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Foreign output shocks, monetary rules and macroeconomic volatilities in small open economies☆

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ABSTRACT

The 2008 financial crisis is marked by the drop in output of major industrial countries which affected small open economies in various degrees. We examine the role of three different types of monetary policy rules in mitigating or exacerbating the effects of a negative foreign output shock on key macroeconomic variables of a small open economy by numerically solving a dynamic stochastic general equilibrium (DSGE) model. We find that compared to the Taylor rule, small open economies that follow either fixed exchange rate regime or strict inflation targeting tend to stabilize real exchange rate and inflation at the expense of substantial instability in the real economy.

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1. Introduction

The most recent financial crisis in the United States began to unfold soon after the bursting of housing market bubble in the mid-2000. The steep drop in housing prices made it difficult for homeowners to refinance their mortgages forcing them to default on their loans. The drop in housing prices also reduced the values of financial instruments linked to home mortgages. The default in housing loans and the reduction in the values of mortgaged-backed financial instruments caused US financial institutions to suffer heavy losses and to restrict lending to the rest of the economy. The resulting credit crunch affected the other sectors of the US economy and, as shown in Fig. 1, US real GDP began to decline in the first quarter of 2008. From this benchmark date, the cumulative change in US real GDP growth over the trend is estimated to be −6.7%.[1] Financial institutions in the United Kingdom, France and other industrialized countries that bought US mortgage-backed financial instruments also suffered heavy losses causing a credit crunch in their respective markets. Real GDP of G-7 countries declined around the first quarter of 2008 and had a cumulative change in real GDP growth over the trend of −7.8%.

Fig. 2 shows that emerging countries with small open economies have been adversely affected by the financial crisis even though most of their financial institutions had low exposure to US mortgage-backed financial instruments.[2] For these countries, the drop in real GDP could be due to the decline in exports as output and real income in industrial countries declined. In other words, emerging economies with relative sound financial institutions were largely affected by the 2007–2008 financial crisis

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[1] We consider 2008 Q1 as the benchmark date of the 2008 financial crisis. We follow Blanchard and Gali (2007) in calculating the cumulative change in real GDP gain or loss over eight quarters following benchmark date relative to the trend given by the cumulative real GDP growth rate over the preceding eight quarters.

[2] We assume a small open economy that could not influence the market of oil which is an input to production.

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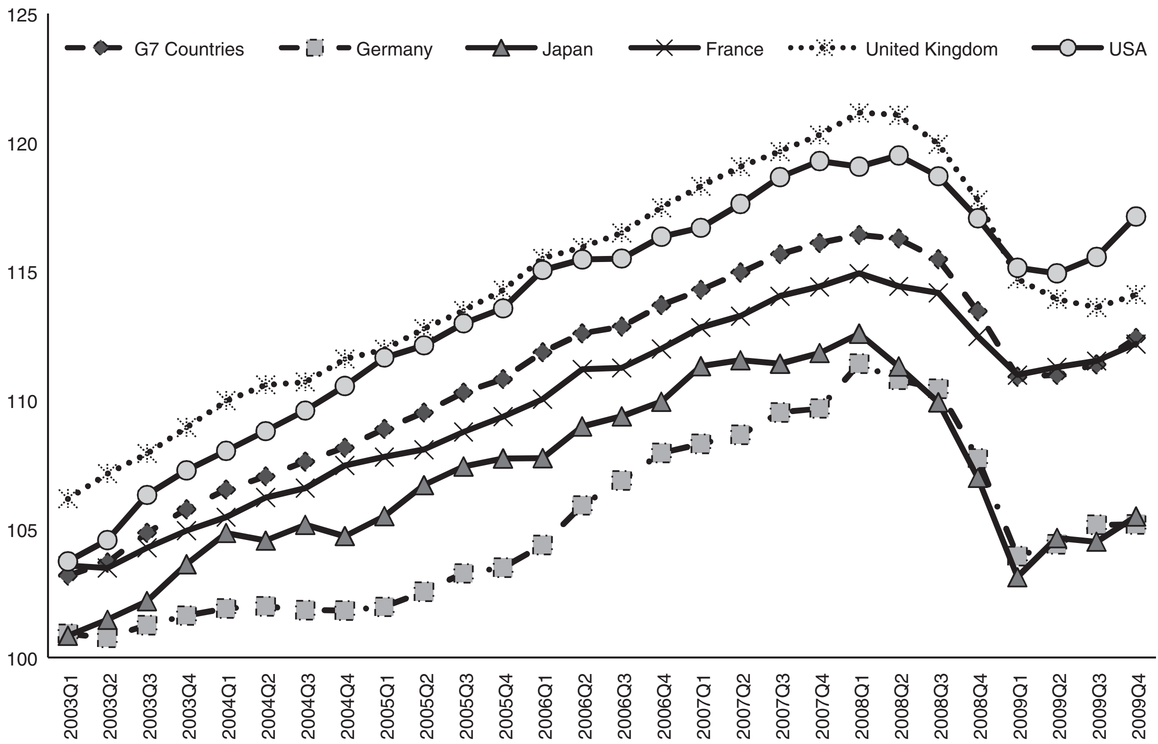

Fig. 1. GDP volume (2001 = 100) of selected industrial countries.

through foreign output shock. In addition, Fig. 1 shows that the real GDP of Hong Kong and Taiwan are more volatile than Israel and South Korea from 2003 to 2009.

The findings in Fig. 2 are confirmed in Table 1 which shows that cumulative changes in real GDP of Israel, South Korea, Taiwan and Hong Kong varied significantly across countries. Among these small open economies, both Hong Kong and Taiwan are the

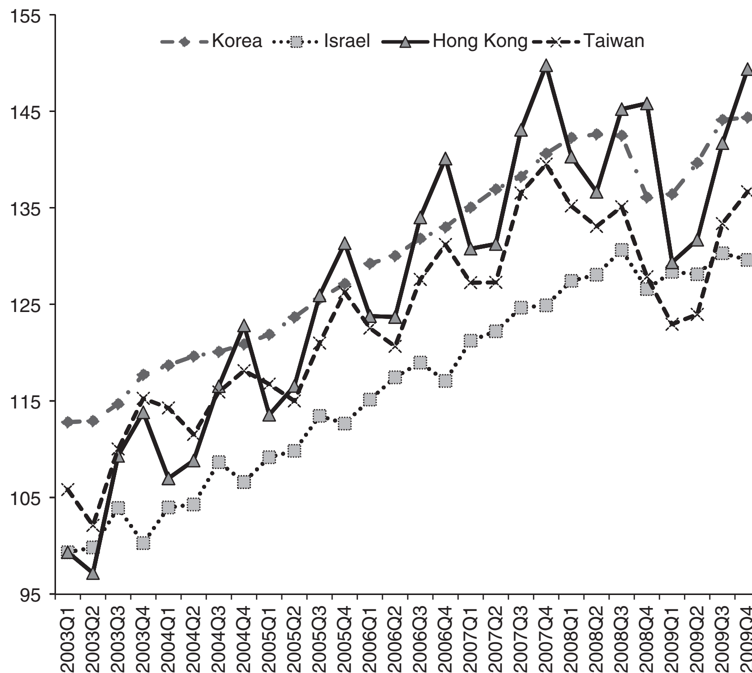

Fig. 2. GDP volume (2001 = 100) of selected emerging countries.

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