



Distortionary tax instruments and implementable monetary policy[☆]

Luigi Marattin, Massimiliano Marzo^{*}, Paolo Zagaglia

Department of Economics, University of Bologna, 2, Piazza Scaravilli-40126 Bologna, Italy

ARTICLE INFO

Article history:

Received 19 December 2011
Received in revised form 10 July 2012
Accepted 10 July 2012
Available online 20 July 2012

JEL classifications:

E52
E61
E63

Keywords:

Nominal rigidities
Distortionary taxation
Monetary-policy rules

ABSTRACT

We introduce distortionary taxes on consumption, labor and capital income into a New Keynesian model with Calvo pricing and nominal bonds. We study the relation between tax instruments and optimal monetary policy by computing simple rules for monetary and fiscal policy when one tax instrument at a time varies, while the other two are fixed at their steady-state level. The optimal rules maximize the second-order approximation to intertemporal utility. Three results emerge: (a) when prices are sticky, perfect inflation stabilization is optimal independently from the tax instrument adopted; (b) the optimal degree of responsiveness of monetary policy to output varies depending on which tax instrument induces fluctuations in the average tax rate; (c) when prices are flexible, fiscal rules that prescribe unexpected variations in the price level to support debt changes are always welfare-maximizing.

© 2012 Elsevier Inc. All rights reserved.

1. Introduction

Existing theoretical literature on optimal monetary policy (Schmitt-Grohé and Uribe (2005a), Marzo (2009), Kollmann (2008) and Schmitt-Grohé and Uribe (2007)) typically predicts that responding only to inflation is a good approximation to the optimal policy. This paper shows that this finding crucially depends on the types of tax instruments available to fiscal authority. More specifically, it is shown that when labor income tax is a major source of tax variations, it is optimal for monetary policy to respond to output.

The relevance of tax burden's composition is evident from the observation of the way fiscal policy is actually implemented, and can suggest that the use of an average tax rate can be a poor indicator of the true distortions on agents' marginal decisions triggered by fiscal policy. Furthermore, its relevance for the setting of monetary policy is supported by a number of results on Ramsey optimal policy. In a simpler framework with no capital accumulation, Correia, Nicolini, and Teles (2003) provide equivalence theorems on the mix between consumption and labor-income taxes as a substitute for state-contingent debt in the delivery of Ramsey allocations. However, it is unclear how the proposed allocations should be implemented for the purpose of stabilization around distorted steady states.

The aim of this paper is to fill the gap in the literature by deriving benchmark results about the impact of alternative sources of distortionary taxation on monetary policy. We build a New Keynesian DSGE model with Calvo pricing, capital accumulation and distortionary tax rates on consumption, labor and capital income. We compute optimized simple rules for monetary and fiscal

[☆] We are grateful to Jonas Agell, Tommaso Monacelli and Ulf Söderström for insightful discussions and suggestions, and to Fabrice Collard, Stephanie Schmitt-Grohé and Martin Uribe for detailed explanations on their related work. Robert Kollmann kindly commented on an earlier draft, thus shaping most of the improvements. We also thank two anonymous referees for precious comments which substantially improved our previous version. Financial support from Stockholm University, MIUR, and BI Norwegian School of Management is gratefully acknowledged. The views expressed herein are those of the authors only. The usual disclaimer applies.

^{*} Corresponding author.

E-mail addresses: luigi.marattin@unibo.it (L. Marattin), massimiliano.marzo@unibo.it (M. Marzo), paolo.zagaglia@unibo.it (P. Zagaglia).

policy when one tax instrument at a time varies, while keeping the other two distortionary tax rates fixed at their steady-state levels. This is done in order to comparatively evaluate the contribution emerging from each distinct form of taxation to inflation volatility and on the optimality results. The optimal rules maximize a measure of intertemporal (conditional) utility, in order to account fully for the transitional effects of alternative policy arrangements. To that end, we approximate the solution to the system of optimality conditions through the second-order Taylor approximation around the distorted steady states suggested by Schmitt-Grohé and Uribe (2007).

Our results contrast the findings of Schmitt-Grohé and Uribe (2007) and Kollmann (2008) regarding the optimality of acyclical monetary policy. We show that the optimal degree of responsiveness of monetary policy to output can depend on the fiscal policy tax instrument. In particular, when labor-income tax follows a simple feedback rule, acyclical monetary policy generates indeterminacy, i.e. it is consistent with multiple equilibria. This means that the combination between rules for monetary and fiscal policy is incapable of pinning down a unique desired macroeconomic outcome. However, the choice of the optimal policy mix satisfies the logic outlined in Leeper (1991), and minimizes the welfare effects of the dispersion in markups.

The main intuition goes along the optimal taxation theory results. With distortionary taxes on both capital and labor, it turns out to be optimal to set labor tax to zero and capital tax at a positive level. This is because the predetermined nature of the capital stock and the distortionary interaction of labor taxes with intertemporal choices of the representative agent. Under this respect, it is more distortionary to tax labor rather than capital. Therefore, the output targeting in the monetary policy rule emerges as a natural way to mitigate the additional distortions emerging from output fluctuations. In effect with an output level more distorted – because of the presence of proportional labor taxation – there is an additional channel for the inflation fluctuations. In the traditional AS curve setting (which is embedded in our model), output fluctuations below its long run optimal level induce inflationary expectations. In this way, targeting output is an additional method to keep under control the expected inflation rate. Minimizing distortions from the output side also allows to reduce distortions on inflation. These results contrast with the findings obtained by a large part of the current literature (in particular, Schmitt-Grohé and Uribe (2007) and Kollmann (2008)) where it is generally shown that output targeting does not entail any welfare improvement. A key explanation of our results pertains to the role of inflation and output volatility. Welfare criterion here adopted penalizes volatility when the economy is characterized by distortions. Our model includes distortionary taxes as real distortion in addition to price rigidities. The emphasis assigned to output targeting by optimized monetary policy function emerges as the need to minimize output and inflation volatility. Under this respect, our results can be interpreted under the light of the results presented by Posch (2011) who clearly shows the importance of distortionary taxation as determinants of output volatility.

Our analysis presents two additional insights concerning the interaction between fiscal and monetary policy as a function of the degree of nominal rigidities. First, when prices are sticky, inflation stabilization is optimal independently from the tax instrument considered. Hence, optimal fiscal policy is ‘passive’ in the sense that the fluctuations of government liabilities require no adjustment to the price level in order to sustain fiscal solvency (see Leeper, 1991). This is explained by the fact that, with Calvo pricing, movements in inflation rate generate an inefficient (welfare-reducing) dispersion of markups between the firms that change prices and those that cannot. In other words, the critical role played by the distortions caused by nominal rigidities is confirmed. Without sticky prices, the main distortion is related to distortionary taxes. With sticky prices, the welfare damaging role played by inflation fluctuations is amplified by the presence of distortionary taxation. This motivates the fact that inflation fluctuation is more costly with sticky prices and distortionary taxation, witnessing a sort of multiplier effect of distortions.

The second set of results indicates that, when prices are flexible, fiscal-policy rules that prescribe unexpected variations in the price level are optimal independently from the tax instrument considered. Interestingly though, the quantitative findings indicate that a fiscal policy ‘active’ in the sense of Leeper (1991) need not arise from a strong reaction of taxes to changes in government liabilities. The reason is that, in Leeper (1991)’s framework, taxes are lump-sum. Distortionary taxes instead affect real allocations both directly through their impact on equilibrium choices, and indirectly through inflation expectations. Thus, although the logic of Leeper (1991) applies, the quantitative dynamics is different from the baseline setting with lump-sum taxes: under flexible prices it is optimal to use unexpected fluctuation in inflation to change the real return of nominal government debt. Under this respect, the role of inflation is like a non-distortionary tax, when it is non-expected. Thus, why would the government use distortionary taxes? The main reason is because lump sum tax tools may be insufficient or non-available. Proportional taxes have a satiation point in tax collection revenue. If prices are flexible a source of nominal distortions is absent. In this case, it is optimal to use the effect on contingent debt due to unexpected inflation rather than to recur to distortionary taxation to balance the budget. In this case, in fact, unexpected inflation acts as lump sum tax and allows to wash out the real value of debt, instead of recurring to heavier (from the point of view of welfare) tools. Under this respect we confirm the fact that Ramsey policy entails high inflation volatility in flexible price models, as witnessed by Chari, Christiano, and Kehoe (1991), Schmitt-Grohé and Uribe (2007) and Kollmann (2008). We also extend Lubik, Thomas, & Marzo, 2007 methodology to detect for equilibrium determinacy induced by policy rules (fiscal and monetary) in our modeling framework.

Our paper extends to a DSGE with monetary policy the setting outlined in the endogenous growth literature. It should be noted, however, that the nature of a DSGE concerns the behavior of an economic system when, after a shock, is moved away from its steady state. Growth models, instead, are focused on long-term behavior of the economy, after a permanent policy change. This implies that – given the strict path dependency – steady state calibration of taxes and public expenditure ratio to GDP are crucial for long-term growth results. In particular, the effects on long-run growth rate induced by fiscal policy effects, has been explored by Turnovsky (1996), Jones, Manuelli, and Rossi (1997) and Corsetti (1996). More recent results are by De Hek (2006), Marrero and Novales (2007). In general, the results depend on the assumption made about the usage of public expenditure as engine for growth, and from the preference structure for leisure. In particular, the link between public expenditure and optimal tax composition has been investigated by Chen (2006). We focus on the optimal setting to be assumed by monetary policy function

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات