Financial frictions and policy cooperation: A case with monopolistic banking and staggered loan contracts

Ippei Fujiwara\textsuperscript{a,b,},* and Yuki Teranishi\textsuperscript{c}

\textsuperscript{a}Faculty of Economics, Keio University, Tokyo, Japan
\textsuperscript{b}Crawford School of Public Policy, Australian National University, Canberra, Australia
\textsuperscript{c}Faculty of Business and Commerce, Keio University, Tokyo, Japan

\textbf{ARTICLE INFO}

\textbf{Article history:}
Received 30 October 2013
Received in revised form 20 April 2016
Accepted 19 September 2016
Available online 20 October 2016

\textbf{JEL classification:}
E50
F41

\textbf{Keywords:}
Monetary policy in open economies
Financial frictions
Linear quadratic problem

\textbf{ABSTRACT}

Do financial frictions call for cross-border policy cooperation? This paper investigates the implications of financial frictions in the form of staggered loan contracts supplied by monopolistic banks, for monetary policy. Using the linear quadratic (LQ) framework, we show that policy cooperation yields long-run gains in addition to gains from stabilizing inefficient fluctuations over the business cycle, as usually found in models with price rigidities. The Ramsey optimal steady states differ between cooperation and noncooperation. Such gains from cooperation arise irrespective of capital account liberalization.

\textcopyright 2016 Elsevier B.V. All rights reserved.

\section{1. Introduction}

The recent global financial crisis has renewed interest in the potential of policy cooperation. In order for the global economy to recover, the need for policy cooperation is now a topic of discussion for leaders in major policy institutions.\textsuperscript{1} Academic studies, however, do not usually emphasize the importance of cooperation in stabilization policies.\textsuperscript{2} What causes these divergent views on policy prescriptions during the global financial crisis?

\textsuperscript{1} Formerly circulated as “Financial stability in open economies.” The authors thank the editor Giancarlo Corsetti and two anonymous referees for useful comments. We have also benefited from discussions with Kosuke Aoki, Pierpaolo Benigno, Martin Bodenstein, Larry Christiano, Richard Dennis, Bianca De Paoli, Marty Eichenbaum, Takeshi Hoshi, Gunes Kamber, Yongsung Kim, Federico Mandelman, Tomoyuki Nakajima, Stefan Niemann, Maury Obstfeld, Lee Ohanian, Bruce Preston, Lars Svensson, Cedric Tille, Mike Woodford, and seminar and conference participants at the University of Bonn, Hitotsubashi University, FRB Atlanta, Bank of Korea, University of Zurich, Victoria University of Wellington, Reserve Bank of New Zealand, Kyoto University and National University of Singapore. Fujiwara gratefully acknowledges financial support from the Murata Science Foundation Grant Number H24-13 and JSPS KAKENHI Grant-in-Aid for Scientific Research (A) Grant Number 15H01939.

\textsuperscript{2} Corsetti et al. (2010) conclude that, “[l]n welfare terms, the gains from cooperation are close to zero. Indeed, the literature has presented numerical assessments of the benchmark model under the complete markets that do not generate appreciable quantitative welfare gains from coordinating policies, relative to optimal stabilization pursued by independent policy makers (engaging in strategic manipulation of terms of trade).”

\textsuperscript{4} Corresponding author at: Crawford School of Public Policy, Australian National University, Canberra, Australia.

E-mail addresses: ippei.fujiwara@keio.jp (I. Fujiwara), yukitera@fbc.keio.ac.jp (Y. Teranishi).

http://dx.doi.org/10.1016/j.jinteco.2016.09.004
0022-1996/© 2016 Elsevier B.V. All rights reserved.
of shocks originating from financial frictions to the slowdown during the recent global financial crisis.

Firms need to borrow working capital from private banks in advance to finance wage bills. Barth and Ramey (2002) and Ravenna and Walsh (2006) empirically demonstrate the importance of this cost channel in monetary policy transmission in the US. Each bank is assumed to be in a long-term relationship with each intermediate-goods producing firm. Thus, banks have monopoly power over loan rate settings. Gropp and Kashyap (2010), van Leuvensteijn et al. (2013) and Mandelman (2010, 2011) explore the importance of bank competitions on loan rate settings. Finally, dynamic frictions in the financial market are captured by staggered loan contracts, that follow the Calvo (1983)–Yun (1996) framework.

Stickiness in loan rate contracts is reported by many studies, as Slovin and Sushka (1983) and Berger and Udell (1992) for the U.S., Sorensen and Werner (2006) and Gambacorta (2008) for the Euro area, and the Bank of Japan’s Financial System Reports for the Japanese economy. Their explanations rely on credit rationing during recession. There are, however, other aspects relating to stickiness in loan rates. For example, the Bank of Japan’s Financial System Reports show that the duration of fixed loan contracts tends to be very long. Also, Graham and Wright (2007) report that a significant proportion of interest rate payments in some European countries are at a fixed rate. Furthermore, they note that “[t]he associated debt contracts are almost always written in nominal terms, have quite significant associated transactions costs and as a consequence are renegotiated relatively infrequently.”

We then use a NOEM model with such financial frictions to analyze the optimal monetary policy under both cooperation and noncooperation. In order to understand how simple financial frictions as explained above may alter gains from cooperation, a linear quadratic (LQ) approach is employed. The second order approximated welfare metric following Benigno and Woodford (2005) and Benigno and Benigno (2006) is also derived.

Staggered loan contracts under monopolistic competition in the banking sector create dispersion in loan rates when a shock hits the economy. Since labor supply is tightly linked to loan rates due to the working capital loan, this results in inefficient allocations in labor among ex post symmetric firms. Consequently, similarly to the case with price rigidities, dispersion in loan rates works as if it were a negative technology shock. The role of the central bank is to reduce welfare loss stemming from such dispersion in loan rates and the working capital loan.

Welfare analysis shows that there are both long-run and short-run gains in cooperation. Steady state welfare becomes higher under cooperation. Under noncooperation, each central bank has long-term incentives to raise loan interest rates. This is because high interest rates reduce labor supply via the cost channel. This result is similar to the one obtained in Cooley and Quadrini (2003). Over the business cycle, there also exist gains from cooperation when the global economy is subject to markup shocks. This is because the terms of trade externality, where each country attempts to manipulate the terms of trade in its favor, is not internalized under noncooperation. These results hold regardless of capital account liberalization. Neither international lending nor borrowing makes any difference to the case in which only domestic financial transactions are allowed.

The rest of the paper is structured as follows. Previous studies with similar banking sectors to ours in a dynamic general equilibrium framework are summarized in Section 2. Section 3 derives the model used in this paper and displays its dynamic properties. Section 4 solves the equilibrium under the Ramsey optimal monetary policy in both cooperative and noncooperative regimes. Section 5 derives the quadratic loss functions around the Ramsey optimal steady states obtained in Section 4. These are the welfare measures that central banks aim to minimize. We also investigate the nature of the optimal monetary policy in open economies with financial frictions. Finally, Section 6 summarizes the findings of this paper and introduces possible future extensions of this paper.

### 2. Monopolistic banking and staggered loan contracts

Nominal contracts together with infrequent renegotiation are commonly observed in many countries. Thus, the stickiness of loan rates together with imperfect competition in the banking sector are potentially important mechanisms in accounting for the data. Several previous studies incorporate a similar banking sector in a dynamic general equilibrium framework.

Gerali et al. (2010), Mandelman (2010, 2011) and Fujiwara and Teranishi (2011) develop models with an imperfectly competitive financial sector. They all conclude that an imperfectly competitive banking sector contributes to a better fit of the model to the data. Gerali et al. (2010) provide empirical evidence of the stickiness in loan contracts in this vein. They estimate the prototypical new Keynesian model, a la Smets and Wouters (2003, 2007) and Christiano et al. (2005), and extend to replicate the aforementioned features with a monopolistic banking sector and loan rate stickiness. Shocks stemming from the banking sector explain the major part of the contraction in the recent financial crisis. Mandelman (2010, 2011) finds that the incorporation of a monopolistic banking sector increases the volatility of real variables and amplifies the business cycle. Countercyclical bank markups generated from strategic limit pricing — aimed at protecting retail niches from potential competitors — increases the model’s fit to the data developing economies. Fujiwara and Teranishi (2011) explain the persistence of the real exchange rate by incorporating an imperfectly competitive financial sector. Also, Ravenna and Walsh (2006) report empirical evidence of a direct interest rate effect on inflation where marginal costs are affected both by real wages divided by the productivity and nominal interest rates.

On implications of such financial frictions on monetary policy, Ravenna and Walsh (2006) introduce the cost channel into an otherwise standard new Keynesian model in closed economy. The optimal monetary policy under the cost channel faces trade-off between inflation and output gap stabilization even with the IS shocks. Cooley and Quadrini (2003) hint that the decline in interest rates after the advent of Euro can be explained by monetary cooperation in a two-country model with the cost channel. No study, however, has investigated whether financial market imperfections call for policy cooperation not only in the long-run but also over business cycles.

Such mechanisms can also replicate one of the important characteristics of monetary policy, interest rate smoothing. Woodford (2003) explains this through the history dependent policy

---

1. For the US, using micro level data, Slovin and Sushka (1983) and Berger and Udell (1992) show that it takes two or more quarters for the private banks to adjust loan interest rates.

2. For the Euro area, Sørensen and Werner (2006) estimate the incompleteness in the pass-through from the policy interest rate to loan interest rates in an error correction model using macro data. They further show that the degree of the incomplete pass-through significantly differs among countries. Gambacorta (2008) conducts similar analysis for Germany and shows the existence of sticky adjustment in loan interest rates.

3. For Japan, according to Bank of Japan’s Financial System Reports published in March 2007 and 2008, the major city banks need five quarters and the local banks seven quarters to adjust loan interest rates.

4. Several studies provide empirical evidences behind these infrequent negotiations, for example, Hannan and Berger (1991) for menu costs, Berger and Udell (1992) for implicit contracts and Calem et al. (2006) for switching costs.

5. The mechanism behind this result is similar to the one in Benigno and Benigno (2006) with sticky prices.
دریافت فوری
متن کامل مقاله

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