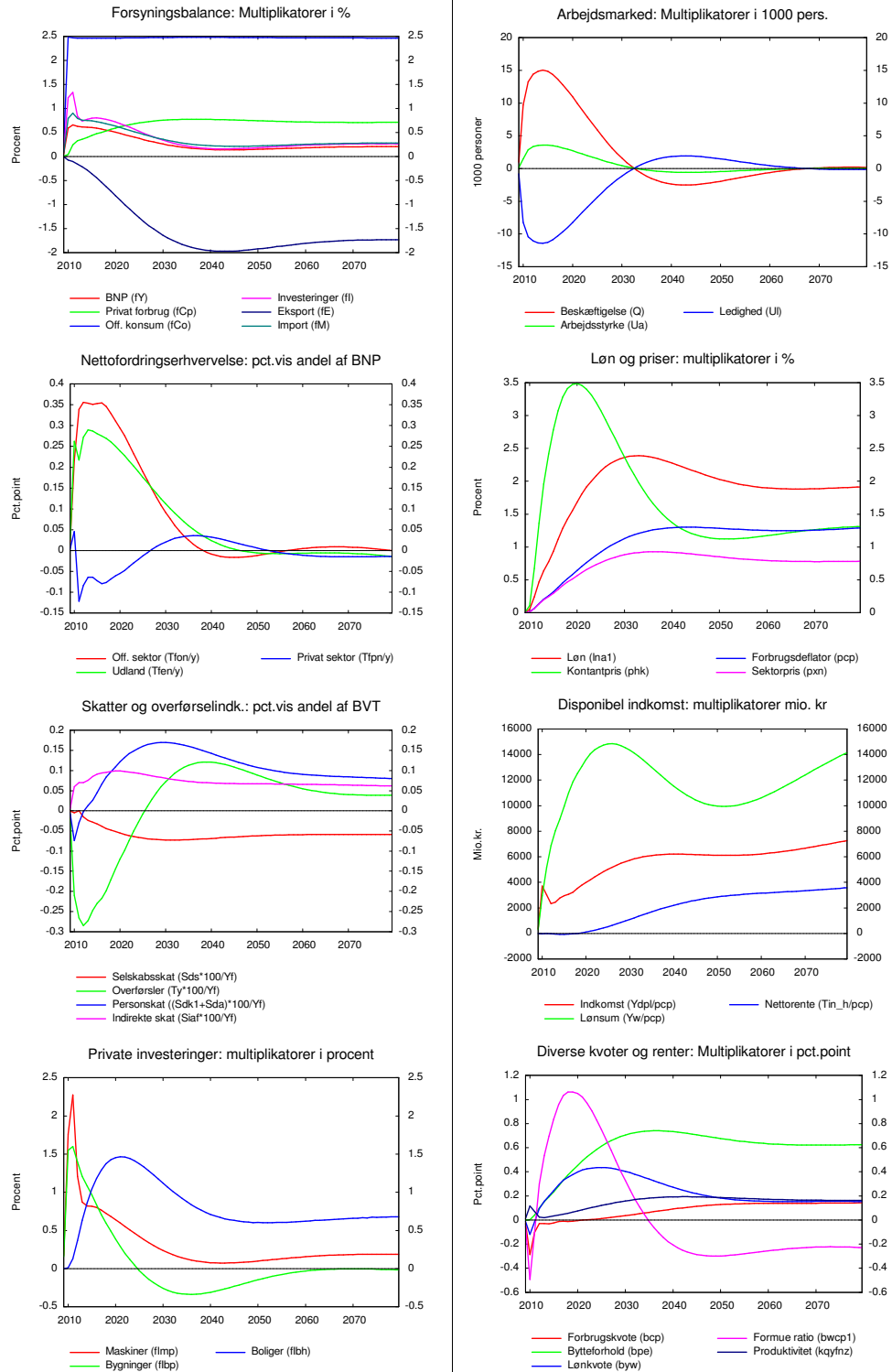
Appendix

(1) An increase in public purchase of goods of 10 bil. kr, financed by an increase in income taxes. (presented above)



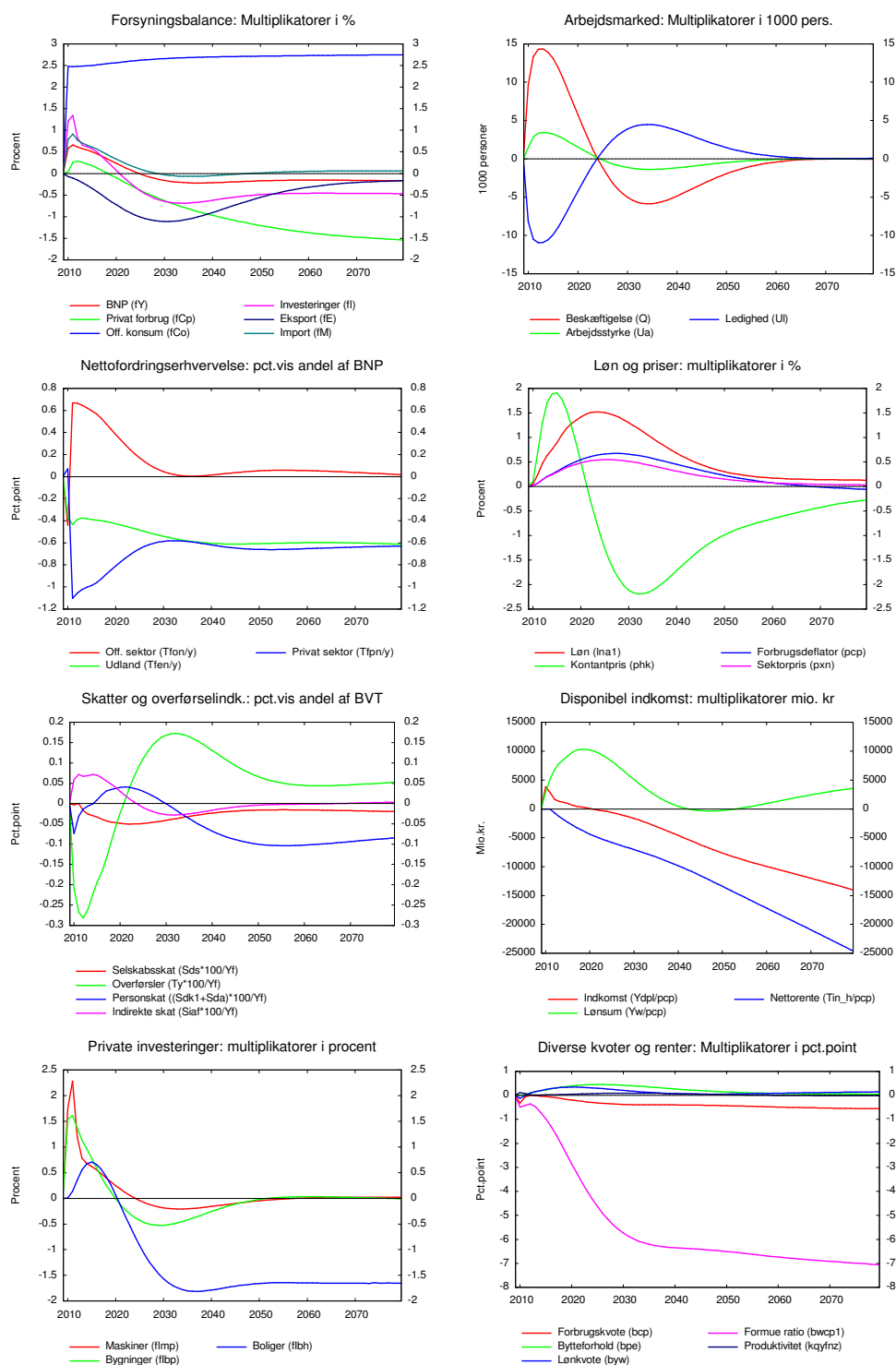
(2) An increase in public purchase of goods of 10 bil. kr, financed by capital inflows from abroad, (*theo*, ADAM variable name).

This is like the case where government plays Ponzi-game, forever rolling debts by borrowing from abroad. The macro-economic effects are similar to the bond-financed public purchase experiment except in this case fiscal balances are zero in the long run.



(3) An increase in public purchase of goods of 10 bil. kr, financed by raising capital taxes, (*sak*, ADAM variable name).

In contrast to income tax financed purchase, the model is more stable when financing is made by raising taxes on capital. This is because effects in the economy are transmitted through changes in consumer wealth, where as the former works via changes in income. The long run effects in output are similar to income tax-financed experiment (see appendix 1).



(4) An increase in public purchase of goods of 10 bil. kr, financed by raising capital and income taxes.

A year after public purchases are made, taxes on capital are raised to finance expenditures, as of the third year income taxes are used for financing. The use of capital taxes initially slows down the responses in output and employment.

