

## **An International Monetary System Built on Sound Policy Rules**

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The purpose of this lecture is to consider a reform of the international monetary system in which each central bank describes and commits to a monetary policy rule or strategy for its own policy instruments. The lecture is based on my recent research presented in Taylor (2016a, 2016b, 2016c) and on my earlier research on international coordination in the design of monetary policy rules including Carozzi and Taylor (1985) and Taylor (1985).

I begin by showing that the international monetary system has departed in recent years from a rules-based system, and that this departure has led to large capital flows, volatile exchange rates and poor overall economic performance. I then show that a greater adherence to a rules-based international monetary system would lead to greater international stability. I show how such a system could be achieved in a way that would allow each central bank to pursue independently its own domestic stability goals while allowing for open international markets and flexible exchange rates.

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While some have argued that a rules-based international monetary system is impossible, I show that there is no inherent incompatibility between internationally independent monetary policies and either open capital markets or flexible exchange rates. Empirical correlations that suggest otherwise are likely spurious, stemming from departures from rules-based monetary policy in many countries, which are neither necessary nor advisable.

### **Drifting Away from a Rules-Based International Monetary System**

There is no disputing that the international monetary system has departed from a rules-based system advocated by economists and policy makers ranging from Milton Friedman (1953) to Paul Volcker (2014). There has been a spread and amplification<sup>2</sup> of unusual monetary policy actions and interventions across countries; governments are increasingly imposing or considering capital controls, intervening in exchange markets, and using macro-prudential regulations to affect international exchange transactions. Some officials at the international financial institutions are endorsing such controls and interventions, suggesting that they should be built into a new global system, in contrast to the days when these institutions were arguing for the removal of such controls.<sup>3</sup>

This departure from a rules-based system has been associated with disappointing economic results. There have been huge swings of capital flows around the world, especially into and out of emerging markets. Exchange rate volatility has increased, and is reminding people of

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<sup>2</sup> Amplification occurs when more than one central bank follows other central banks. Then a series of spillovers evolves in which each central bank reacts by moving its interest rate when another central bank moves, resulting in a multiplier effect as explained in Taylor (2009).

<sup>3</sup> Compare, for example, the International Monetary Fund (2012) report which states that “capital flow management measures [that is, capital controls] can be useful,” with the Communiqué of the Interim Committee (1997) of the IMF which called for “an amendment of the Fund’s Articles” to promote “an orderly liberalization of capital movements.”

currency wars and competitive devaluations. And overall economic performance has included a global financial crisis, a great recession, a very slow recovery, and now disappointing economic growth in many emerging market and developing countries.

These very developments have led some to conclude that a rules-based international monetary system is literally impossible, at least one built on flexible exchange rates, open capital markets, and an independent rules-based monetary policy in each country. After documenting recent “surges and retrenchments in capital flows” for central bankers at a recent Jackson Hole conference, Helene Rey (2014) argued that there is an “irreconcilable duo: independent monetary policies are possible if and only if the capital account is managed, directly or indirectly via macro-prudential policies” and “if they are not sufficient, capital controls must also be considered.” In other words, independent monetary policies and open capital markets are irreconcilable. After reviewing evidence that monetary policy in several central banks is significantly contaminated by policy spillovers from decisions at other central banks,<sup>4</sup> Sebastian Edwards (2015b) called “into question the idea that under flexible exchange rates there is monetary policy independence.” He thereby pointed out another apparently irreconcilable duo: independent monetary policies designed to achieve domestic economic stability and flexible exchange rates.

Empirical research by Ahrend (2010) on interest rate policy in the OECD countries and by Taylor (2007), Kahn (2010) and Selgin, Beckworth and Bahadir (2015) on interest rate policy in the United States shows that the deviation from rules-based policy started around 2003-

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<sup>4</sup> Many studies have documented policy spillovers by showing that foreign interest rates appear with statistically significant coefficients in policy rule regressions, including Edwards (2015a), Carstens (2015), Gray (2013) and Taylor (2007). There is also direct evidence reported by central banks as discussed in Taylor (2013).

2005—well before the financial crisis—creating a boom and an inevitable bust. Hofmann and Bogdanova (2012) find an ongoing “Global Great Deviation,” which is caused in part by the spread and amplification of policy deviations around the world. Deviations from rules are also seen in the large-scale asset purchase programs known as quantitative easing and in frequently changing discretionary forward guidance operations. In apparent response to quantitative easing in the United States, policy makers in Japan engaged in quantitative easing and then policy makers in Europe expanded their own quantitative easing in response to both. Exchange rate effects were on their minds and openly discussed. Note that these departures from rules-based policy refer to events before and after the panic of 2008, not to the actions taken by central banks during the panic.

There is evidence that the increased volatilities of capital flows and exchange rates are associated with these deviations from rules-based policy. Taylor (2015) finds an increase in exchange rate volatility of the U.S. dollar starting around 2003, around the time of the recent deviation from rules-based policy. Carstens (2015) finds a sharp rise in the volatility of emerging market capital flows, debt and equity around the same time. Rey (2014) finds that “monetary policy in the center country...affects leverage of global banks, credit flows and credit growth in the international financial system.” Much of this effect appears to be due to excessive swings in monetary policy starting about a dozen years ago when very low interest rates in the United States drove an international search for yield.

There is also evidence that the increased spillovers of central banks’ actions on other central banks are associated with the deviations from rules-based policy. Cries of spillover of Fed policies by emerging market officials certainly have grown louder during this period. And the currency-war-like sequence of QE begetting QE from the United States to Japan and to the

Eurozone in recent years occurred with discretionary rather than rule-like policies. Much of the empirical work documenting a significant presence of foreign interest rates in central bank policy rules started after the shift away from rule-like policy.

### **The Benefits of a Return to Rules-Based Policy**

Basic monetary theory tells us that adherence to rules-based policy can prevent excessive capital flows and can allow each country to pursue its own domestic stability goals without disrupting the system.<sup>5</sup> To see how this theory works and where it might go wrong, consider some simple scenarios. Consider a world in which exchange rates are flexible, capital is mobile, and each central bank sets its policy interest rate according to a rule. Interest rate differentials between countries can occur with capital flows bringing any differences into alignment with the expected percentage change in the exchange rate. Movements in real exchange rates affect imports and exports, and thus the trade balance and real GDP. Prices and wages are sticky so that changes in the policy interest rate in one country can affect output as well as the inflation rate in that country. Depreciations or appreciations in the exchange rate also affect inflation. Shocks can hit anywhere.

For concreteness, let the policy rule be one in which each central bank systematically increases the interest rate when inflation rises above a target or when real GDP falls below its estimated potential; similarly, the central bank systematically reduces the interest rate when inflation falls below target and real GDP rises above its estimated potential. Let the inflation target be set at 2% in all countries, and let the given long run real policy interest rate be 2%. If

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<sup>5</sup> Carlozzi and Taylor (1985) and Taylor (1985)

this world were not subject to shocks, the global inflation rate would settle at the 2% target, the nominal policy interest rate at 4%, and real GDP at potential. The exchange rate would be stable.

Suppose now that—starting from this equilibrium—there is a price shock which raises inflation in one country above the target. This will cause the central bank in that country to take actions to raise the interest rate, and output will thus temporarily fall while the inflation rate declines back to its target. Eventually the effects of the shock will wear off.

What about the impacts abroad? The initial inflation shock will cause the inflation rate to rise abroad as the costs of imported inputs to production rise, but by a small amount according to most models with the effects of the inflation shock abroad mitigated by the initial central bank's stabilizing actions. So if foreign central banks follow their rules, they will raise their policy interest rates, but by a small amount, and there will be little effect on their economies.

However, with interest rate differentials rising, central banks abroad may fear an outflow of capital or a depreciation of their currency. They may decide to raise interest rates by a larger amount getting closer to the rate increase of the initial central bank, and thereby deviate from the rule. This would be an example of the phenomenon of central banks following each other. However, if the first central bank is committed to the policy rule, the effect on interest rate differentials would be known to be quite temporary, reducing the need or incentive for other central banks to over-react. In effect the commitment to the rule enables each foreign central bank to better commit to its own rule.<sup>6</sup> In contrast, if the first central bank's policy is ad hoc or discretionary, the foreign central bank may fear a larger or longer capital outflow and even a downward spiral of the exchange rate, and thereby take more aggressive action. A greater

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<sup>6</sup> Thus, the rule would have less reaction to exchange rate changes, but just as important any such reaction will be more predictable.

adherence to rules-based policy by the first central bank will reduce the likelihood that the other central banks will follow, and thereby detract from their own performance. This reasoning suggests that the volatility of capital flows would diminish with a more rules-based policy: With the exchange rate expected to stabilize there would be less reason to pull out of the currency in fear of a large depreciation.

These same arguments apply to other types of shocks. Suppose that there is a shock that lowers the inflation rate. In this case the first response is to lower the policy interest rate below the starting point of 4%. After an adjustment period this action brings the inflation rate back up to target. However, after a smaller rule-like interest rate response in the rest of the world, interest rates will now be higher abroad generating concerns about capital inflows or exchange rate appreciation. There will be a tendency for central banks abroad to lower their interest rate further. But with a rules-based policy this tendency will be mitigated by the knowledge that the capital outflows and exchange rate effects will be temporary.

There are many other types of shocks and policy scenarios which would require a more detailed monetary model to analyze. However, the general prediction that rule-like policy will mitigate excessive capital flows and unnecessary monetary spillovers is likely to be robust.

There is empirical support for these predictions. Regarding exchange rates, empirical research by Eichengreen and Taylor (2003) found that “countries that target inflation,” a form of rules-based policy, “have significantly less volatile exchange rates.” Regarding capital flows, Vegh and Vuletin (2012) found that the adoption of rules-based inflation targeting had the effect in a number of emerging market countries of reducing large capital movements associated with “fear of free falling” exchange rates. And Coulibaly and Kempf (2010) show that inflation

targeting rules reduce the pass-through of exchange rates to inflation. This further reduces the need for over-reaction of policy due to concerns about exchange rate changes.

While the scenarios examined here apply to a particular policy rule, the arguments are likely to be robust to other types of policy rules examined over the years. Beckworth and Hendrickson (2015), for example, have examined interest rate rules where the central bank reacts to nominal GDP rather than to the inflation rate and GDP separately. They stress that such a rule has the advantage that the central bank does not have to estimate potential GDP, reflecting concerns raised by Orphanides (2003). Though more research is needed I see no reason why the same types of arguments would not apply to this particular implementation of nominal GDP targeting or others suggested by Sumner (2014). Another recent example is due to Fagan, Lothian, and McNelis (2013) who examine two monetary policy rules in a model estimated over the classical Gold Standard period from 1879 to 1914. One policy rule has the monetary base following an auto-regression with the interest rate determined by the supply and demand for money. The other is an estimated interest rate rule. They find that inflation volatility decreases a lot while output and employment volatility decreases a little with the interest rate rule. Of course the dynamic properties of rules are very important for policy evaluation, and it is necessary that the rules do well domestically if they are to contribute to a global rules-based system.

### **An International Monetary Reform**

The implication of these results is that the international economy would be more stable if policy makers could create a more rules-based international monetary system. But how could such a system be implemented? A workable proposal would be an international agreement in which each central bank describes and commits to a monetary policy rule or strategy for setting



the policy instruments. The strategy could include a specific inflation target, an estimate of the equilibrium interest rate, and a list of key variables to react to in certain specified ways. The process would not impinge on other countries' monetary strategies. It would be a flexible exchange rate system, though currency zones, like the Eurozone, and their central banks could certainly be part of it.

Such an agreement would pose no threat to either the national or international independence of central banks. Each central bank would formulate and describe its strategy. Central banks participating in the process would not have a say in the strategies of other central banks, other than that the strategies be reported. And the strategies could be changed or deviated from if the world changed or if there was an emergency. A procedure for describing the change and the reasons for it would be in the agreement. It is possible that some central banks will include foreign interest rates in the list of variables to react to, but when they see other central banks not doing so, they will likely do less of it, recognizing the amplification effects.

The agreement would be completely global in principle, rather than for a small centralized or regional group of countries. As with the process that led to the Bretton Woods system it could begin informally with a small group and then spread out. The rules-based commitments would reduce capital flow volatility and remove some of the reasons why central banks have followed each other in recent years.

A companion reform would set up rules for eventually removing capital controls. According to a recent classification of countries by Fernandez et al (2015), 36 countries now have "open" capital accounts, but 48 are classified as "gate" countries and 16 as "wall" countries with varying degrees of capital controls. The reform could be phased in with a transition period, and should be accompanied by adequate enforcement of safety and soundness regulations on

financial institutions.<sup>7</sup> Though controversial, this reform is conceptually the same as the agreement by initial IMF members to remove exchange controls in 1944 as I describe below.

The time may be ripe for implementing an international understanding and agreement along these lines. Many have called for reforms of the international monetary system, reflecting concerns about the instabilities, international policy spillovers, volatile capital flows, and poor economic performance. The Bank for International Settlements (BIS) has been researching the issues and Jaime Caruana, the General Manager of the BIS has promoted it. The approach suggested here is attractive because each country can choose its own independent strategy and simultaneously contribute to global stability.

Some form of re-normalization of monetary policy is needed first, but that could be phased-in during a transition period. Goals and strategies for the instruments of policy to achieve the goals would come next. The major central banks now have explicit inflation goals, and many policy makers use policy rules that describe strategies for the policy instruments. Thus, explicit statements about policy goals and strategies to achieve these goals are feasible. That there is wide agreement that some form of international reform is needed would help move the implementation along.

The biggest hurdle to an agreement of this kind is disagreement about the problem and the solution. Some are not convinced of the importance of rules-based monetary policy; others may doubt that it would deal with the problems of volatile capital flows or policy spillovers. Some believe that the competitive depreciations of recent years are simply part of a necessary process of world monetary policy easing.

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<sup>7</sup> If prudential regulations were already in place, a gradualism phase-in may not be necessary.

A clear commitment by the Federal Reserve to move in this rules-based direction would help start the implementation process. Legislation to require that the Fed report its rules-based strategy—such as that which is now working its way through the U.S. House of Representatives and the U.S. Senate—would be a constructive part of the implementation effort.

### **Comparison with the Bretton Woods Rules**

One way to see how this reform would be implemented in practice is to compare it with the major reform of the international system at the time the International Monetary Fund was created in 1945. Serious concerns at that time were the competitive devaluations and currency wars in the years leading up to World War II. The British devalued the pound in 1931, and they gained a competitive advantage, but they slammed other countries' exports and economies in doing so. Not to be left behind, other countries followed, including the United States which devalued the dollar in 1934. Whether defensive or offensive, these "beggar-thy-neighbor" actions led to government restrictions and interventions in other countries. After trying such interventions, Italy, for example, finally devalued the lira by 40.93% in 1936, matching precisely the US devaluation of 1934.

There were also extensive "exchange controls," in which importers of goods were forced to make payments to a government monopoly in foreign exchange. The government would determine what types of goods could be imported and how much to pay exporters. Exchange controls also involved multiple exchange rates, government licenses to export and import, and even officially conducted barter trade. They deviated from the principles of economic freedom, and caused all sorts of distortions and injustices.

To deal with these problems the Bretton Woods reformers developed a strategy. Each country—each party to the agreement—would commit to two basic monetary rules which would

become the key foundation of the rules-based system. First, they would swear off competitive devaluations by agreeing that any exchange rate change over 10% from certain values, or pegs, would have to be approved by a newly-created IMF. As Dean Acheson, Under Secretary of State explained in Congressional testimony, “The purpose of the Fund is not to prevent any devaluation. It is to prevent competitive devaluation.”

Second, countries agreed to remove their exchange controls, with a transition period because many had extensive controls in place. The countries, however, did not agree to remove capital controls, which included restrictions on making loans, buying or selling bonds, and equity investments.

With commitment to these two rules, the IMF would provide financial assistance in the form of loans with the help of an outsized contribution from the United States. U.S. economist Jacob Viner explained the deal this way: “Other countries make commitments with respect to exchange stability and freedom of exchange markets from restrictive controls while we in turn pledge financial aid to countries needing it to carry out these commitments.” He concluded that “It is largely an American blueprint for the post war economic world.... It seems to me a magnificent blueprint.” And many other economists supported it, including Irving Fisher, Frank Knight and Henry Simons.

In important respects the blueprint succeeded. Exchange controls were removed, though it took more than a decade, and the currency wars ended, though the adjustable peg system itself fell apart in the 1970s and gave way to a flexible exchange rate system. The 1970s were difficult because monetary policy lost its rules-based footing and both inflation and unemployment rose. But in the 1980s and 1990s policy became more focused and rules-based and economic performance improved greatly. Though not part of the blueprint, virtually all the developed

countries that signed the original agreement—and others like Germany and Japan—also abandoned capital controls. By the late 1990s, many emerging market countries were adopting rules-based monetary policies, usually in the form of inflation targeting, and entered into a period of stability. Some emerging market countries, such as Brazil, began to remove capital controls, and the IMF recommended adding their removal to the articles of agreement.

The economic reform proposed here could build on the old reform of the 1940s. We now have evidence that the key foundation of a rules-based international monetary system is simply a rules-based monetary policy in each country. Research shows that the move toward rules-based monetary policy in the 1980s was the reason why economic performance improved in the 1980s and 1990s. More recent research shows that the spread and amplification of deviations from rules-based monetary policy are drivers of current international instabilities. And research shows that if each country followed a rules-based monetary policy consistent its own economic stability—and expected other countries to do the same—a rules-based internationally cooperative equilibrium would emerge.

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