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Competitive tax reforms in a monetary union with endogenous entry and tradability[☆]

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ABSTRACT

We quantify the effects of competitive tax reforms within a two-country monetary union model with endogenous entry and endogenous tradability. As expected, their effects on output, consumption, hours worked and the terms of trade are positive. Extensive margins provide additional transmission mechanisms that turn the response of foreign output from negative to positive and yields larger aggregate welfare gains compared to alternative models. These positive spillovers are due to the positive effect of the reform on variety creation in both countries and change our vision of this type of reform from *beggar-thy-neighbour* to *prosper-thy-neighbour*.

1. Introduction

The 2008 Great Recession and the subsequent Eurozone crisis made the need for structural reforms in European countries more critical. Policymakers are faced with several challenges that call for swift action. Among those are the stubbornly sluggish economic growth, the rise of structural imbalances in the Eurozone and rising debt levels. In this paper, we investigate the effects of competitive tax reforms using a two-country monetary-union model with endogenous varieties and endogenous tradability.[1] In our framework, tax reforms not only affect the dynamics of trade but also shape extent of distortions in the economy. As such, we consider that fiscal devaluations are just a subset of a broader menu of structural

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[1] The paper thus belongs to the open-economy literature with heterogeneous firms and/or endogenous tradability along the lines of Bergin and Glick (2009), Bergin and Lin (2012), Naknoi (2008), or Roriguez-Lopez (2011) among others.

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reforms policymakers may implement.[2] Our main result is that the outcome of competitive tax reforms is critically different with endogenously produced and traded varieties. After such reforms, the positive effects on domestic output, investment, consumption and hours worked are all magnified compared to a model with a constant number of varieties. In addition, these reforms induce a *positive* transmission to the foreign economy (output in particular) while the transmission is *negative* according to the standard New-Keynesian model with constant varieties.

Following Auray et al. (2012) and Cacciatore and Ghironi (2014), our model is one of a monetary union with endogenous entry and tradability with sticky prices. As usual, endogenous tradability is introduced by an entry condition on export profits, and endogenous entry is derived directly from expected profitability conditions.[3] Carefully calibrated to countries of the Euro Area and driven by standard productivity and monetary policy shocks, the model successfully replicates a large set of business cycle moments, including business cycle moments pertaining to the creation of new ventures. We then use the model to account for the effects of a competitive tax reform that temporarily raises VAT and lowers the payroll tax rate in a way that keeps the government budget balanced at each period. First, the reform leads the domestic real wage to fall, which favors the entry of new firms, and contributes to raise output, consumption, investment and hours worked more than when the number of produced varieties is constant. Second, the reform leads the foreign real wage to fall. Along with the increase in domestic output, it raises the expected profits of foreign firms and favors the formation of new ventures. This rise in the extensive margins of foreign output and consumption more than compensates for the fall in intensive margins. As a result, foreign output rises instead of falling as in standard models. Last but not least, we show that the lifetime welfare effect of a domestic competitive tax reform is positive for both countries and larger than in alternative models with a constant number of varieties, because the reform has positive net effects on aggregate productivity in both countries. Our results hold when the competitive tax reform is implemented around the steady state, or conditional on an asymmetric shock on borrowing and entry costs that mimics the recent slowdown observed in countries of the periphery of the Euro Area. In the latter case, a competitive tax reform also proves to have interesting stabilizing properties with fairly small negative side-effects on other members of the monetary union. Further, we quantify the impact of pre-announcing competitive tax reforms. We find that the announcement pattern crucially alters the way welfare gains and losses materialize over time. Finally, a sensitivity analysis indicates that our results are fairly robust to changes in key parameters.

The theoretical channels through which competitive tax reforms can affect the economy were recently studied by Farhi et al. (2014). They show that allocations implied by nominal exchange rate devaluations may be replicated under an extensive set of assumptions, regardless of the size of the targeted devaluation, and provided governments have access to a sufficiently large number of tax instruments. Hence, changes in the tax mix can help governments affect the terms of trade and real exchange rates within a monetary union. These changes may generate external rebalancing effects and a rise in GDP through exports, as well as a rise in the number of hours worked.[4] In line with the literature, we find that a competitive tax reform boosts output, consumption, and hours worked. The relative price of traded goods falls, leading the trade balance to improve after a few periods. Our results thus comfort existing studies about the overall effects of competitive tax reforms.[5]

However, most papers focusing on the effects of competitive tax reforms or fiscal policy in open economies disregard their potential effects on the patterns of trade, business creation and aggregate productivity. Their scope is therefore limited to the effects on the intensive margin of trade, *i.e.* expenditure switching and international wealth effects (see Bosca et al., 2013; Lipinska and von Thadden, 2012 or Langot and Lemoine, 2014). Since Ghironi and Melitz (2005) however, we know that changes in terms of trade not only induce expenditure-switching or wealth effects, but also impact the number of varieties produced and traded in the economy, with strong effects on the overall degree of trade openness in the economy and on aggregate productivity (even for a given distribution of firm-specific productivity levels) through firms entry and market share reallocations.[6] Hence, any change in the taxation of goods and labor that affects terms of trade should translate into significant effects on the number of varieties produced and traded, with effects on competitiveness, resources allocation and productivity.

The paper is organized as follows. Section 2 presents the model used to analyze competitive tax reforms. Section 3 presents the calibration of the model and performs a matching exercise on business cycle moments. Section 4 comments on the dynamics set in motion by competitive tax reforms, depending on whether they are done around the steady

[2] Fiscal devaluations are tax reforms that shift the tax burden from one tax base to another, trying to replicate the path of terms of trade that would be achieved after a nominal exchange rate devaluation when the latter is out of reach. The expected effects of such policies are a reduction in labor costs and production costs, and a change in the relative price of tradable goods, leading to an expenditure switching effect towards domestic goods that improves the trade balance, with positive effects on output and employment.

[3] Our entry condition depends on expected profits and is therefore equivalent to the condition proposed by Ghironi and Melitz (2005).

[4] Relatedly, Langot et al. (2014) analyze the optimal taxation scheme in an open economy with search labor market frictions.

[5] A recent study by the European Commission (2013) uses general equilibrium models to quantify the effects of fiscal devaluations and concludes that fiscal devaluations induce an expansion of employment and GDP, while the trade balance reacts positively in the short-run. Bosca et al. (2013) develop a general equilibrium model of a small open economy with search and matching frictions calibrated to Spain. They show that a fiscal devaluation may be effective in stimulating output, hours worked and the trade balance. Engler et al. (2014) propose a New-Keynesian model with Ricardian and Non-Ricardian households and sticky wages and find similar results.

[6] See Bilbiie et al. (2012) and references therein for the importance of endogenous entry along the business cycle in closed economies, and Auray and Eyquem (2011) or Imura (2016) regarding the importance of business creation and tradability along the business cycle in open economies.