Union Debt Management

The role of debt management (DM) in macroeconomic models with distortionary taxation and the optimal maturity structure of debt has been studied extensively in the last years. Central to these studies is the role of the fiscal hedging channel of DM that leverages on the negative covariance between long bond prices and government deficits. Angeletos (2002) and Buera and Nicolini (2004) (hereafter ABN) reach the conclusion that governments should issue only long term debt. Buera and Nicolini (2004) and Faraglia et al (2010) find that the optimal portfolios emerge from these models feature large long bond positions financed through investments in short term assets. In Chari and Kehoe (1999) and Siu (2004) governments can smooth taxes, even when they borrow short, because debt is nominal and inflation is effective in absorbing fiscal shocks. On the other hand, Lustig et al (2008) show, also using a model with nominal assets, that financial market frictions coupled with sticky prices restore the optimality of long term debt.

All these papers consider DM in a closed economy setting. It is however not clear that their conclusions apply when we consider an open economy, and more so when we are concerned with the optimal structure of government debt in a currency union. There are two main issues to consider: firstly, the role of inflation in stabilizing macroeconomic variables, such as public debt, is limited in currency areas in the presence of idiosyncratic shocks and, secondly, bond prices and spending shocks may not sufficiently covary in equilibrium in a currency area when cross border arbitrage constrains the behavior of asset prices, especially under asymmetric shocks.

In this paper we study optimal DM in a currency union, both empirically and theoretically, focusing on whether debt portfolios can help governments hedge against fiscal shocks. We lay out our empirical analysis which tests formally for the presence of fiscal hedging in Euro Area government bond markets. We present a novel dataset, assembled for this paper, which contains information on bond prices and quantities of all types of debt in the portfolios of five Euro Area governments since 1998. We first look at the composition of the public debt in the Euro Area and find that governments have issued debt in a wide range of maturities including large amounts of long term bonds, and have mainly focused on issuing nominal debt.

We then estimate a series of panel VARs to identify the effects of fiscal shocks on the holding period returns of government portfolios. We propose a novel identification strategy to separate idiosyncratic and aggregate spending shocks and study their impact effects on the holding period returns. If the impacts are negative, then a rise in spending levels leads to a drop in government liabilities, which enables governments to partly transfer the burden to bond holders. This is the fiscal hedging channel of DM.

Our empirical findings suggest that bond returns responded strongly to spending shocks during 1999-2008, the period considered in our analysis. However and most importantly, this only holds for shocks which affect the average level of spending in the Euro Area, the aggregate shocks according to our identification scheme, whereas shocks which do not affect average spending and which we consider idiosyncratic, do not have any effect on bond returns. Hedging against the latter types of shocks through DM therefore seems to have been nearly impossible.

We then turn to a formal model of optimal DM in a currency union to ask whether theory can shed light on our empirical findings, but also to investigate what types of debt instruments governments should use if they want to take full advantage of fiscal hedging. We setup a model in which two

countries, members of a currency area, face fiscal shocks and finance them through distortionary taxes and through debt portfolios. Key features of our model are monopolistic competition and sticky prices (e.g. Siu (2004) and Lustig et al (2008)), private sector preferences which exhibit a mild bias towards home goods, but also that government consumption is allocated in home goods (e.g. Gali and Monacelli (2008)). Using this model we study the optimal policy assuming that a benevolent planner with full commitment sets taxes and the debt portfolio in both countries to maximise the joint welfare of their citizens. The assumption of a benevolent planner that maximises joint welfare is common in the international macro literature (e.g. Gali and Monacelli (2008) and Fahri and Werning (2017)) and extends the optimal DM literature to a currency area (ABN, Faraglia et al (2010), Siu (2004) and Lustig et al (2008)).

We first build our Ramsey program assuming that the planner can issue state contingent debt. Then, we attempt to decentralize the optimal complete market allocation using non-state contingent assets and in particular nominal bonds of different maturities, as seen in the data. Using the same definition of aggregate and idiosyncratic shocks as in the empirical model, we show that a government that issues nominal debt can hedge against aggregate shocks, however in the presence of idiosyncratic shocks the complete market outcome cannot be attained.

To understand this prediction of our model notice that, in a currency union and under complete financial markets, the efficient allocation equates the ratio of marginal utilities across countries to the consumption based real exchange rate, in our case the ratio of consumer price indices. Under this condition the price of a nominal asset that promises to pay one unit of income in some future period cannot vary in equilibrium with idiosyncratic shocks. If it did, then bonds of equal maturity issued by different governments would need to carry different returns; however, consumers have essentially the same asset pricing kernel and thus would want to buy only one of these assets bringing the other asset's market in disequilibrium. In equilibrium, nominal assets have the same price and yield the same holding period returns; at the same time, however, idiosyncratic shocks to spending impact government deficits. Thus, the covariance between realized returns and deficits is zero.

Which kind of bonds can therefore help the government to implement the complete market allocation irrespective of the type of shocks? We show that this can be achieved through issuing inflation indexed debt, since the covariance between real bond prices and government deficits is negative in our model. Moreover, to fully exploit the negative covariance governments should issue long term bonds similar to Angeletos (2002), Buera and Nicolini (2004) and Faraglia et al (2010). We show that this result is robust across different parametrisations of the model. We, then, turn again our attention to our dataset to document the behavior of the shares of long term inflation indexed debt in the five Euro Area countries in our sample since the introduction of the common currency. We note that the shares, which were zero or close to zero in 1999, increased substantially over the period considered for many of the countries in our sample. This change in the structure of debt in the Euro Area brings actual DM policies closer to the optimum identified by our model.

We are currently revising the empirical part of the paper following some comments from referees. A new version will be available by July 2019.