LONG TERM EFFECTS OF FISCAL POLICY ON THE SIZE AND THE DISTRIBUTION OF THE PIE IN THE UK

Xavier Ramos & Oriol Roca-Sagalès

Universitat Autònoma de Barcelona

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Motivation

Fiscal policy has been traditionally considered a good instrument to
- smooth cyclical behaviour
- ameliorate inequality through redistribution

Yet we have limited and mixed evidence about:
- the growth effects of distinct FPs [mostly US aggregate studies], and
- the distributive impact of overall spending and taxation [except for direct taxes and benefits].

We provide new evidence on macroeconomic effects of fiscal policy in the UK by means of VAR models
- paying attention to spending components and different taxes
- taking into account distributive issues.

Our findings suggest an efficiency-equity trade-off: Fiscal contraction may be expansionary at the cost of higher inequality

Motivation

Expected Effects of Fiscal Policy

'Perfectly reasonably economist' can and do disagree even on the basic qualitative (let alone quantitative) effects of fiscal policy:

> While neoclassical models predict that private consumption (and aggregate demand) should fall following a positive shock to government consumption, keynesian and some neokeynesian models predict the opposite (Perotti, 2005).

Distributive effect of taxation and government spending is ambiguous
- progressive direct taxes, regressive indirect taxes and proportional social contributions
- Social spending supposed redistributive, while unknown effect of other components.

Data

Macroeconomic Data

Come from Eurostat (expressed in millions of 2000 €)

Public Spending: covers 89% of overall PS (excluding interests)
- Current Expenditure (goods, services and current transfers), 33% GDP
- Public Investment, 1.5% GDP

Taxes: cover 91% of total revenue
- Direct tax revenue (income, wealth and payroll tax), 23.5% GDP
- Indirect tax revenue (taxes on output and imports), 13%

Inequality Data

Gini coefficients from IFS files (Brewer *et al.*, 2007)
Income is Household disposable equivalent income (post-tax, pre-housing costs)

Data

Fiscal Data, 1970 - 2007

	1970	1980	1990	2000	2007	(1998-2007) average	
Public Expenditure	31.1	35.5	33.9	32.4	36.0	**34.4**	**100**
Current expenditure	26.4	32.9	31.6	31.1	34.2	**32.8**	**95.3**
Public Investment	4.7	2.6	2.3	1.3	1.8	**1.6**	**4.7**
Tax Revenue	36.9	36.0	36.0	37.5	37.4	**36.9**	**100**
Direct Taxes	22.7	23.1	24.1	24.2	24.9	**24.0**	**65.0**
Indirect Taxes	14.2	12.9	11.9	13.3	12.5	**12.9**	**35.0**

Figures expressed as percentage of GDP; source is Eurostat

Data

Income Inequality, 1970-2007

Increase of 10 points, mostly due to huge rise in the 80's
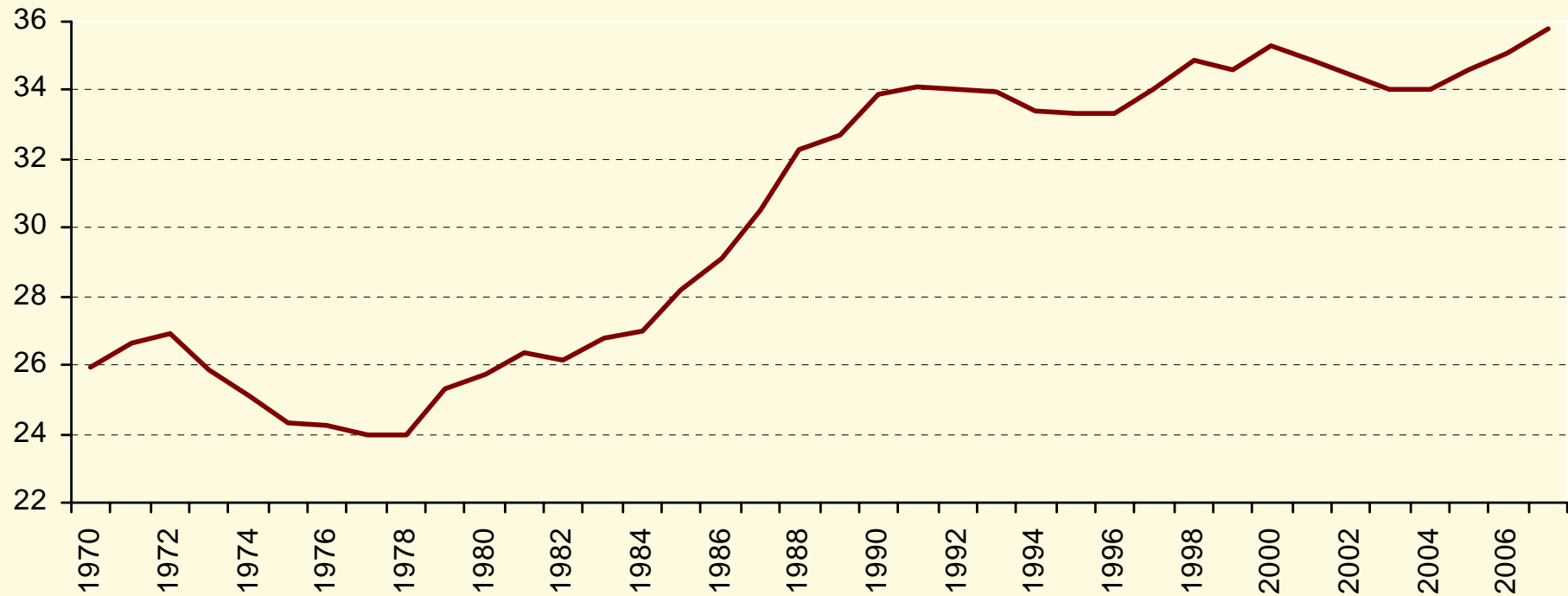
Methodological Issues

We use VAR models to estimate long term effects of fiscal variables

$$X_t = B(L) \cdot X_{t-1} + U_t$$

X_t : vector of endogenous vbles (GC, GFBC, Y, I, TD, TIND)
B : matrix of coefficients for the *i*-th lag
U_t : vector of reduced form residuals, with usually non-zero correlations

Estimated in first differences of log-levels by OLS

Identification by means of Choleski decomposition with the ordering
- GC, GFBC, Y, I, TD, TIND [alternative orderings have no bearing on results]

Specification tests suggest model residuals do not suffer from:
- First-order autocorrelation
- Heteroscedasticity
- Non-normality

Methodological Issues

We use VAR models to estimate long term effects of fiscal variables

Take account of feedback effects between variables
- **Important if delay between policy implementation and ensuing impact.**

Suitable when variables of interest are endogenous
- **Output, public expenditure, tax revenue and inequality are interrelated**

Not too demanding on the data (e.g. needn't have exogenous change to identify effects as in dummy variable approach).

Effects on Output of Fiscal Policy (I)

GDP Long Term Elasticities

	Model 1 (G,Y,I,T)	Model 2 (GC,GFBC,Y,I,T)	Model 3 (G,Y,I,TD,TIND)	Model 4 (GC,GFBC,Y,I,TD,TIND)
Public Spending	-0.620*		-0.639*	
Current spending		-0.592*		-0.592*
Public investment		-0.009		-0.010
Overall Tax Revenue	-0.236*	-0.233*		
Direct Tax Revenue			-0.156	-0.168
Indirect Tax Revenue			-0.096	-0.080

Expansionary fiscal policy has negative effects on output

Expenditure side: 1% increase in Public Spending reduces output by 0.6% [consistent with previous evidence for the UK (Perotti, 2005), but at odds with previous evidence for Germany, France, Italy, Spain, the US (Marcellino, 2006; Blanchard and Perotti, 2002)]

- **Current Spending has the largest effect**
- **Public Investment has no effect** (small in size & statistically insignificant)

Effects on Output of Fiscal Policy (II)

GDP Long Term Elasticities

	Model 1 (G,Y,I,T)	Model 2 (GC,GFBC,Y,I,T)	Model 3 (G,Y,I,TD,TIND)	Model 4 (GC,GFBC,Y,I,TD,TIND)
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Expansionary fiscal policy has negative effects on output

Revenue side: 1% increase in Tax Revenue reduces output by 0.2%
[consistent with previous evidence for the UK (Perotti, 2005), Germany, France, Italy, Spain (Marcellino, 2006), the US (Blanchard and Perotti, 2002)]
- **Separate effect of direct and indirect taxes cannot be measured with precision**
- **Direct taxation seems to be contractionary while indirect taxation is much more neutral**

Effects on Output of Fiscal Policy (III)

GDP Weighted Marginal Products (Accumulated long-term effects of policies on GDP)

	Model 1 (G,Y,I,T)	Model 2 (GC,GFBC,Y,I,T)	Model 3 (G,Y,I,TD,TIND)	Model 4 (GC,GFBC,Y,I,TD,TIND)
Public Spending		-1.86*	-1.75	-1.75
Current spending			-1.72*	-1.72*
Public investment			-0.03	-0.03
Overall Tax Revenue	-0.64*	-0.68	-0.63*	-0.67
Direct Tax Revenue		-0.42		-0.46
Indirect Tax Revenue		-0.26		-0.22

> Takes account of relative importance of each component

What does this mean in pounds?

- **£1 shock on public spending reduces output by £1.8**
  - Current spending has the largest impact

- **£1 shock on tax revenue reduces output by £0.6**
  - Direct taxes have the largest impact (twice as large)

Budget-neutral fiscal expansion has a contractionary effect !

Effects on Output of Fiscal Policy (IV)

GDP Marginal Products (Accumulated long-term effects of policies on GDP)

	Model 1 (G,Y,I,T)	Model 2 (GC,GFBC,Y,I,T)	Model 3 (G,Y,I,TD,TIND)	Model 4 (GC,GFBC,Y,I,TD,TIND)
Public Spending	-1.80*	-1.86*		
Current spending			-1.80*	-1.80*
Public investment			-0.56	-0.63
Overall Tax Revenue	-0.64*		-0.63*	
Direct Tax Revenue		-0.65		-0.74
Indirect Tax Revenue		-0.70		-0.62

What does this mean in pounds? Unweighted effects

- **£1 shock on public spending reduces output in the long run by £1.8 Current spending accounts for all the impact**

- **£1 shock on tax revenue reduces output in the long run by £0.6 Both types of taxes have similar effects**

Distributive Effects of Fiscal Policy (I)

Inequality Elasticities

	Model 1 (G,Y,I,T)	Model 2 (GC,GFBC,Y,I,T)	Model 3 (G,Y,I,TD,TIND)	Model 4 (GC,GFBC,Y,I,TD,TIND)
Public Spending	-1.190*		-1.188*	
Current spending		-1.349*		-1.335*
Public investment		-0.047		-0.041
Overall Tax Revenue	0.210	0.136		
Direct Tax Revenue			-0.091	-0.162
Indirect Tax Revenue			0.258*	0.237*

Expansionary (budget neutral) fiscal policy reduces inequality

Public (current) expenditure has a sizeable redistributive effect:
- **1% increase in current spending reduces inequality by 1.2%**
- **With available data cannot separately identify the contribution of the different programmes (e.g. cash transfers vs. in-kind transfers)**

Distributive Effects of Fiscal Policy (II)

Inequality Elasticities

	Model 1 (G,Y,I,T)	Model 2 (GC,GFBC,Y,I,T)	Model 3 (G,Y,I,TD,TIND)	Model 4 (GC,GFBC,Y,I,TD,TIND)
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Expansionary (budget neutral) fiscal policy reduces inequality

Indirect taxation increases inequality
- **Elasticity of savings wrt indirect taxation is larger for poorer than for richer individuals**

Direct taxation has a neutral effect:
- **Contributions and income tax are overall rather proportional**

Results are robust to …

Our findings are robust to …

Employing different measures of inequality
- **Gini, MLD, 90/10 Ratio**

Different definitions of income
- **Inclusion of housing costs, not equally distributed across income distr.**

Excluding Inequality from the analysis
- **Allows comparing our findings with previous studies**

Changes in the ordering of the variables in the VAR models

Wrapping up

Our results find the standard efficiency-equity trade-off for the UK, 1970-2007 (no structural break found):

The smaller the size of the government the larger the pie, but the less equally distributed.
Indirect taxation only policy that breaks this trade-off

Disaggregating matters

The composition of public expenditure and the mix of taxes are central to determining the impact of fiscal policy on growth:
- Current spending accounts for overall growth effect, while public investment has no impact on output.
- Direct taxation has larger contractionary effect than indirect taxation.

... and on inequality
- Current spending accounts again for overall inequality reducing effect, while public investment has no distributive impact.
- Indirect taxation slightly increases inequality; direct taxation has no redistributive effect.

Tentative Policy recommendations

Budget cuts are expansionary but inequality increasing

Fiscal retrenchment in the UK could be seen as a premise for an economic expansion.

- Cutting taxes and public spending increases output in the long term.
- Such expansion will help in compressing the debt-GDP ratio further in two ways:

  - directly, by increasing GDP (the denominator of the ratio)
  - indirectly, by triggering the automatic fiscal stabilizers, and further reducing public debt.

Giavazzi & Pagano (1996) analyse data for 19 OECD countries and find non-Keynesian effects of fiscal policy changes (both contractions and expansions) if they are sufficiently large and persistent.

These effects can result from changes in public consumption and in taxes and transfers.

Tentative Policy recommendations

Learning for previous experiences of fiscal consolidation

Are there other experiences from which to learn?

Ireland and Denmark had opposed experiences of fiscal stabilization policies in the 1980s.

Denmark: 5% deficit reduction [via spending cuts and tax increases] in the early 80's lead to a consumption boom in the mid-80's.

- Giavazzi & Pagano (1990) attribute it to changes in expectations about future fiscal policy: Credible spending cuts raised expectations of lower future taxes, which led to higher consumption even with higher taxes

However, fiscal stabilization in Ireland plunged the economy in a severe recession in the early 80's.

- The increase in net taxes led to a drop in disposable income, which in turn reduced consumption due to the liquidity constraints faced by agents (Giavazzi & Pagano, 1990).

Tentative Policy recommendations

Under which circumstances is fiscal consolidation most likely to be successful and expand private demand?

Fiscal policy changes should be sufficiently large and persistent. If credible, fiscal consolidation will be seen as a signal of future lower taxes and will expand consumption.

Should make sure that liquidity constraints do not depress private consumption.