UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

Is more regional fiscal autonomy always better?

ASSOCIATION AMBA ACCREDITED
EFMD EQUIS ACCREDITED
AACSB ACCREDITED

Gioele Figus

What is the FAI?

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

- The Fraser of Allander Institute is a leading economic research institute focussed mostly on the Scottish Economy
- The institute was funded in 1975 and it is housed in the Department of Economics, University of Strathclyde, Glasgow
- The institute has a broad interest in regional economics and in issues related to fiscal devolution and autonomy
- The institute has expertise on Computable General Equilibrium analysis and its use in the area of fiscal policy analysis (first CGE developed in 1991)
- The FAI also disposes of a microsimulation model for fiscal policy

Fiscal autonomy

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

- 1999 Creation of a devolved Parliament of Scotland
  - Scottish public spending funded via a block grant transferred by the central Government.
  - The block grant was calculated using the so called Barnett formula.
- 2012 Scotland Act 2012
- 2014 Scottish Independence referendum (Yes 44.7 No 55.3)
- 2014 Smith Commission
- 2016 Scotland Act 2016

Fiscal devolution in AMOS

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

- AMOS (A model of Scotland) is a regional dynamic Computable General Equilibrium model (CGE)
- It has been used to analyse the impact of numerous policies (energy efficiency, workers migration, higher education, tourism and big events, agricultural policies, Scottish Independence, Brexit).
- Essentially it is a modelling framework not just a model.
- In this application the model encompasses a range of regional fiscal regimes, each representing a different degree of autonomy.

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

Capturing fiscal devolution in AMOS

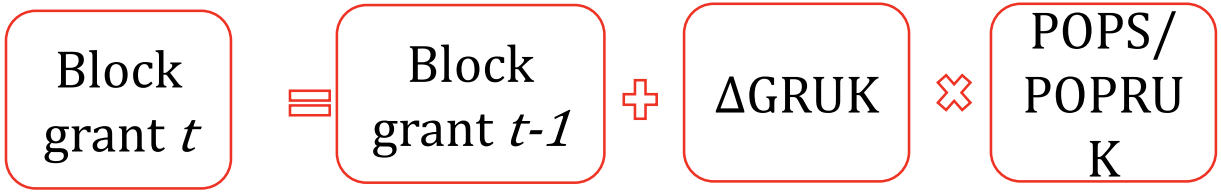
ASSOCIATION OF MBAS ACCREDITED
EFMD EQUIS ACCREDITED
AACSB ACCREDITED

Capturing regional fiscal regimes

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

- The current version of our model captures four different fiscal regimes:
  - Barnett (the region relies on transfers from the central government)
  - Smith (the region relies on some transfer from the central government as well as on devolved tax revenues)
  - Equalisation (similar to Smith but includes a mechanism to equalise transfers between essentially two regions)
  - Full Tax autonomy

Barnett (fix real government expenditure)



Given that we use a single region model:

RUK is exogenous

The closure essentially corresponds to a fixed real government expenditure

Smith

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

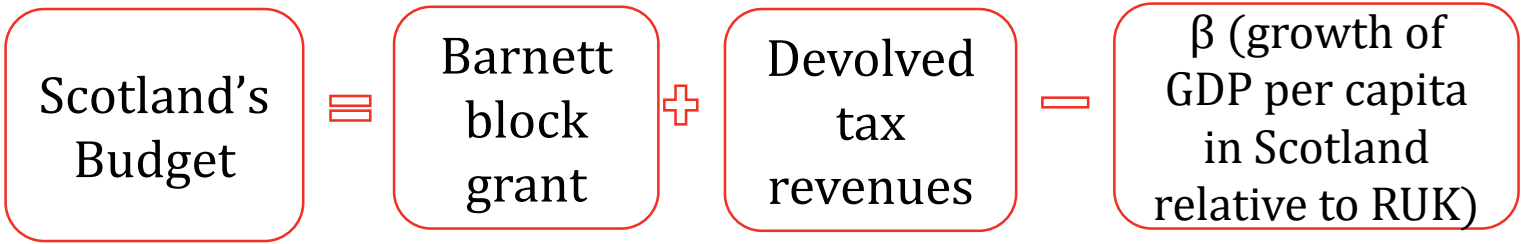
Scotland's Budget = Barnett block grant + Devolved tax revenues − Block grant adjustment

Scottish Government's budget is greater under Smith than Barnett if Devolved Tax revenus increase and exceed the Block Grant adjustment (BGA)

BGA *t* = BGA *t0* + Growth in Scottish/ RUK pop × RUK tax revenues in *t* relative to *t-1*

Essentially this requires growth in tax revenues per capital in Scotland to be greater than growth in tax revenues per capita in rUK

Equalisation



Equalising transfers negatively related to rise in GDP per capita in Scotland

Scottish Government's budget clearly greater under Barnett than under equalisation if devolved tax revenues exceed the scale of "equalising" transfers

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

Illustrative simulation (demand shock)

ASSOCIATION OF MBAS ACCREDITED
EFMD EQUIS ACCREDITED
AACSB ACCREDITED

A demand shock

- A 5% permanent increase in export is introduced in the first period of the simulation
- The simulation is repeated for each of the government closures illustrated above
- The capital stock and the working population are updated via investment and migration respectively

Summary results

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

	Barnett Fixed real gov. expend.	Smith NO Block Grant Adjustment	Smith with Block Grant Adjustment	Equalisation	Full Tax Autonomy
Exports	5.00	5.00	5.00	5.00	5.00
GDP	2.50	2.79	2.58	2.47	3.47
Wages	0	0	0	0	0
CPI	0	0	0	0	0
Employment	2.31	2.65	2.41	2.27	3.47
GDP/ capita	0.99	1.05	1.00	0.97	1.19
Gov. expend.	0	1.10	0.31	-0.07	3.75
Population	1.50	1.72	1.56	1.48	2.26
Household consumption	1.36	1.55	1.42	1.31	1.19
Investment	2.72	2.94	2.78	2.69	2.00

Summary results

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

Model results provides a clear ranking of the fiscal regimes in terms of the long-run impact of an export stimulus: FTA>Smith>B>EQ,

Not surprisingly, the biggest multiplier for an export stimulus is associated with full tax autonomy and the smallest with the equalisation regime (with the former generating a full 1 percentage point increase in GDP greater than that latter – a 40% increase in impact).

The results appear to have fairly clear implications for the growth incentives provided by each fiscal regime to the devolved regional Government.

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

A more practical example (TVL)

ASSOCIATION OF MBAS ACCREDITED
EFMD EQUIS ACCREDITED
AACSB ACCREDITED

Tourism tax

- There is a large debate around the introduction of a tourism tax
- Preliminary studies on the city of Edinburgh have found that a per night tax could raise a revenue of £25.8m
- Since this is too small to be captured in the regional model, we assess the impact of a TVL that raises £258 million

Tourism tax

- The revenue is set exogenously and the model finds the tax rate required to raise the revenue
- Reported results are long-run only under
- These also reflect a range of fiscal regimes
- Tourism demand elasticity is initially set to 1.2 but sensitivity is tested

Summary results

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

	Barnett (TVL no recycled)	Barnett (TVL recycled)	Smith	Full Tax Autonomy
GDP	-0.013%	0.044%	0.046%	0.058%
Skilled income	-0.010%	0.072%	0.074%	0.092%
Unskilled income	-0.014%	0.041%	0.042%	0.054%
Hh. consumption	-0.019%	0.104%	0.107%	0.133%
Gvt . expenditure	0.000%	2.353%	2.422%	2.913%
Investment	-0.015%	0.018%	0.019%	0.026%
Total Exports	0.031%	-0.182%	-0.188%	0.014%
Tourism expenditure	-1.230%	-1.246%	-1.246%	-1.250%
Tourism price index	6.847%	6.935%	6.938%	6.956%
Tourism tax rate	19.393	19.381	19.380	19.378

Summary results

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

- With no recycling (Barnett), all measures of aggregate activity fall.
- Just recycling TVL increases government expenditure which, together with multiplier effects now increases GDP, employment, household consumption etc.. But exports now fall and tourist expenditure lower.
- Recycling changes in other taxes (i.e. increasing devolved fiscal powers) further increases the positive impact on activity and government revenues.

Smith results with different elasticities

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

Tourism demand elasticity	0.8	1.2	2.5
GDP	0.072%	0.046%	-0.048%
Skilled employment	0.095%	0.074%	0.000%
Unskilled employment	0.070%	0.042%	-0.062%
Hh. consumption	0.146%	0.107%	-0.037%
Gvt .consumption	2.445%	2.422%	2.335%
Investment	0.049%	0.019%	-0.092%
Total Exports	-0.251%	-0.188%	0.045%
Tourism expenditure	1.221%	-1.246%	-10.302%
Tourism price index	6.532%	6.938%	9.133%
Tourism tax rate	18.153	19.380	25.873

Discussion

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

- Chose Smith as being closest to actual present fiscal situation in Scotland.
- **Elasticity = 1.2** : Tourism revenue falls but activity and government revenue increases both through TVL and other taxes.
- **Elasticity = 0.8**: expenditure on tourism increases with the tax. Revenue raised by other taxes also increasing. There is a positive impact on GDP and employment. Clearly a politically desirable way to raise government revenue, but impact on tourist numbers restricted.
- **Elasticity 2.5:** Large fall in tourism expenditure, a step up in the change in tourism price index, much higher tax rate to reach tax target. GDP falls and non-TVL government revenues fall. In this case the £255 million increase in Governemnt expenditure is partly paid through a £111.3 million reduction in household expenditure.

UNIVERSITY of STRATHCLYDE
FRASER OF ALLANDER INSTITUTE

Thank you for listening

strath.ac.uk/fraser

@Strath_FAI

@Strath_Econ

ASSOCIATION OF MBAS ACCREDITED

EFMD EQUIS ACCREDITED

AACSB ACCREDITED