Research Proposal

Alexandra Fotiou, Bocconi University

November 30, 2016

The Global Financial Crisis and the Great Recession have triggered questions about fiscal policy responses. Countries with high public debt under fiscal austerity programs have received special attention. One of the main topics of policy debates relates to the implications that these fiscal austerity measures have for the macroeconomy, especially when a country is in an economic downturn. The reason is that in the past years, in most countries, the observed path of GDP has declined. Meanwhile, several countries experienced a rise in the government debt levels and had to engage in fiscal consolidations, which consequently had a negative impact on growth, which declined even more.

In my recent work, Fotiou (2016), I provide a general ecompassing framework to simultaneously assess the relevance of different sources of non-linearities. I focus on three non-linearities: the state of the economomy (i.e. recessions versus expansions), the type of fiscal stabilization (i.e. taxes (TB) versus spending (EB)) and the governments' fiscal position (i.e. high debt versus low debt). I account endogenously both for the state of the economy (recessions, expansions) and for the dynamics of debt.

My findings *(Figure 1* and *2)* indicate that the initial level of debt and the composition of the fiscal adjustment are the most relevant non-linearities. Second, I find that the effects of tax-based adjustments are on average more recessionary when they are implemented during an economic upturn. The reason is that, when the economy is in recession, the probability of being in a recessionary regime is already close to 1. When debt is high, tax-based consolidations appear to be self-defeating. Instead of reducing the deficit, they deliver on average higher debt ratios because the negative effect on GDP growth is larger from the budget changes. Third, expenditure cuts, have a less pronounced effect on output. But, importantly, they are able to stabilize debt independently of the state of the cycle.

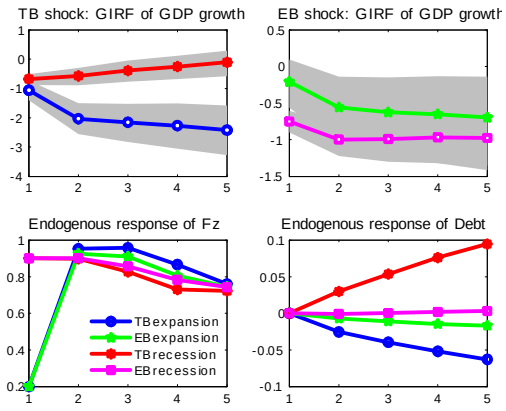


Figure 1: Cumulative GIRFS for the ISTVAR with LOW Debt: The output growth response on a tax-based shock or an expenditute-based shock in recessions or expansions when the Debt ratio is low.

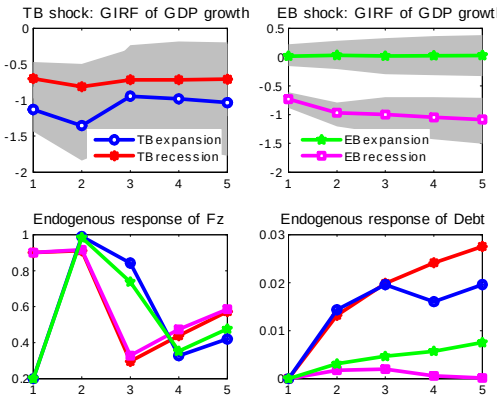


Figure 2: Cumulative GIRFS for the ISTVAR with HIGH Debt: The output growth response on a tax-based shock or an expenditute-based shock in recessions or expansions when the Debt ratio is high.

As a first step, I would be interested in exploring these results further and study how fiscal transmission changes if I consider different economic environments. More precisely, in an extension of a Smooth Transition VAR, I would like for example to study how the fiscal policy transmission may change when debt is low or high and if I assume that the state of the economy is a function of a confidence/uncertainty indicator. As a second step, depending on the empirical evidence that I will get, I would like to build an heterogeneous agents model under ambiguity to study state-dependent fiscal austerity. Ambiguity reflects the uncertainty that the agent has about the "true" probability distribution about future outcomes and in my opinion plays a relevant role, since it can have an effect on the aggregate demand of the economy. I would like to model ambiguity according to the smooth ambiguity model of Klibanoff, Marinacci and Mukerji (2005) to study fiscal policy with recursive preferences under model uncertainty.

On a different note, on my ongoing research, I discuss and show econometrically the possible pitfalls of the way the local projections method (Jorda, 2005) has been widely used in the fiscal and monetary policy literature (e.g. Auerbach and Gorodnichenko, 2013). Not only, the impulse response functions from the STVAR are statistically different from the ones that I get when I use the local projections approach, but more importantly, conclusions in terms of the state-dependency of fiscal multipliers differ. However, since those are reduced form models, and I do not know which is the underlying model that generated the data, I would like to study state-dependence in a non-linear New Keynesian model. Solving (e.g. Guerrieri and Iacoviello, 2015) and estimating the true non-linear model will allow me to generate data and study the performance of the two different approaches. More precisely, a possible state-dependence could arise when the Zero Lower Bound on nominal interest rates is binding. The aim of this work will be two-fold: On the one hand, I am eager to look into the relationship of fiscal policy and (unconventional) monetary policies. On the other hand, there is a methodological point of great importance (i.e. the potential pitfalls of the use of local projections) that has to be examined further.

References

[1] A. Auerbach and Y. Gorodnichenko, Fiscal Multipliers in Recession and Expansion, in *Fiscal Policy after the Financial Crisis*, A. Alesina and F. Giavazzi eds., University of Chicago Press, Chicago, 2013.

[2] A. Fotiou, Non-Linearities and Fiscal Policy, *mimeo,* 2016.

[3] L. Guerrieri and M. Iacoviello, OccBin: A Toolkit for Solving Dynamic Models with Occasionally Binding Constraints Easily, *Journal of Monetary Economics*, 70, 22–38, 2015.

[4] O. Jorda, Estimation and Inference of Impulse Responses by Local Projections, *American Economic Review*, 161–182, 2005.

[5] P. Klibanoff, M. Marinacci, and S. Mukerji, A Smooth Model of Decision Making under Ambiguity, *Econometrica*, 73, 1849–1892, 2005.

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Placement Chair: Nicola Pavoni, email: nicola.pavoni@unibocconi.it

Education:

2011-Present	Ph.D. Candidate in Economics and Finance, Bocconi University Expected Completion: May 2017
2011	Ph.D. courses, Athens University of Economics and Business
2009-2011	M.Sc. in Economic Theory, Athens University of Economics and Business
2004-2009	B.Sc. in Statistics, Athens University of Economics and Business

Fellowships and Awards:

2011-2015	Graduate Fellowship, Bocconi University
2011	Graduate Fellowship, Athens University of Economics and Business
2010	Second semester scholarship for top performance, Athens University of Economics and Business

Research Interests:

Macroeconomics, Econometrics, Fiscal Policy, Monetary Policy

Working Papers:

"Non-Linearities and Fiscal Policy", mimeo, 2016

"Fiscal Consolidation Plans in Recessions and Expansions", mimeo, 2016

"The Country-Heterogeneity of the Fiscal Consolidation Plans: A Bayesian Approach", mimeo, 2016

Work in Progress:

"Fiscal Policy and the Potential Output"

Seminars and Conferences:

Sept 2016	EDGE Jamboree (University College Dublin)
July 2016	CRETE Conference (Tinos)
July 2014	CRETE Conference (Milos)

Teaching Experience:

2014-present	TA, Macroeconomics, Prof. Sala and Prof. Trigari
2013-2015	TA, Experimental Economics and Psychology, Prof. Dufwenberg

Research Experience:

Dec 2015-present	RA for the advanced grant INDIMACRO (ERC) (PI, Massimo Marinacci)
Sep 2014-Dec 2014	RA of Prof. Martin Dufwenberg
2013-2014	RA for the advanced grant Contracts, Institutions, and Markets in Historical Perspective (ERC) (PI, Maristella Botticini)

Work Experience:

Jun 2015-Nov 2015	European Investment Bank (PhD Intern)
2008-2009	Pegasus Securities S.A (Internship)
2007-2008	Center for Counseling and Development, Pilot Research (Internship)

Languages:

Greek (Native speaker), English, Italian (B2), French (B2), German (C1)

IT Skills:

MATLAB, R, E-VIEWS, SPSS, STATA

Other Information:

MSc dissertation: "Bilateral Investment Holdings: Panel data techniques" (supervisor: Ekaterini Kyriazidou)
Undergraduate dissertation: "How do the forecasts of professional analysts influence the stock price?" published in "Chrimatistirio" (Journal of the Greek Stock Market) 2009 (supervisor: Petros Dellaportas)

References:

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Milan, 10 November 2016

Re: Reference Letter for Alexandra Fotiou

This is a letter of reference for Alexandra Fotiou, who is completing her PhD thesis under my supervision at Bocconi University.
I have known Alexandra since Fall 2011, when she enrolled in the PhD Program at Bocconi University.
Alexandra had a constantly improving performance while she progressed in the programme. She found her first year at Bocconi somewhat difficult. She fought very hard and she was able improve greatly at the end of the first year to make it through the second and the third year. She is now completing her Phd with a very solid job market paper and other interesting and promising pieces of work.
Alexandra's job market paper is a piece of time series econometrics with application in macroeconomics, in particular to the analysis of the output effect of fiscal policy. The paper is entitled "Non-Linearities and Fiscal Policy" and it addresses a policy relevant issue on the output effects of fiscal consolidation. The policy relevant contribution of the paper is on the analysis of the sources of potential non-linearities in the effect of fiscal policy. The literature so far has mainly concentrated on two types of non linearities: i.e. those related to the "when" the fiscal adjusted is implemented (ie. Expansion versus Recession) and those related to the "how" fiscal adjustment is implemented (i.e. Expenditure based adjustments versus Tax-based adjustment) . There is an obvious third dimension of non-linearity related to initial conditions. i.e. the level of the debt when the stabilization is implemented that might matter and it is never be explicitly considered jointly with the alternative dimensions. The main contribution of Alexandra's paper is a model that allows for all three non-linearities and tracks the debt dynamics,along with the cycle dynamics during episode of fiscal stabilization. The conclusion that the initial level of the debt and the composition of the adjustment matter much more than the state of the cycle when the adjustment is implemented is very interesting and policy relevant.
The paper has also a technical contribution of its own independent value. The empirical literature on the macroeconomic effects of fiscal policy has been recently concentrating on estimating multipliers that smoothly vary according to the state of the cycle. The dominant method to generate impulse response analysis from this type of model is the linear projection method proposed by Jordà(2005). This is a very efficient method that allows to take nonlinearities into account in a very simple and tractable framework. Alexandra shows that this method has some limitation with Smooth Transition VAR, in that it does allow to keep track accurately of the evolution over the system after the impulse and therefore to correctly describe the response of the economy to the policy of interest. In her JM paper she provides Monte-Carlo based evidence that the linear projection methods can produce biased estimates of the "true" impulse response functions within a non-linear smooth transition VAR. She provides an alternative method based on generalized impulse response function and shows its practical relevance in estimating the effect of fiscal policy when it depends either on the state of the cycle or on the state of public finance (as captured by the initial level of the debt).
Alex's job market paper is an excellent indicator of her interest and skills. She is an applied econometrician with a very thorough knowledge of both Classical and Bayesian method and a keen interest for applying them to macroeconomic policy related issues.
During the course of her PhD Alex has acquired experience through a stage at the European Commission where she work on the measurement of potential output in European countries.

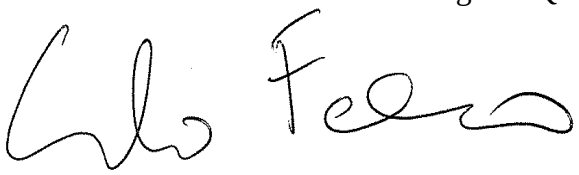
Alexandra is a fighter, she has been capable of overturning an adverse situation and she has shown a very strong dedication to the PhD programme. In the last period of her Phd she worked both as an RA and a TA. She performed very well in both capabilities showing enthusiasm and dedication to the jobs.

She would fit very nicely in any national or supra-national institution with interest in econometric policy evaluation or in an Economic Department with interests in this area.

She most certainly belongs to the group of the most deserving among our students.
I am pleased to recommend her.

I hope this will be helpful,

Carlo A.Favero
Deutsche Bank Chair in Asset Pricing and Quantitative Finance



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October 4th, 2016

Dear Sir/Madam,

It is a pleasure for me to write a reference letter for Alexandra Fotiou, who is on the job market this year applying for a position at your Institution/University. Alexandra is about to obtain her PhD in Economics from Università Bocconi and her job market paper is entitled "Non-linearities and fiscal policy".

In her paper, Alexandra shows that the approach used to compute impulse responses (using local projection) in the literature studying the effects of fiscal policy in a world in which there are endogenous switches in regimes has drawbacks. The intuition behind her criticism is straightforward. Suppose that during a recession an increase in government spending spurs the economy and a boom occurs. According to Alexandra's results, the local projection approach, which is limited to studying the effect of a fiscal action in one regime, cannot take into account the endogenous response of the economy and the switching from a regime to another. This will have significant effects on the estimated impulse responses and will have implications for the study of the effects of fiscal policy.

In the second part of her paper, Alexandra computes "correct" impulse responses taking into account the endogenous response of the economy. Alexandra adds three asymmetries in her empirical model. The three asymmetries are: a) different categories of fiscal consolidations (expenditure-based versus tax-based); b) the state of the economy (boom vs. recession); c) high vs low debt.

Results show that all three asymmetries are important and have a significant impact on the effect of fiscal policy shocks. I am confident that with some cosmetics her paper has the chance of being published in a good field journal.

Alexandra is also my teaching assistant in the undergraduate course "Macroeconomics". She prepares and performs exercise classes with approximately 80 students. She also helps students during office hours and corrects exams. She is very precise and sharp in her corrections. I must say that she is very serious and students like her a lot.

Alexandra also speaks English very well and can present her work clearly. She is also a very nice person. I am sure she will be a great colleague to interact with. I am also sure that she will be a great hire in a place where her skills can be used to do structural analysis and forecasting.

Please do not hesitate to contact me if you think I could be of further help in evaluating Alexandra's profile.

Regards,

Luca Sala

Milan, 25 November 2016

Letter of reference for **Alexandra Fotiou**

I am glad to have the opportunity to write a letter of recommendation for **Alexandra Foiou** who I understand is applying for a position at your institution. Alexandra is completing her doctoral dissertation at Bocconi, and I am part of her thesis committee.

I am not Alexandra's main advisor, therefore I refer to Carlo Favero's letter for a more thorough evaluation of Alexandra's work. I had quite a few conversations with Alexandra concerning her paper and have seen her presenting it in several occasions.

Alexandra is an applied macroeconomist with a strong take for empirical questions. Her computational and econometric skills are excellent. She is not afraid of tackling even very complicated problems. She is incredibly hard working, and has a very good intuition for interesting applied problems.

Her job market paper testifies of all these qualities. The paper is a very ambitious solo piece on the the state contingent effects of fiscal policy. Although a (small) literature investigating the non linear effects of fiscal policy already exists, there is no paper, to the best of my knowledge, which has developed a methodology able to tackle all types of non-linearities simultaneously. In this respect, Alexandra's paper really deserves your attention.

The paper studies the macroeconomic effects of tax and government spending shocks as a function of three types non-linearities:

1. state of the business cycle (i.e. recessions versus expansions),
2. type of policy-stabilization (e.g. tax increases versus government spending cuts)
3. outstanding level of government debt

A key element of her methodology is to extend a TSVAR approach a la Auerbach and Gorodnichenko to allow for the endogenous evolution of government debt. In other words, Alexandra generalizes the Markov Switching approach followed in previous studies (high vs. low debt, high vs. low unemployment, etc..) to allow for the state variables to evolve endogenously. In the case of debt, for instance, this happens via the period-by-period budget constraint of the government.

Her results suggest that there are heterogeneous implications when debt is high or low along different phases of the business cycle. Fiscal consolidations based on tax increases are in general self-defeating. Increasing taxes in periods of expansions have the most recessionary effect in the economy and fail to stabilize the debt ratio when debt is high. Cutting public expenditure has a less pronounced effect on the economic activity and is able to stabilize debt.

Furthermore, Alexandra's paper offers an interesting methodological contribution. Most of the recent empirical literature on fiscal multipliers adopts the Jordà (2005) local projections (LP) approach to derive impulse response functions. Her paper argues that the way that literature employs the LP method, when accounts for non-linearities, may be problematic and consequently affect policy conclusions.

In short, I believe Alexandra has written an excellent piece of applied macroeconometrics. The topic is of extreme interest, the methodology is first rate and innovative. I recommend you take a close look at this paper.

Overall I have a very good consideration of Alexandra. She is hard working and thoughtful and competent. I recommend her for academic departments. But, for instance, she would be a really terrific catch for a policy institution with a strong emphasis on research.

Do not hesitate to contact me should you need any further assistance in evaluating her profile.

Yours sincerely,



Bocconi

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