The Effects of Fiscal Policy: Evidence from Italy

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Motivations

- The assessment of the effects of fiscal policies regained popularity since the beginning of the Great Recession (e.g., zero lower bound, self-defeating austerity, demand-driven secular stagnation)

- The dependence of fiscal multipliers on time/state of the economy has been advocated (e.g., monetary policy regime, financial turmoil, economic downturns, composition of fiscal stimulus, asymmetric effects of expansions vis-à-vis consolidations)

- Nonlinearities are substantial and deserve to be studied with appropriate modelling tools (i.e., mainstream DSGE models appear to be essentially flawed (also) in this respect)
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Aims

- Characterizing Italian fiscal policies in terms of degree of (counter)-cyclicality and effects of government spending shocks both over time and as the state of the economy changes.

- Embedding the most relevant features in a properly designed macroeconometric model able to catch the most relevant sources of nonlinear behavior.

- Run counter-factual simulations so as to track the dynamics of fiscal multipliers as the power of the different transmission channels changes.
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So far... so good?

- We start our journey by considering government consumption expenditures as they come from National Accounts.

- We look at cross-correlation coefficients between government spending and GDP (bandpass filtered series) in different time periods.

- We estimate a wide set of (linear, time varying, threshold) vector autoregressions (VARs) so as to catch the dynamics of the effects of fiscal policies over time.
Results in a nutshell

- Italian government consumption expenditures do display a moderate counter-cyclicality over the post WWII period. However, the decade between the late 90s and the crisis (excluded) is characterized by (moderately) pro-cyclical fiscal policy.

- This coincides with lower government spending multipliers as showed by the performed VAR analysis and the ensuing impulse response functions.

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Our approach

- BandPass filter and cross-correlations
- Linear and time varying VAR analysis
- State dependent (Threshold) VAR analysis
BP filter and cross-correlations

- We do apply a Christiano-Fitzgerald filter so as to extract the business cycle component from both government public expenditures and GDP (from 6 up to 32 quarters).

- We do apply the filter to the variables in yearly growth rates (i.e., $\ln(y_t) - \ln(y_{t-4})$)

- We then look at cross-correlation coefficients at different leads/lags
Linear vector autoregressions

- A VAR model is...

\[ y_t = c + \sum_{i=1}^{p} A_i y_{t-i} + \varepsilon_t \]

- Estimation. The model can be estimated relying on a wide range of econometric techniques (i.e., OLS, maximum likelihood, bayesian approach).

- Identification issues. Once the model has been estimated you need to recover the (contemporaneous) structural linkages among the variables within the system (Choleski or other decompositions; long-run restrictions; sign restrictions).
Time varying vector autoregressions

▶ A TVP-VAR is

\[ y_t = c_t + \sum_{i=1}^{p} A_{t,i} y_{t-i} + \varepsilon_t \]

▶ The variance-covariance matrix of residuals can be time dependent (i.e., \( \Sigma_t \))

▶ Estimation and identification issues are similar to the linear version case.
Threshold Vector Autoregressions

A TVAR is

\[ y_t = c_j + \sum_{i=1}^{p} A_{j,i}y_{t-i} + \varepsilon_{t,j} \quad r_{j-1} < w_{t-d} \leq r_j \]

- The model is linear within a particular regime, while the changes in the parameters across regimes allow for non-linearities

- It can be estimated through LS conditional on the threshold variable, \( w_{t-d} \), the number of regimes and the order \( p \)

- Standard identification procedures can be employed (e.g. Choleski)
Data

- Quarterly data from OECD from 1960 to 2015
- Real government consumption expenditures and Gross domestic product
- For robustness: shorter time series (e.g., Istat time series)
BP filter and cross-correlations

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</tr>
</tbody>
</table>

- Public expenditures slightly counter-cyclical (with lags) over the whole sample
- The post Maastrict era looks very different (apart from the Great Recession)
- What if we had the second dip of the recession?
Linear VARs

(a) 1964-2012

(b) 1995-2007

(c) 1995-2012

Tommaso Ferraresi (Irpet)  Fiscal policy in Italy  INFORUM 2016
Time-varying parameter VAR

Impulse response of GDP, 1986:Q1

Impulse response of GDP, 1991:Q1

Impulse response of GDP, 1996:Q1

Impulse response of GDP, 2001:Q1

Impulse response of GDP, 2006:Q1

Impulse response of GDP, 2011:Q1
State dependent fiscal multipliers

Figure: High growth (dashed line) vs. low growth (solid line)

(a) 1964-2012

(b) 1995-2007
To sum up...

- We characterize public government consumption expenditures in terms of (counter-)cyclicality
- We show relevant time dependence in the effectiveness of government spending shocks
- Analysis also highlights the presence of state-dependent fiscal multipliers
Further research

- Fiscal policies are not all the same: gross government investment, automatic stabilizers vs. discretionary fiscal policy, composition of fiscal shocks (e.g., subsidies vs. wages vs. ...), balanced budget spending vs. deficit spending etc.

- Excluded endogenous/exogenous relevant variables: short-/long-term interest rate, public revenues → curse of dimensionality: VAR models run soon out of power

- Single candidate for regime switching behavior → need for more general macroeconomic models

- Next step: state/time dependent analysis in a structural macroeconometric model of the Italian economy (with Leonardo Ghezzi) with a carefully implemented public sector module
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