13

Coordination of Fiscal and Monetary Policies

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13.1 Introduction

In this chapter we use the International Monetary Fund's Global Integrated Monetary and Fiscal Model (GIMF) to illustrate the increased effectiveness of expansionary fiscal policy when monetary policy accommodates the shock, such as was the case in the 2008 to 2009 coordinated fiscal expansion. To accomplish this, we introduce simple fiscal policy and monetary policy rules into the model to show the dynamics of policy coordination. We also show how features like financial accelerators affect the dynamics of policy coordination.

The chapter starts with a review of the literature on activist monetary and fiscal policies, describes the key features of the economic model in which the policy rules are imbedded, and finally discusses the simulation results that illustrate the benefits of coordinating fiscal and monetary policy. The chapter ends with a brief conclusion.

13.2 Literature Review

A model-based examination of the dynamic coordination of fiscal and monetary policies requires a macroeconomic model with rigidities so that aggregate demand management policies can help dampen economic cycles.

The literature on activist monetary policy rules is more developed than that for fiscal policy rules. On the model side, the time-dependent price adjustment formulations of Taylor (1980), Rotemberg (1982), and Calvo (1983) made it possible to incorporate price-setting rigidities into rational expectations macroeconomic models with forward-looking optimizing agents. Empirical support for the importance of price-setting rigidities came from evidence showing that monetary policy has significant short-run real effects, such as Christiano, Eichenbaum, and Evans (1996, 1998) and Leeper, Sims, and Zha (1996). On the policy reaction side, the work by Taylor (1993) on the revealed behavior of monetary policy makers, and by Bernanke and Mishkin (1997) on constrained discretion, laid the foundation for simple

formulations of activist monetary policy rules that conformed to conventional wisdom about how policy responds to economic cycles.

Although the literature on activist fiscal policy rules is more recent than that for activist monetary policy, fiscal policy has been a variable in macroeconomic models from the beginning. Early on, Philips (1954) included a role for fiscal automatic stabilizers in the Keynesian framework. Musgrave (1959) advocated the systematic use of discretionary fiscal policy; specifically, he promoted a system whereby changes in taxes and spending would be legislated in advance to respond to changes in income. Tobin (1972) makes a similar argument.

However, Keynesian fiscal activism started to be challenged in the 1960s for theoretical and empirical reasons. One of the first theoretical challenges came from Mundell (1963) and Fleming (1962), who extended the Keynesian IS-LM model to the open economy and showed that fiscal policy lost its effectiveness in stimulating aggregate demand under flexible exchange rates. Stronger challenges arose from the neoclassical school. Eisner (1969), based on Friedman (1957), realized that in a permanent income model, temporary changes in taxation would have only minor effects on lifetime income and therefore on consumption demand. Barro (1974) went further by showing that the timing of tax changes has no real effect on infinitely lived representative agents because economic agents change their savings behavior to restore their optimal consumption time path. This is known as the Ricardian equivalence hypothesis. This skepticism about the efficacy of activist fiscal policy, along with the difficulty of meeting the Gramlich (1999) criterion that fiscal policy needs to be delivered in a "timely, targeted, and temporary" manner to be effective in managing the economic cycle, led to the presumption that activist demand management should be left to monetary policy. Legislatures are generally much slower at changing taxation and spending than central banks at changing the policy rate, they may not deliver stimulus where it is most needed but instead where it is politically advantageous, and they may be reluctant to withdraw it sufficiently quickly in good times to preserve fiscal sustainability.

Empirical work has not settled the debate about the effectiveness of fiscal activism as measured by the size of fiscal multipliers, mainly because identifying the discretionary components of fiscal policy entails overcoming serious methodological issues. For further discussion of fiscal multipliers, and what their size depends on, see chapter 12 in this book, "Size of Fiscal Multipliers."

Recent studies have used structural dynamic stochastic general equilibrium (DSGE) models to identify the private sector response to changes in fiscal policy. This approach has been used successfully in the monetary policy literature. The DSGE models are New Keynesian in spirit in that they contain significant nominal and real rigidities, have non-Ricardian properties, and liquidity-constrained households. A key study of this nature is Gali, López-Salido, and Vallés (2007).

But there has been little progress on fiscal rules that manage aggregate demand and maintain a sustainable fiscal policy. Taylor (2000) considers a rule in which the budget surplus depends on the output gap, but he argues that such a rule is unnecessary, and in fact undesirable, because the Fed has been very successful at stabilizing the business cycle and would only suffer from having to forecast the fiscal stance. He therefore argues, along with many other commentators at that time, that the role of fiscal policy should be limited to minimizing distortions and to "letting automatic stabilizers work." Automatic stabilizers describe the channels through which the structure of fiscal policy is countercyclical without discretionary action. Taylor (2000) makes two exceptions to his call for nondiscretionary fiscal policy. The first is in a fixed exchange-rate regime where monetary policy does not have a stabilizing role. The second is a situation where nominal interest rates approach their zero lower bound and monetary policy becomes less effective. Support for activist demand management fiscal policy under fixed exchange rates has been provided by Beetsma and Jensen (2005) and Gali and Monacelli (2008). The latter focuses on understanding the theoretically optimal policy.

Solow (2005) and Wyplosz (2005) support activist fiscal policy by looking at institutions and procedures to make fiscal policy timely, targeted, and temporary. These include either automatically triggered countercyclical rules or a technocrat-run fiscal policy board that decides on the overall budget balance but leaves decisions on the composition of the budget to parliament so as to maintain democratic accountability.

Wyplosz (2005) also provides a list of countries that actually use activist fiscal rules. Apart from the Maastricht criteria of the EU, which include a 60 percent of GDP maximum debt and a 3 percent of GDP maximum deficit, very few countries pursue either a debt rule or a golden rule that limits the deficit to financing public investment over the cycle. Four countries pursue structural surplus rules, including Brazil (4.5 percent primary surplus), Chile (0.5 percent overall surplus), Sweden (2 percent overall surplus), and Switzerland (0 percent overall surplus).

Following Kumhof and Laxton (2009a, b), the analysis in this chapter uses a class of rules for fiscal and monetary policy similar to Taylor rules. For monetary policy, this means a rule that keeps inflation on target in the long run, but responds to disequilibrium aggregate demand (i.e., output gap) in the short run in order to manage the economic cycle. Similarly the fiscal policy rule ensures debt sustainability in the long run but also stabilizes the business cycle in the short run by reacting to the output gap. The monetary policy variable is a very short-term interest rate. The fiscal policy variable is the budget-surplus-to-GDP ratio. The fiscal policy variable is influenced by tax rates and government spending variables. The policy rules are calibrated to reflect the automatic stabilizers in Canada and the United States.

It is important to embed the analysis of fiscal and monetary activist rules in the appropriate macroeconomic model. An obvious candidate is an example of the new generation of open economy business-cycle models, with nominal and real rigidities, that are currently being deployed in central banks and other policy-making institutions. However, most of these models face difficulties in replicating the medium- and longer term effects of fiscal policy.[1] Some also have shortcomings when used to analyze medium- and long-run fiscal issues such as the crowding-out effects of a permanent increase in public debt. These difficulties occur largely because of the absence of non-Ricardian household savings behavior in the model that would make the timing of fiscal interventions nonneutral. In this chapter we use a new generation model with added non-Ricardian behavior. In particular, the model maintains the nominal and real rigidities necessary to generate interactions between monetary and fiscal policies.

The literature contains two candidates for non-Ricardian features to include in the model: an overlapping generations structure following Blanchard (1985) and Weil (1989); and a subset of liquidity constrained agents following Gali, López-Salido, and Vallés (2007). Both agents are subject to a stochastic lifetime which effectively makes their discount rate higher than the government's assumed discount rate. As the liquidity-constrained agents have a higher marginal propensity to consume, this effectively enhances the response to fiscal interventions.

In the model we assume that there is no coordination problem between monetary and fiscal policies, and that monetary policy follows the familiar type of interest-rate reaction function, calibrated to reflect the historical conduct of monetary policy in Canada and the United States.

The rest of the model features endogenous labor supply, endogenous capital accumulation, productive government investment in infrastructure, habit persistence, investment and import adjustment costs, sticky nominal goods prices, and an endowment sector for raw materials that are used as a manufacturing input.

13.3 The Model

The model of the economy used to analyze the coordination of fiscal and monetary policy is the International Monetary Fund's Global Integrated Monetary and Fiscal Model (GIMF). GIMF is a multicountry dynamic general equilibrium model used extensively inside the IMF, and also at a small number of central banks, for policy and risk analysis.[2] The strength of GIMF for this analysis is the inclusion of a range of non-Ricardian features in the model that make not only spending-based but also revenue-based fiscal measures nonneutral. These features have been included in the model to aid the analysis of the short-run effectiveness of fiscal stimulus packages. However, GIMF is also useful when the focus turns from short-run stimulus to long-

run sustainability, given its focus on the savings–investment balance. It can answer questions about the link between fiscal deficits and real interest rates, crowding out, and current account deficits. The structure of GIMF can be found in Kumhof et al. (2010), "The Global Integrated Monetary and Fiscal Model (GIMF): Theoretical Structure."

In the version of GIMF used for this analysis the world consists of six "countries": Canada, the United States, the euro area, Japan, Emerging Asia, and the remaining countries of the world. All parameters in the model can differ across countries, except gross population growth and gross technology growth.

Countries are populated by two types of households, both of which consume final retailed output and supply labor to unions. First, there are overlapping generations (OLG) households with finite planning horizons as in Blanchard (1985). Second, there are liquidity-constrained households which do not have access to financial markets, and which, consequently, are forced to consume their after tax income in every period.

Firms are managed in accordance with the preferences of their owners, the myopic OLG households that have finite-planning horizons. Each country's primary production is carried out by manufacturers producing tradable and nontradable goods. Manufacturers buy capital services from entrepreneurs, labor from monopolistically competitive unions, and raw materials from the world raw materials market. Firms are subject to nominal rigidities in price setting as well as real rigidities in labor hiring and in the use of raw materials. Capital goods producers are subject to investment adjustment costs. Entrepreneurs finance their capital holdings using a combination of external and internal financing. A capital income tax is levied on entrepreneurs. Unions are subject to nominal wage rigidities and buy labor from households.

Manufacturers' domestic sales go to domestic distributors. Their foreign sales go to import agents that are domestically owned but located in each export destination country. Import agents in turn sell their output to foreign distributors. When the pricing-to-market assumption is made, these import agents are subject to nominal rigidities in foreign currency. First, facing an adjustment cost in changing the volume of imported inputs, distributors assemble nontradable goods and domestic and foreign tradable goods. This private-sector output is then combined with a publicly provided capital stock (infrastructure) as an essential further input. This capital stock is maintained through government investment expenditure financed by tax revenue and the issuance of government debt. The combined final domestic output is then sold to consumption goods producers, investment goods producers, and import agents located abroad.

Consumption and investment goods producers in turn combine domestic and foreign output to produce final consumption and investment goods. Foreign output is purchased through a second set of import agents that can price to the domestic

market, and, here also, changes in the volume of imported goods are subject to an adjustment cost. This second layer of trade at the level of final output is critical for allowing the model to produce the high trade-to-GDP ratios typically observed in small, highly open economies. Consumption goods output is sold to retailers and the government, while investment goods output is sold to domestic capital goods producers and the government.

Consumption and investment goods producers are subject to another layer of nominal rigidities in price setting. This cascading of nominal rigidities from upstream to downstream sectors has important consequences for the behavior of aggregate inflation. Retailers, who are also monopolistically competitive, face real instead of nominal rigidities. While their output prices are flexible, they find it costly to rapidly adjust their sales volume. This feature contributes to generating inertial consumption dynamics.

Asset markets are incomplete. There is a home-country bias toward owning domestic-currency government debt. The only home-country assets traded internationally are foreign-currency bonds. There is also a home bias in ownership of domestic firms. In addition, equity is not traded in domestic financial markets. Instead, households receive lump-sum dividend payments. This assumption is required to support the assumption that firms, as well as households, are myopic.

Fiscal consolidation through higher taxes takes the form of bringing tax payments forward to the near future from the more distant future so as to reduce the debt stock. Taxes cannot be raised permanently without an increase in government expenditures because the government has to respect its inter-temporal budget constraint, which means that the expected present discounted value of its future primary surpluses has to remain equal to the current debt when future surpluses are discounted at the market interest rate. But when individual households discount future taxes at a higher rate than the government, the same tilting of the tax profile represents a decrease in human wealth because it increases the expected value of future taxes for which the household expects to be responsible. This is true for the direct effects of lump-sum taxes and of labor-income taxes on labor-income receipts, and for the indirect effect of corporate taxes on dividend receipts. For a given marginal propensity to consume, these reductions in human wealth lead to a reduction in consumption.

Entrepreneurs and banks are modeled following Bernanke et al. (1999) and Christiano et al. (2010).

The GIMF raw materials sector is constructed primarily with oil in mind, with extremely low demand and supply elasticities. This is the main reason, apart from analytical tractability, why the output of raw materials has been specified as having a zero price elasticity. Firms in the raw materials sector can choose how much they sell in any given period by adding to or drawing down from a storage facility.

Unions buy labor from households and sell labor to manufacturers. They are perfectly competitive in their input market and monopolistically competitive in their output market. Their wage setting is subject to nominal rigidities.

Import agents buy intermediate goods (or final goods) from manufacturers (or distributors) in their owners' country and sell these goods to distributors (intermediate goods) or consumption/investment goods producers (final goods) in the foreign countries. Import agents are perfectly competitive in their input market and monopolistically competitive in their output market. Their price setting is subject to nominal rigidities.

Distributors produce domestic final output. They buy domestic tradable goods and nontradable goods from domestic manufacturers, and foreign tradable goods from import agents. They also use the stock of public infrastructure free of a user charge. Distributors sell their final output composite to consumption goods producers, investment goods producers, and final goods import agents in foreign countries. They are perfectly competitive in both their output and input markets. Investment goods producers buy domestic final output directly from domestic distributors, and foreign final output indirectly via import agents. They sell the final composite good to capital goods producers, to the government, and back to other investment goods producers. Investment goods producers are perfectly competitive in their input markets and monopolistically competitive in their output market. Their price setting is subject to nominal rigidities.

Consumption goods producers buy domestic final output directly from domestic distributors, and foreign final output indirectly via import agents. They sell the final composite good to consumption goods retailers, to the government, and back to other consumption goods producers. Consumption goods producers are perfectly competitive in their input markets and monopolistically competitive in their output market. Their price setting is subject to nominal rigidities.

The consumption good is sold by retailers. Retailers combine final output purchased from consumption goods producers and raw materials purchased from raw materials producers. There are adjustment costs to rapid changes in materials inputs. Retailers sell their output to households. They are perfectly competitive in their input market and monopolistically competitive in their output market. Their price setting is subject to real rigidities in that they find it costly to rapidly adjust their sales volume in response to changing demand conditions.

The government uses consumption goods and investment goods to produce government output. Fiscal policy consists of choosing the level of public investment spending, public consumption spending, transfers from overlapping-generations households to liquidity-constrained households, and lump-sum taxes. Government investment and consumption spending is a demand for government output. Both types of government spending are exogenous and stochastic. Government investment

spending augments the stock of publicly provided infrastructure capital. Government consumption spending, on the other hand, is modeled as unproductive. The government's policy rule for transfers partly compensates for the lack of asset ownership of liquidity-constrained households by redistributing a small fraction of the overlapping-generations household's dividend income.

The model makes two key assumptions about fiscal policy. The first concerns dynamic stability and the second relates to the stabilization of the business cycle. Constraining fiscal policy to be dynamically stable ensures a nonexplosive government-debt-to-GDP ratio. This is achieved by adjusting tax rates to generate sufficient revenue, or by reducing expenditure, in order to stabilize the overall interest (inclusive government surplus-to-GDP ratio at a long-run level chosen by policy). In other words, for a given nominal growth rate, choosing a surplus target implies a debt target, which keeps debt from exploding. Constraining fiscal policy to be business-cycle stable ensures that the government surplus-to-GDP ratio can also flexibly respond to the business cycle while satisfying the long-run debt target. Specifically, the deficit responds to the output gap, a tax revenue gap, and a raw materials revenue gap.

Monetary policy uses an interest rate rule that features interest-rate smoothing and which responds to (1) deviations of one-year-ahead year-on-year inflation from the inflation target, (2) the output gap, (3) the year-on-year growth rate of GDP, and (4) deviations of current exchange-rate depreciation from its long-run value. Monetary policy shocks are allowed to persist. Thus, the interest rate rule used to implement monetary policy is very general and similar to conventional inflation forecast based rules, with one minor and one important exception. The minor exception is the presence of exchange-rate depreciation, which is used only to model strict exchange-rate targeting. The more fundamental exception is that the non-Ricardian nature of the model implies that potential GDP and the equilibrium real interest rate are not constant, but are modeled as moving averages of observed values. The inflation rate targeted by monetary policy is a weighted average of current and one-year-ahead inflation.

Finally, combining all market-clearing conditions in the model with the budget constraints of households and the government and with the expressions for firm dividends determines the current account.

13.4 The Simulations

13.4.1 Scenario 1: Expansionary Fiscal Policy When the Monetary Policy Rate Can Move

Scenario 1 is an increase in baseline government consumption of 1 percentage point of GDP forever. After two years, government transfers decrease via the assumed fiscal policy stabilization rule in response to the otherwise unsustainable rise in gov-

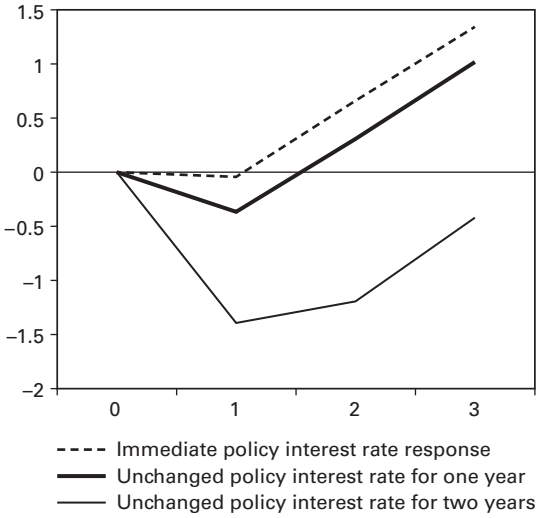

Figure 13.1
Scenario 1: US government debt (percent of GDP deviation from baseline)
Source: GIMF simulations

ernment debt such that the debt-to-GDP ratio stabilizes over time. The shape of the endogenous path for government debt is largely independent of the country undertaking the fiscal expansion because the fiscal policy stabilization rule is assumed to be the same for each country. Actual government spending does not increase by the full shock to baseline government consumption because of the automatic stabilizer component of government spending—essentially, the economy is stronger because of the shock, which reduces the demand for some government programs.

The three lines in figure 13.1 show the effect of different monetary policy coordination strategies.

- The dashed line shows the baseline monetary policy reaction function at work. Here the policy interest rate rises to counteract the increase in aggregate demand in order to more strictly adhere to the inflation target, even in the short run.
- The bold line shows the effect of partially accommodating monetary policy that keeps the policy interest rate unchanged for one year, before returning to the baseline monetary policy reaction function that then returns inflation to target.
- The thin line shows the effect of fully accommodating monetary policy that keeps the policy interest rate unchanged for the full two-year length of the fiscal shock, before returning to the baseline monetary policy reaction function.

The stance of monetary policy—that is, whether monetary policy is easy or tight—depends on whether the policy rate rises less or more than the rate of expected inflation (i.e., the change in the real interest rate). The baseline monetary policy reaction function produces a tightening of the stance of monetary policy to counteract the inflationary effects of the increase in aggregate demand associated with the expansionary fiscal shock. Keeping the policy rate unchanged for a year produces a mild easing in monetary policy for that year, followed by tighter policy. The fully accommodating monetary policy keeps policy easy for two years, followed by a dramatic tightening of policy to contain the inflationary pressure that was created.

The government-debt-to-GDP ratio is lower when monetary policy accommodates fiscal policy because interest rates are relatively lower and the economy is stronger. The economy responds so strongly to the fully accommodating monetary policy that government indebtedness falls temporarily, as can be seen by the thin line falling below its control value.

Scenario 1 shows that fiscal policy is much more effective when monetary policy accommodates the fiscal shock.

Canada

In the results for Canada, the government expenditure multiplier is less than one when monetary policy tightens immediately in response to the inflationary pressure coming from the increase in aggregate demand. In contrast, when monetary policy is fully accommodating, the government expenditure multiplier is greater than 1.

When monetary policy is fully accommodating, the real interest rate, which indicates the stance of monetary policy, falls by over one-half percentage point in the first year of the shock. This easing of policy adds to the initial fiscal shock, producing an increase in GDP of over 1.2 percentage points in the first year. A partial accommodation of the shock would have monetary policy easing in the first year of the shock, but not sufficiently to produce a multiplier greater than one. The reason is that financial markets anticipate that monetary policy will tighten in the second year so the exchange rate appreciates, which crowds out domestic production despite an increase in domestic consumption and investment.

Private consumption rises whether or not monetary policy accommodates the shock because of spillovers from the increase in government consumption on wages and salaries. However, the effect of lower real interest rates on private consumption, which arises from the monetary accommodation, is more significant. The rise in investment is very muted without monetary accommodation, showing the power of real interest rates in stimulating investment in the model. Inflation rises even without monetary accommodation. This owes to interest-rate smoothing in the monetary policy reaction function that prevents the monetary authorities from moving the

policy rate sufficiently to fully offset the increase in inflationary pressure from the stimulus to aggregate demand.

United States

Results for the United States are similar in pattern to those for Canada, but there are a few notable differences. Interestingly, the government expenditure multiplier is larger for the United States than it is for Canada, especially when monetary policy is accommodating. Since the United States is more of a closed economy than is Canada, less of the increase in aggregate demand is satisfied by imported goods (i.e., there are fewer import "leakages") and so the impact on domestic production is greater. This makes the economy more inflation prone, with inflation responding more to the fiscal shock and monetary policy responding less aggressively in the baseline monetary policy reaction function. The larger increase in inflation results in lower real interest rates when monetary policy accommodates by holding the nominal interest-rate constant. The stance of monetary policy is therefore easier, which adds an extra boost to GDP (thin line in figure 13.2).

With the greater inflation response, monetary policy needs to respond aggressively when accommodation ends. Indeed, in the case of full accommodation, the nominal policy rate rises to a point where it is double that of the no-accommodation case (dashed line in figure 13.2). This shows that when an economy

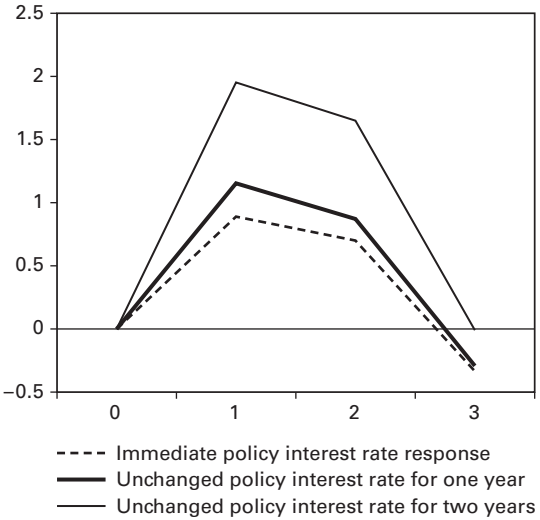

Figure 13.2
Scenario 1: US real GDP (percent deviation from baseline)
Source: GIMF simulations

is inflation prone, any delay in reacting to inflationary pressures is costly in terms of the subsequent amount by which the policy rate will need in order to rise to return inflation to target.

13.4.2 Scenario 2: Expansionary Fiscal Policy When the Policy Rate Is at Its Lower Bound

The monetary policy rate cannot fall in the simulation because the policy rate is at its lower bound. Instead, monetary accommodation in scenario 2 is a purchase of longer maturity government bonds by the central bank, which reduces the interest rate on long-dated government bond by 50 basis points at one year, 75 basis points at three years, and 100 basis points at ten years—essentially, an operation twist to flatten the yield curve on government debt. In addition, monetization of government debt causes an increased perception of inflation risk and results in an increase in the country risk premium by about 25 basis points. The policy is assumed to last two years.

When this unconventional monetary policy is combined with expansionary fiscal policy, the result is a significant increase in inflation expectations which causes the stance of monetary policy to ease dramatically in the case where interest rates are held constant for two years. This creates an expansion in GDP that, when combined with the low interest rates, reduces government indebtedness.

Even if the central bank were to raise its policy rate to counter the expansion in GDP, the stance of monetary policy would ease because of the perception of higher inflation from the unconventional policy. Again, the expansion of the economy is sufficient to reduce government indebtedness slightly in the first year, in contrast to scenario 1 where indebtedness remained unchanged.

As a result fiscal policy expansion with unconventional monetary policy is very effective in the simulation.

Canada

Recall that the expansionary fiscal policy is an increase in government consumption expenditures of 1 percentage point of GDP and unconventional monetary policy is an operation "twist" that flattens the yield curve combined with an increase in the country risk premium. When the policy interest rates remains unchanged for two years, the fiscal multiplier is 2 in the first year, indicating that the economy expands by two dollars for every dollar the government spends. Even in the case where the policy interest rate is held fixed for one year before moving to respond to the building inflationary pressures, the fiscal multiplier is one.

The policy combination stimulates private consumption significantly, which increases by about the same amount as the increase in government consumption when the policy rate is held unchanged for two years. Private investment

increases substantially and is up over four percentage points when the policy rate is constant.

The policy combination causes inflation to rise. When the policy interest rate is held unchanged for two years, inflation is up by almost a full percentage point by the second year. It is this increase in inflation that helps explain the effectiveness of the policy as it produces lower real interest rates and a depreciated real exchange rate, which stimulates consumption and investment.

If policy rates rise in the second year to choke off the inflationary pressure, inflation rises by less than one-half of a percentage point by the second year. This monetary policy response maintains a fiscal multiplier greater than one without much threat to achieving the inflation target.

United States

The policy combination of expansionary fiscal policy and unconventional monetary policy is even more effective in the United States, again because inflation reacts more to the shock so that real interest rates decline and the real exchange rate depreciates. When the policy interest rates remain unchanged for two years, the fiscal multiplier is 2.5 in the first year, indicating that the economy expands by two and a half dollars for every dollar the government spends (thin line in figure 13.3). Even in the case where the policy interest rate is held fixed for one year before moving to respond to the building inflationary pressures, the fiscal multiplier exceeds one (solid line).

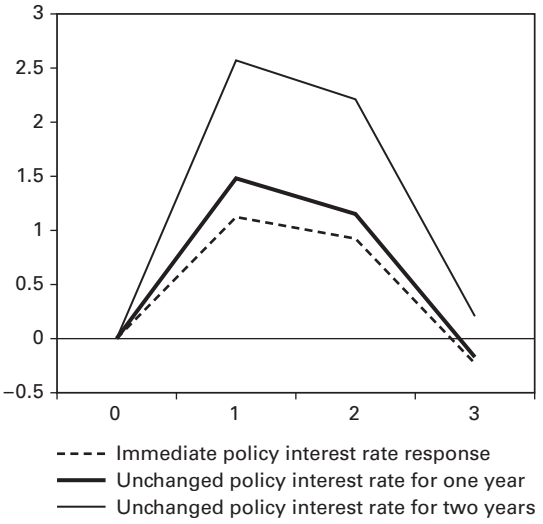

Figure 13.3
Scenario 2: US real GDP (percent deviation from baseline)
Source: GIMF simulations

Consumption is stimulated by relatively more than when the same shock is applied to Canada, whereas the increase in investment is similar in the two countries. This reflects the greater sensitivity of investment to the real exchange rate in Canada.

The results in scenario 2 show why Freedman et al. (2009a, b) argued that a global fiscal stimulus is essential to support aggregate demand and restore economic growth when interest rates are at their lower bound and cannot move lower. The results are robust in that simulations for different countries generate similar results, as is the case with the simulations from Canada and the United States shown here. The implication is that coordinated fiscal action will be more effective than a single country working alone. That is indeed what Freedman et al. (2009a, b) show using simulations with GIMF. The simulations also show that monetary policy accommodation is essential to effective fiscal policy, even if that accommodation is unconventional.

Since Freedman et al. (2009a, b), governments and central banks responded to the global slowdown with simulative fiscal policy and accommodative monetary policy. In addition, central banks reduced interest rates to unprecedented levels to offset the increase in private-sector risk premia and to underpin aggregate demand. The simulations here show that fiscal policy would not have been effective had monetary policy not been accommodative, even though some of the accommodation was unconventional.

One important difference between the results in the simulations shown above and the post 2008 outturn is that inflation was not as much a threat as suggested by the simulations. The reason, no doubt, is that the world economy was facing significant deflationary pressures as a result of (1) the sharp decline in stock market and housing wealth, (2) the related desire to rebuild assets and to repay debts, (3) the difficulty of accessing credit in a world of deleveraging, and (4) the much-increased uncertainty surrounding future economic developments. While deflation did not occur, the simulations above suggest that it would have if it were not for the fiscal policy stimulation supported by accommodative monetary policy. The inflationary consequences of the policies were in fact sufficient to offset the disinflationary consequences of the crisis.

Freedman et al. (2009a, b) also focus on the importance of a clear commitment to long-run fiscal discipline by countries wishing to engage in short-run discretionary fiscal stimulus. This commitment is built into the policy rules used in the above simulations. In the absence of such a perceived commitment, expansionary fiscal actions could lead to increases in long-term real interest rates, which could offset the stimulus effects of the fiscal actions on GDP. These negative effects were not part of the simulations shown here.

Like Freedman et al. (2009a) our analysis implies that if fiscal policy and monetary policy work together, they can make a significant contribution to preventing the economy from going into a recession after a financial crisis that forces interest rates to their lower bound. However, it is important to reiterate that while fiscal and

monetary policy can help support demand in the short run, these tools have limitations and should not be viewed as a substitute for dealing with financial sector issues.

13.4.3 Scenario 3: Expansionary Fiscal Policy with the Perception of Unsustainable Debt

Scenario 3 shows the negative consequences of perceived unsustainable fiscal policies. The perception of unsustainability is accompanied by a higher country risk premium as investors need an incentive to hold government debt equivalent to the perception of increased risk of default. As a result government indebtedness rises.

Scenario 3 shows how expansionary fiscal policy becomes ineffective as a country becomes increasingly indebted. Moreover it is the perception of unsustainable indebtedness that renders fiscal policy ineffective, since people are forward looking, so demand increases risk premiums above the point at which government becomes unable (or unwilling) to continue to service its debt.

The increase in the risk premium works in the opposite direction of operation twist, the unconventional monetary policy action. Yet, despite the increased risk premium, it is assumed that monetary policy does not raise the nominal policy rate in the first two years of the scenario. An increase in the country risk premium without a corresponding rise in the nominal policy rate means that the stance of monetary policy has effectively eased, but the easing is not enough to offset the effect of the rise in risk premiums.

Canada

The effect of unsustainable indebtedness on the effectiveness of fiscal policy is dramatic. In the most realistic case where all domestic interest rates rise, the government multiplier drops from about 2 (scenario 2, fully accommodating monetary policy) to 0.2. The multiplier drops because the real interest rate rises owing to the higher country risk premium. But even without the rise in the country risk premium, the multiplier is barely back to where it was in scenario 1 without any monetary policy accommodation. In effect, the rise in government risk premiums more than fully offsets the unconventional monetary policy accommodation, also making the economy behave as if monetary policy was reacting to the shock. However, interest rates in the economy are rising not because the policy rate is higher but because the private sector demands greater compensation for the higher probability of government default associated with the increase in government spending.

In the case where both the government and country risk premiums rise, inflation falls because of the economic downturn that is created by the rise in longer term interest rates in response to the fiscal expansion. The economic downturn happens in year two and beyond, but inflation expectations are forward looking and so the decline in inflation starts almost immediately.

Both consumption and investment are affected negatively by the increase in government indebtedness. Investment is hit hardest because it is long-term interest rates that rise the most. As a result of the decline in investment, the weakness in the productive capacity of the economy is likely to be long lasting.

United States

The negative effects of increased government spending when the government is already highly indebted are equally severe for United States. In the most realistic case where all domestic interest rates rise, the government multiplier drops from about 2.5 (scenario 2, fully accommodating monetary policy) to about 0.4 (solid line in figure 13.4). It does not matter whether the economy is open or closed, as domestic investors are just as likely to choose to invest in more sustainable economies as are foreign investors, and so a dramatic rise in real interest rates is still needed to keep investment at home.

Inflation in the United States rises a bit more than in Canada, and the government multiplier is a bit larger, as we saw in scenario 1, again owing to the greater openness of the Canadian economy and hence import leakages damping the direct effect of increased government spending on domestic production. However, this effect is

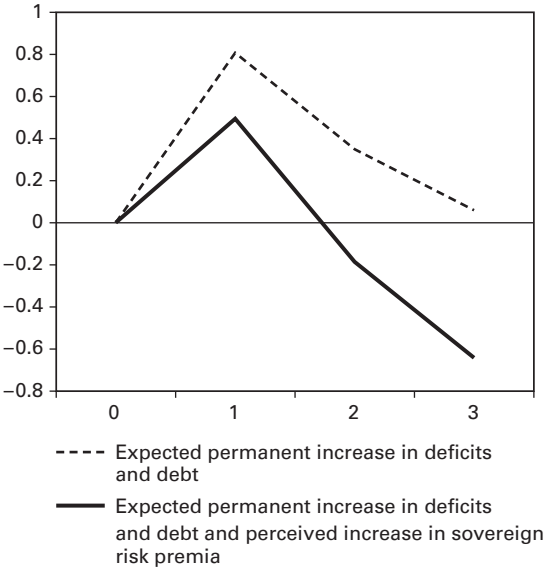

Figure 13.4
Scenario 3: US real GDP (percent deviation from baseline)
Source: GIMF simulations

small in relation to the negative impact of the higher risk premia on the economy in both countries.

The real exchange rate does not depreciate significantly (and actually appreciates when the country risk premium does not rise) despite the weakness in GDP. The higher interest rates necessary to keep investors from fleeing the country puts additional pressure on the currency to appreciate. Thus, the increase in government spending is doubly counterproductive in that it works against the need for the country to increase exports as a way of generating the income to service its increasing debt, as well as adding directly to the interest costs of servicing the debt owing to the higher interest rates that the increase in indebtedness produces.

Again, as with the open-economy case of Canada, investment is hit hardest by the rise in long-term rates caused by the increase in government spending, which is likely to dampen the long-term productive capacity of the economy.

Freedman et al. (2009b) caution that if fiscal stimulus should lead to permanently higher deficits and therefore debt, the consequences can be very unfavorable in the long run even though they may in the short run look favorable for the domestic economy. In scenario 3 we show the effects of fiscal expansion when debt is perceived to be unsustainable. This perception brings forward the negative long-run effects that Freedman et al. (2009b) illustrate in their paper.

13.5 Conclusion

The simulations in this chapter show that fiscal stimulus is significantly more effective in boosting economic output when the higher real interest rates that it can generate are offset by other policy measures. A coordinated expansion of monetary policy, or credible commitment to reverse the fiscal stimulus in the future in order to keep government indebtedness on a sustainable track, could accompany policies and be effective in keeping real interest rates from rising, thereby maximizing the positive impact of the fiscal stimulus.

Notes

1. See Kumhof and Laxton (2009c).

2. Many of the properties of GIMF are similar to other DSGE models. For a discussion of GIMF fiscal multipliers see Anderson et al. (2013), and for a comparison of these multipliers to fiscal multipliers in other models see Coenen et al. (2012).

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