

A Rules-Based Cooperatively-Managed International Monetary System for the Future

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This paper draws on lessons from the Plaza Accord of 1985 and the three decades of economic policy and performance that followed. For nearly two decades following the Plaza Accord economic performance and stability improved in major parts of the world—a period known as the Great Moderation or simply as NICE (for non-inflationary consistently expansionary)—as monetary policy tended to be more focused and rules-based. However, during much of the past decade monetary policy has deviated from a rules-based approach and economic performance and stability has deteriorated, remaining poor today. As Paul Volcker (2014) has put it “the absence of an official, rules-based, cooperatively managed monetary system has not been a great success.”

Accordingly, this paper proposes a new approach to international monetary policy. The experience of the past thirty years and basic economic reasoning suggest that a rules-based reform in each country will deliver performance akin to a cooperatively -managed international monetary system and “can better reconcile reasonably free and open markets with independent national policies [and] stability,” the sensible goal called for by Volcker (2014).

I start with a review of key lessons from the Plaza Accord which are most relevant for the future of the international monetary system. Next I review the economic principles that indicate

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that such a rules-based policy will lead to good global economic performance. I then provide evidence consistent with those principles: adhering to more rules-based policy has been associated with good performance while deviating from rules-based policy has been associated with poor economic performance. Building on this experience and the principles, I then describe the reform proposal and its implementation.

1. Key Lessons from the Plaza Accord

In my view two key lessons from the Plaza Accord are most relevant in designing an international monetary system for the future. The first relates to the effectiveness of exchange market intervention and the second is to the impact of the agreement on the strategy of domestic monetary policy in different countries.²

The Impact of Exchange Market Interventions

The first key lesson from the Plaza Accord as analyzed in subsequent empirical studies of the period is that sterilized exchange market interventions have been largely ineffective in moving the exchange rate on a sustained basis.³ To be sure, the dollar was very strong at the time of the September 22 meeting of the G-5 and the announcement at the Plaza Hotel in New York, and it depreciated for the next two years. By 1987 the dollar had largely reversed the

² A detailed review of the meetings and events surrounding the Plaza Accord and the Louvre Accord is beyond the scope of this paper. Frankel (1994) provides an excellent review including important events like the September 1986 meeting between Secretary Baker and Finance Minister Miyazawa of Japan.

³ By “sterilized” I mean that either the monetary base or the policy interest rate is held steady as the central bank offsets its purchases or sales of foreign currency denominated assets with sales or purchases of domestic assets.

appreciation experienced during 1981-1985.⁴ So a casual observer of these trends would see a strong effect of both the Plaza and the Louvre Accords. Moreover, the dollar depreciated immediately on the Monday after the Sunday Plaza meeting. Against the yen, for example, the dollar depreciated from 240 yen/dollar to 232 yen/dollar over the weekend.

However, as Feldstein (1994) and others emphasized in reviewing the episode, the decline in the dollar had started several months before the Plaza Accord. It had reached 260 yen/dollar in February 1985 and was down to 240 yen/dollar on the Friday before the meeting at the Plaza Hotel. In their recent comprehensive history of foreign exchange market interventions in the United States, Bordo, Humpage, and Schwartz (1985) “find no support for the view that intervention influences exchange rates in a manner that might force the dollar lower, as under the Plaza Accord, or maintain target zones as under the Louvre Accord....most of the movements in exchange rates over the Plaza and the Louvre period seem attributable to policy changes, not intervention.”

Using a different method Obstfeld (1990) reached similar conclusions in an earlier study. He also noted that interventions could reveal policy-makers' intentions to change policy and thus affect expectations which could change actual exchange rates. However, Bordo, Humpage, and Schwartz (1985) report that the interventions during this period had very little systematic effect on actual exchange rate changes whether through expectations of macro policy changes or other channels. By studying 129 separate interventions against the yen and the mark during the Plaza-Louvre period, and considering different criteria, they found the impact of the interventions insignificantly different from random.

⁴ This depreciation was, of course, the context of the Louvre Accord of February 22, 1987.

Alan Greenspan summed up the empirical evidence well at a Federal Open Market Committee meeting in October 2000: “There is no evidence, nor does anyone here [in the FOMC] believe that there is any evidence to confirm that sterilized intervention does anything.” (FOMC transcript, October 3, 2000, quoted in Bordo, Humpage, and Schwartz (2015)).

It is possible, of course, to move exchange markets temporarily even with sterilized intervention, but the impacts are uncertain. As I reported in Taylor (2007a, p. 276) based on my experience observing each daily intervention by the Japanese in real time during the period from 2002-2003: “If the Japanese intervene in the markets by buying a huge amount of dollars with yen, they can usually increase the price of the dollar relative to the yen. But the impacts of such interventions are temporary and their size is hard to predict because the volume of trading in the market is many times larger than even the largest interventions.” Nevertheless, I believe that these temporary effects can lead policymakers to intervene in the markets because it is harder to detect the offsetting effects as fundamentals soon overtake the intervention.⁵

The Impact on National Monetary Policies

A second key lesson from the Plaza Accord is related to the impacts of international agreements on monetary policy. In fact there were differential effects across participants in the Plaza Accord with monetary policy being affected in some countries and not in others. Compare, for example, monetary policy in Japan with that of the United States and other participants. The evidence shows that monetary policy was excessively restrictive in Japan in 1985 and 1986 and

⁵ The total amount of Japanese intervention during the 2003 was not sterilized in the sense that the monetary base increased during the period as part of quantitative easing. In fact, the sustained interventions during the year were viewed by me and other officials as a means of increasing money growth in Japan and thereby confronting the deflationary pressures.

then too expansionary from 1987 to 1990. This swing toward overly expansionary policy has been widely viewed as a factor in the boom and subsequent collapse in Japan in the 1990s.

The data suggest that the Plaza Accord, at least as it was implemented in Japan, played a role in this swing. Consider Figure 1 which comes directly from a chart published by the International Monetary Fund (2011). It shows the actual policy interest rate in Japan (the call money rate) along with the policy rate recommended by the Taylor rule as estimated by Leigh (2010) from 1984 to 1992. Jinushi, Kuroki and Miyao (2000) found similar results. Figure 1 shows how the interest rate was too high relative to the rules-based policy in late 1985 and throughout 1986. It also shows the swing with the policy rate set well below the rule from 1987 through 1990.

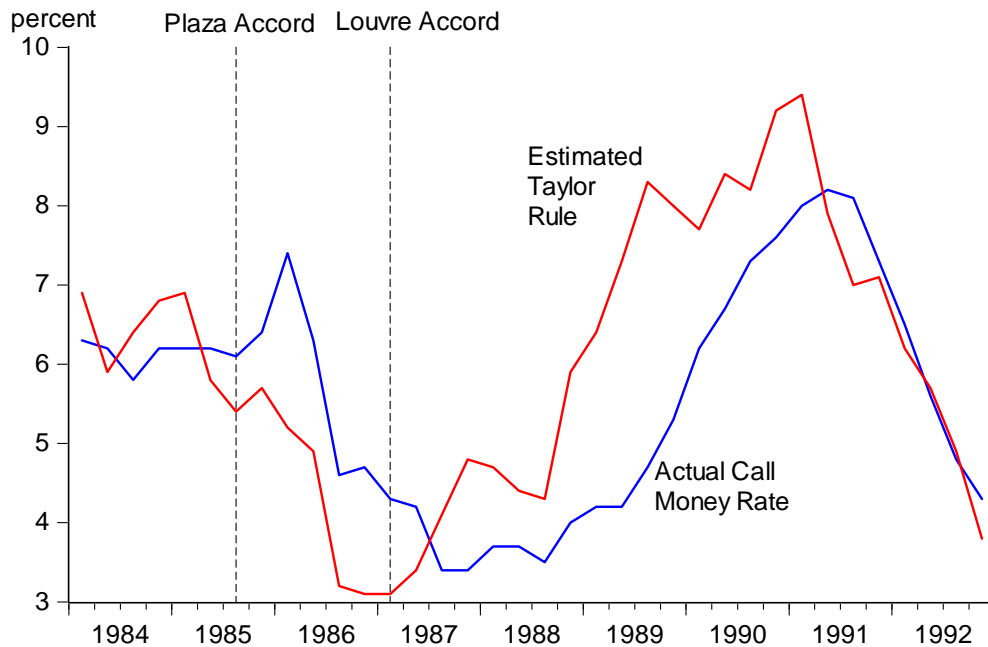


Figure 1. Interest Rate Policy in Japan, 1984-92

(For details on the estimation of Taylor rule, see Leigh (2010))

Source of Graph: IMF (2011), Box 1.4, Figure 1.4.1

The times of the Plaza and the Louvre meetings and resulting communiques are also marked in Figure 1. Observe how the move toward an excessively restrictive policy starts at the time of the Plaza meeting. Indeed, as Figure 1 shows, the Bank of Japan increased its policy rate by a large amount immediately following the Plaza meeting, which was in the opposite direction to what macroeconomic fundamentals of inflation and output were indicating. Then, after a year and a half, starting around the time of the Louvre Accord, Japanese monetary policy swung sharply in the other direction—toward excessive expansion. Figure 1 is remarkably clear about this move. According to the IMF (2011) calculations, the policy interest rate swung from being up to 2¼ percentage points too high between the Plaza and the Louvre Accord to being up to 3½ percentage points too low during the period of time from the Louvre Accord to 1990 “relative to an implicit Taylor rule based on the output and inflation outlook.”

The evidence of an effect of the Plaza Accord on Japanese monetary policy goes beyond this simple correlation between the timing of the meetings and the actual change in policy. The Plaza and Louvre communiques included specific commitments about Japanese monetary policy actions that pointed in that direction. In the Plaza Accord Statement, the Government of Japan committed to “flexible management of monetary policy with due attention to the yen rate.” And in the February 22 Louvre Accord Statement, “The Bank of Japan announced that it will reduce its discount rate by one half percent on February 23.” Thus, the deviations from the rules-based policy, as defined here, were clearly due to the way that Japan implemented the Plaza Accord and later the Louvre Accord.

Importantly, the Plaza and Louvre communiques had no similar statements about monetary policy for the Federal Reserve, the Deutsche Bank, the Bank of England or the Bank of France. For the United States the communique included many supply side or structural reforms

for the United States, including the commitment to “Implement revenue-neutral tax reform which will encourage savings, create new work incentives, and increase the efficiency of the economy, thereby fostering non-inflationary growth” a commitment that was indeed fulfilled in the 1986 tax reforms.

Paul Volcker's later comments on the Plaza Accord are particularly informative. They are an important part of the record and the lessons learned. Volcker (1994) explained that the Plaza Accord had no implication for U.S. monetary policy either explicit or implicit. He said that he was willing to go along with the agreement because he felt that Federal Reserve policy would not be tightened soon anyway. Volcker put it this way, “In fact, it was the absence of any need or desire to tighten that provided a ‘green light’ for the Plaza Agreement” (Volcker (1994, p 150).

To summarize, there were two different types of international cooperation underlying the Plaza Accord. For some participants—certainly the United States, but apparently also France, Germany and the UK—the strategy of the monetary authorities was not affected by the international cooperation. The meetings simply confirmed that the overall strategy that these central banks were pursuing would continue. For the Fed at the Plaza it was simply “to provide a financial environment conducive to sustainable growth and continued progress toward price stability.” For the Fed at the Louvre it was to say that “monetary policy will be consistent with economic expansion at a sustainable non-inflationary pace.” No mention of exchange rates; no mention of deviations from the rules-based policy that the Fed had been putting in place under Volcker. Nevertheless the dollar depreciated across the board—as much against the mark as against the yen—suggesting that it was part of a general reversal of the dollar appreciation experienced during 1981-1985 and related to the monetary policy strategy that Volcker and his colleagues at the Fed had put in place.

This does not mean that the discussions at these meetings—or at subsequent meetings—are without merit. As I argue below, it is beneficial for a central bank simply to describe, clarify and commit to a monetary strategy, including at these meetings. This enables other central banks to formulate and stick to their strategy, and the information reduces uncertainty and helps create stability in global markets. Moreover, the discussions among top economic and finance officials can relate to a host of other important issues—whether pro-growth tax policy, budget policy or international trade policy, as in the case of the Plaza Accord.

In many respects the monetary strategies of the United States and the European participants stated in the Plaza Accord continued and were a reason why the two decades following the Plaza Accord were NICE for these countries even though they were not so NICE for Japan. Indeed, there was another form of NICE, a nearly international cooperative equilibrium, due to these policies which would also last for two decades as I discuss below.

2. The Global Benefits of Rules-Based Monetary Policy

Economic research going back to the time of the Plaza Accord showed that simple rules-based monetary policy would result in good global economic performance.⁶ If each central bank adopted a rules-based monetary policy that was optimal for its own country's price and output stability, it would contribute to global stability. Moreover, there would be little additional gain from the central banks also jointly optimizing their policies, and in practice such joint actions could lead to unintended suboptimal behavior as the example of Japan following the Plaza Accord illustrates. In other words, the research showed that the Nash equilibrium—where each

⁶ See Carlozzi and Taylor (1985) and Taylor (1985), for example.

country chose its monetary strategy taking as given other countries' strategies—is nearly optimal, or nearly an internationally cooperative equilibrium.

In the models used in this research, capital is mobile, which is appropriate for the global economy, and rigidities exist including that prices and wage are sticky. There are cross-country linkages: the price of foreign imports affects domestic prices, and the real exchange rate, along with the real interest rate and expectations of future income, affect output. Shocks from abroad can hit anywhere. Monetary policy makers face a macroeconomic tradeoff between price stability and output stability, and they have the task of finding a policy strategy in which they adjust their monetary policy instrument to reach an optimal point on that tradeoff. The strategy must respond to shocks while not creating its own shocks either domestically or internationally.

The tradeoff is like a frontier. Monetary policy cannot take the economy to infeasible positions off the frontier. But suboptimal monetary policy—due to policy deviations, reacting to the wrong variables, etc.—can take the economy to inferior points off the tradeoff curve. Along the curve, lower price variability can only be achieved with greater output variability corresponding to different values of the reaction coefficients. The existence of such a tradeoff curve is quite general, and the modeling framework has been used in many different monetary policy studies going back to the 1970s and continuing today.

The important result for international policy is that such models imply that the central bank's choice of a policy *strategy* has little impact on output and price stability in the other countries. The tradeoff curves for other countries are virtually the same regardless of which of the optimal policies are chosen by each country. This is the sense in which there is little to be gained by countries coordinating their choice of policy rules with other countries if all are following policy rules that are optimal domestically.

The converse situation where monetary policy in one or more countries does not follow an optimal rule is less clear cut theoretically because it requires defining the nature of the deviation. Nevertheless, the tradeoff curves can be used to illustrate how such deviations from an optimal policy rule can lead to a breakdown in the international system.

Suppose a country deviates from its policy rule and moves in the direction of an inefficient policy. There are two types of impacts on other countries. First, the tradeoff curve in other countries shifts in an unfavorable direction, perhaps due to more volatile capital flows, exchange rates, commodity prices, and export demand. Second, less efficient monetary policy in one country brings about a less efficient monetary policy in other countries. For example, if the policy change in one country brings about an excessively easy policy with very low interest rates, then the policy makers in other countries—concerned about exchange rate appreciation—may deviate from their policy rule by setting interest rates that are too low.

The historical experience following the Plaza Accord has validated many of these theoretical predictions. As the United States and European central banks moved toward rules-based monetary policies, economic performance improved in the 1980s and 1990s, especially when compared with the instability of the 1970s. Evidence for this shift in policy was provided early on by Clarida, Gali, and Gertler (1998). When central banks in many emerging market countries started moving toward more rule-like policies with their inflation targeting approach, economic performance also improved. (De Gregorio (2014)).

During the past decade, however, policy has changed. I refer here not to the lender of last resort actions taken by the Fed and other central banks during the panic of the autumn of 2008, which were largely appropriate and effective in my view, but rather to the departures from rules-based policy before and after the panic. Empirical research by Ahrend (2010), Kahn (2010), and

Taylor (2007b) shows that a deviation from rules-based policy in the United States and other countries started about a decade ago—well before the financial crisis. Hofmann and Bogdanova (2012) show that there has been a “Global Great Deviation” which is continuing, especially when unconventional central bank interventions and large-scale balance sheet operations are included. Nikolsko-Rzhevskyy, Papell, and Prodan (2014) uncover these changes in policy using modern time series techniques. Associated with the change has been deterioration in economic performance, including the Great Recession, the slow recovery, large negative international spillovers, and an increase in the volatility of capital flows and exchange rates. Policy makers in emerging market countries, including Agustin Carsten (2015), have noted the adverse spillovers and many have had to resort to unusual policy actions. Policy makers in developed countries including Japan and Europe have reacted to the adverse exchange rate effects of monetary policies. International economists have raised concerns about currency wars.⁷

While there is general agreement about the first shift in policy in the early 1980s around the time of the Plaza Accord, there is still disagreement about the second and its timing. An alternative view is that the monetary policies have been appropriate during the past decade, even if they are not rule-like, and the recent deterioration in economic performance was not due to monetary policy deviating from a rules-based approach. Mervyn King (2012) argues that the tradeoff curve in many countries shifted in an unfavorable direction because financial stability during the NICE period eventually bred instability as investors got complacent. “Relative to a Taylor frontier that reflects only aggregate demand and cost shocks,” he writes “the addition of financial instability shocks generates what I call the Minsky-Taylor frontier.”

⁷ See Bergsten (2103).

And there is also disagreement about the international spillovers and the related problems with the international monetary system. Bernanke (2013) argues that it was appropriate for countries around the world to deviate during the years from 2009 to 2013 from the policies that worked during the NICE period.

3. Empirical Evidence on Global Effects

Because of these disagreements about the more recent shift in policy and especially the international impacts, it is important to look for and examine evidence that bears on this shift and its effects. Here I consider

- econometric models of spillover effects of policy deviations
- regressions showing policy contagion and the multiplier effects of such contagion
- the spread of unconventional monetary policy as weapons in currency wars
- the impact of policy deviations on other policies that detract from economic performance
- direct evidence that global economic instability has increased.

Evidence from Econometric Models on Spillovers of Monetary Policy Deviations

Consider the IMF's multi-country monetary model GPM6 , described in Carabenciov, Freedman, Garcia-Saltos, Laxton, Kamenik, and Manchev (2013). It is the IMF's main global model, including the United States, other developed countries, and emerging market countries in Latin American and Asia. Simulations of models in Volker Wieland's model data base⁸ show that the IMF model is not special. Other estimated multi-country models show impacts in the

⁸ Wieland, Cwik, Müller, Schmidt and Wolters (2012)

same general range, including the Fed’s SIGMA model vintage 2008 and the ECB’s New Area Wide Model (NAWM) vintage 2008.

Figure 2 summarizes the results of simulations with this model. It shows the impact of a deviation from a monetary policy rule in the United States on real output for a number of countries and regions: Japan, the Euro zone, Latin American countries (which include Brazil, Chile, Colombia, Mexico and Peru) and emerging Asia countries (which include China, India, South Korea, Indonesia, Taiwan, Thailand, Malaysia, Hong Kong, Philippines and Singapore).

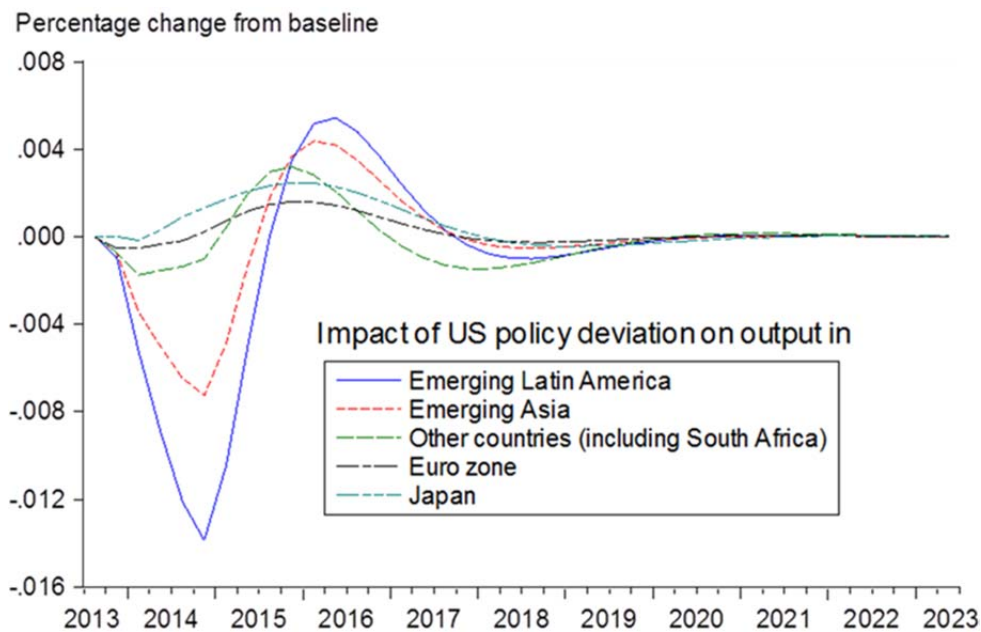


Figure 2: Output Effect of a US Policy Rule Deviation in the form of a temporary negative shock to US interest rate rule of 0.2 percentage points according to GPM6.

The deviation initially causes the U.S. interest rate to fall by about .2 percentage point and then the dynamics of the policy rule lead to a gradual rise in the interest rate back to its starting point in about 5 quarters. According to the GPM6 model there is a negative effect on

output in the Latin American and the Asian emerging market economies. For each percentage point monetary policy-induced increase in output in the United States, output falls by .25 percentage points in the Latin American countries and by .13 percentage points in the emerging Asian countries. As described by the authors of the IMF's GPM6 model this occurs because "the exchange rate channel is stronger than the direct output gap effect." The impact on other developed economies' output is not negative, but it is quite small. For example, Japan's output increases by only about 1/20th of the U.S. output increase in both models.

Note that these simulations contradict the view that deviations from the rules-based policy are beneficial abroad. Bernanke (2013) argued that "The benefits of monetary accommodation in the advanced economies are not created in any significant way by changes in exchange rates; they come instead from the support for domestic aggregate demand in each country or region. Moreover, because stronger growth in each economy confers beneficial spillovers to trading partners, these policies are not 'beggar-thy-neighbor' but rather are positive-sum, 'enrich-thy-neighbor' actions." The policy simulations do not support an enrich-thy-neighbor view.

Evidence of Monetary Policy Contagion and Multiplier Effects

Given these simulations it is not surprising that policy deviations at one central bank put pressures on other central banks to deviate. A reduction in policy interest rates abroad causes their exchange rate to appreciate, and even with offsetting effects due to economic expansion abroad, the overall spillover effect may well be negative. For the emerging market countries in Latin America and Asia, the exchange rate effect dominates. Central banks will tend to resist large appreciations of their currency, and one way to do so is to reduce their own policy rate

relative to what it would be otherwise. This will reduce the difference between the foreign interest rate and the domestic interest rate and will thus mitigate the appreciation of their exchange rate.

There is considerable empirical evidence of this impact of foreign interest rates on central bank decisions.⁹ The best evidence comes from central bankers themselves, many who readily admit to these reactions in conversations. The Norges Bank provides a great deal of detail about its decisions and the rationale for them. In 2010, for example, the Norges Bank explicitly reported that it lowered its policy interest rate because interest rates were lower abroad. The actual policy rate, at about 2%, was much lower than the rate implied by its domestic monetary policy rule, which called for a policy rate of about 4%. This deviation was almost entirely due to the very low interest rate abroad, according to the Norges Bank. It reported that a policy rule with external interest rates included came much closer to describing the actual decisions than the policy rules without external interest rates.

Regressions or estimates of policy rules provide considerable evidence of the spread of central bank policies. The recent work of Edwards (2015), Carstens (2015) and Gray (2013) is quite definitive. The usual approach is to estimate policy rate reaction functions in which the U.S. federal funds rate or other measures of foreign interest rates entered on the right hand side as deviations from their respective policy rules. The usual finding is that the reaction coefficient on the foreign rate is positive, large and significant.

In addition, this type of deviation from interest rate policy rules can create large international multiplier effects. The multiplier can be illustrated in the case of two countries with the diagram in Figure 3, where i and i_f represent the policy interest rates in the two countries.

⁹ See Taylor (2013) for more details.

Assume that the size of the deviation depends on interest rate settings at the central bank in the other country. In Figure 3 the first central bank has a response coefficient of .5 on the second central bank's policy interest rate and the second central bank has a response coefficient of 1 on the first central bank's interest rate. Suppose the first central bank cuts its interest rate by 1 percentage point below its normal policy rule setting. Then, the second central bank will also reduce its policy rate by 1 percentage point, which causes the first central bank to cut its interest rate by another .5 percentage point leading to another cut at the second central bank, and so on. The end result is a 2 percentage point rate cut, or a multiplier of 2. What may have appeared as a currency competition becomes an interest rate competition.

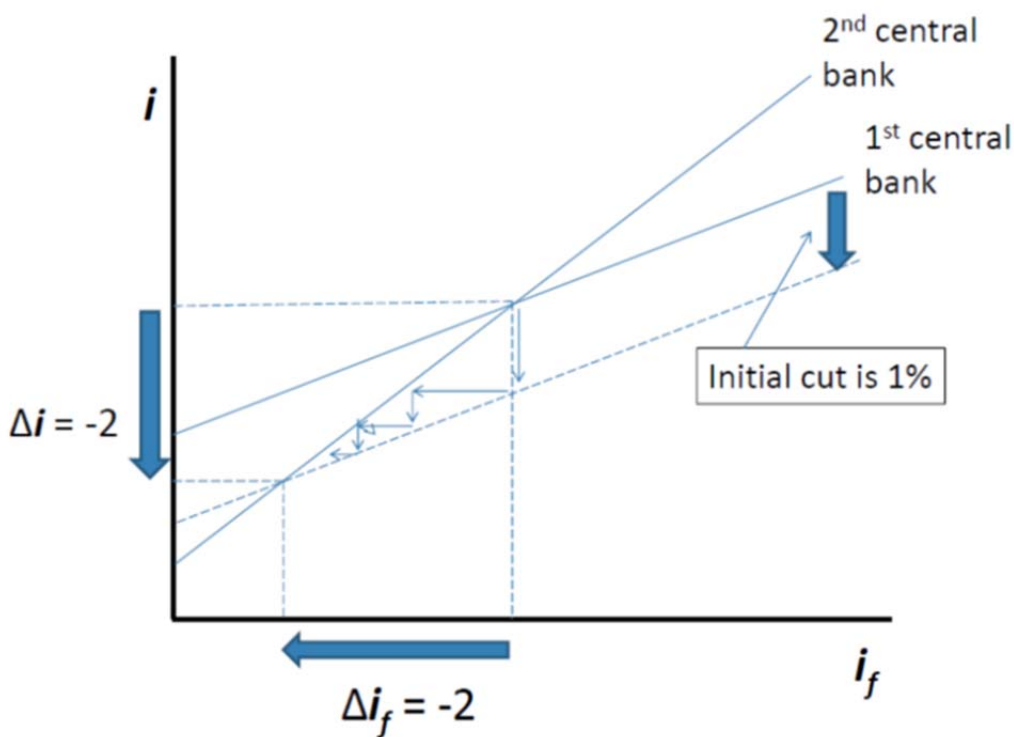


Figure 3: The Policy Deviations Multiplier at the International Level

Begetting Quantitative Easing Internationally and the Threat of Currency Wars

Just as interest rate policy deviations can be transmitted globally so can quantitative easing. Consider the possible impact of quantitative easing in the United States on exchange rates, focusing on the Japanese yen. Following the financial crisis and the start of the US recovery from 2008 to 2012, the yen significantly appreciated against the dollar as shown in Figure 4 while the Fed repeatedly extended its large scale asset purchases along with its zero interest rate policy with little or no response from the Bank of Japan.

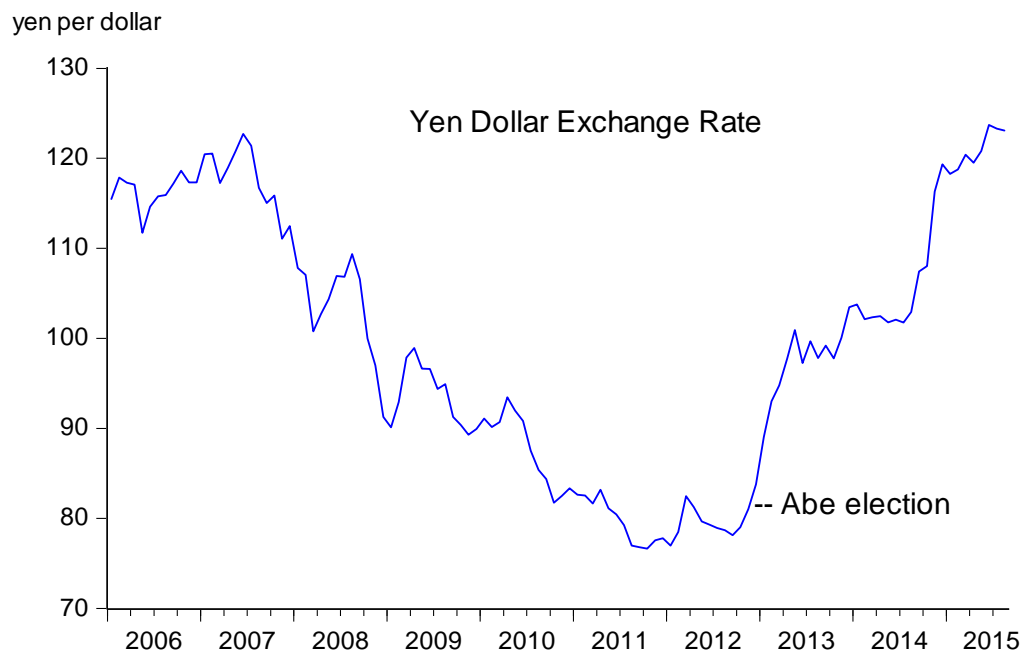


Figure 4. The Yen-Dollar Exchange Rate: 2006-2015

However, the adverse economic effects of the currency appreciation in Japan became a key issue in the 2012 election, and when the Abe government came into power it urged the Bank

of Japan to implement its own massive quantitative easing, and, with a new governor at the Bank of Japan, this is exactly what happened. As a result of this change in policy the yen fully reversed its course and has now depreciated to levels before the panic of 2008 as shown in Figure 4. In this way the quantitative easing policy of one central bank appeared to beget quantitative easing at another central bank.

The moves of the ECB toward quantitative easing in the past year seem to have similar motivations, and were likely influenced by the impacts of quantitative easing in Japan. An appreciating euro was in the view of the ECB a cause of the weak European economy, and the response was to initiate another large round of quantitative easing. At the Jackson Hole conference in August 2014, Mario Draghi spoke about his concerns about the strong Euro and hinted at quantitative easing, which then followed. This shift in policy was followed by a weaker euro and a stronger dollar as shown in Figure 5.

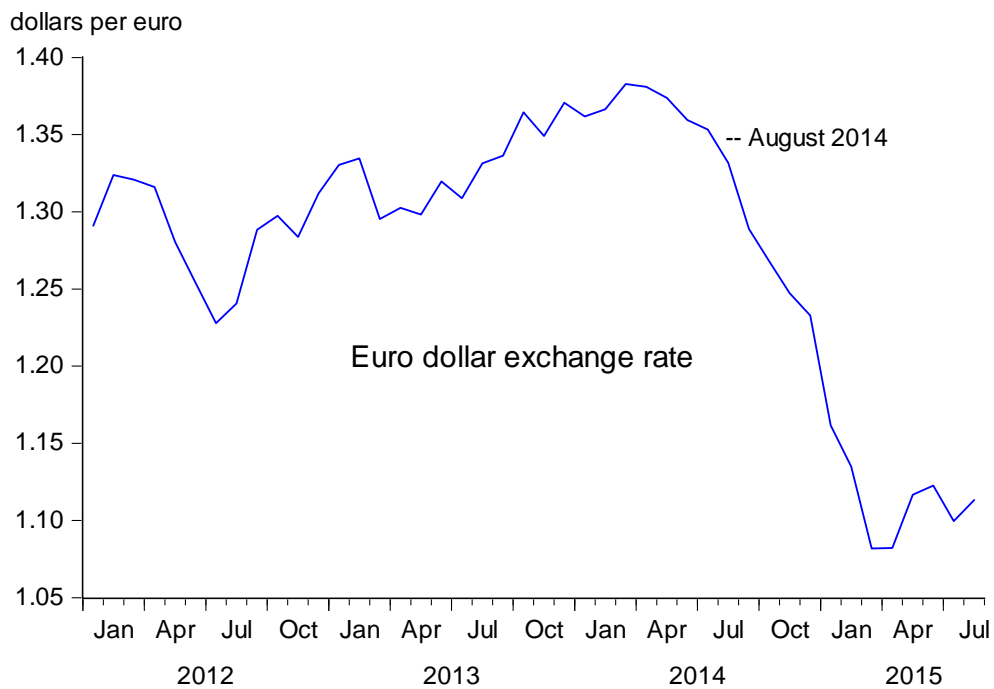


Figure 5. The Euro-Dollar Exchange Rate: 2012-2015

These actions were accompanied—with remarkably close timing—by widespread depreciations of currencies in emerging market countries as capital flows reversed. This is shown in Figure 6, which plots the dollar index against a large group of countries: Mexico, China, Taiwan, Korea, Singapore, Hong Kong, Malaysia, Brazil, Thailand, Philippines, Indonesia, India, Israel, Saudi Arabia, Russia, Argentina, Venezuela, Chile and Colombia. The taper tantrum of May-June 2013, in which the Fed first indicated it was going to wind down QE, was the beginning to the recent turbulence in capital flows and exchange rates, but August 2014 is a big turning point for currency markets.

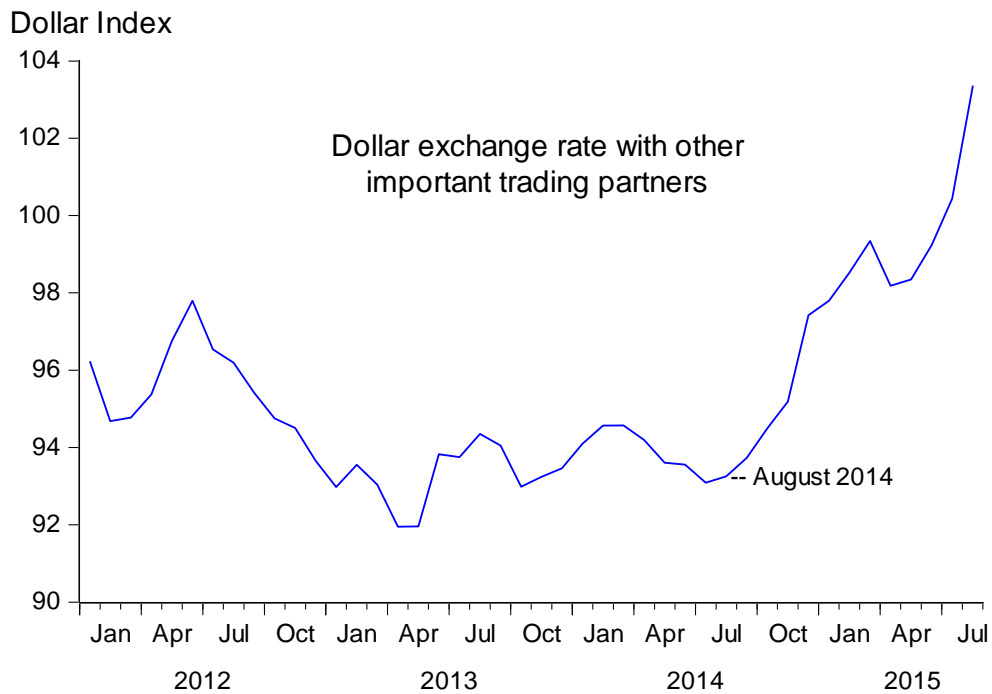


Figure 6. Exchange Rate of the Dollar against a Trade Weighted Average of Mexico, China, Taiwan, Korea, Singapore, Hong Kong, Malaysia, Brazil, Thailand, Philippines, Indonesia, India, Israel, Saudi Arabia, Russia, Argentina, Venezuela, Chile, Colombia.

With these currency developments in the background the actions of China to start to let the yuan move with other currencies and away from the dollar in August 2015 are understandable. There is also econometric evidence that quantitative easing has an impact on

monetary policy decisions abroad. Chen, Filardo, He and Zhu (2012) find that “the announcement of QE measures in one economy contributed to easier global liquidity conditions.”

The Impact of Policy Deviations on Other Policies

Concerned about the ramification of deviating from their normal monetary policy, many central banks have looked for other ways to deal with the impacts of policy deviations abroad. These include imposing capital controls, the proliferation of macro-prudential tools and currency intervention.

Capital Controls. Controls on capital flows, or what the IMF staff calls capital flow management, are usually aimed at containing the demand for local currency and its appreciation, but also to mitigate risky borrowing and volatile capital flows. However, capital controls create market distortions and may lead to instability as borrowers and lenders try to circumvent them and policy makers seek even more controls to prevent the circumventions. Capital controls are one reason why the output and price stability frontier will shift adversely, as discussed in the Section 2 of this paper. Capital controls also conflict with the goal of a more integrated global economy and higher long-term economic growth. Nevertheless, the unusual spillovers of recent years have led even the International Monetary Fund to suggest that capital controls might be used as a defense despite these harmful side effects.

Currency Intervention is another way countries try to prevent unwanted changes of a currency, either as an alternative or as a supplement to deviations of interest rates from normal policy. Currency intervention has been used widely in recent years by many emerging market countries. However, currency interventions can have adverse side effects even if they

temporarily prevent appreciation. If they are not accompanied by capital controls they require a change in monetary policy (nonsterilization) to be effective. In any case currency intervention leads to an accumulation of international reserves which must be invested somewhere. In the case where the low policy interest rates is set in the United States (such as in 2003-2005), the gross outflow of loans due to the low policy rates was accompanied by a gross inflow of funds from central banks into dollar denominated assets, such as U.S. Treasury or mortgage-backed securities which affects prices and yields on these securities.

Macro-Prudential Policies are another impact of policies from abroad. This is most obvious in small open economies closely tied to the dollar. Both Singapore and Hong Kong have had near zero short term interest rates in recent years because the Fed has had zero rates. Their pegged exchange rate regimes and open capital markets have left no alternative. So in order to contain inflationary pressures they have had no choice but to resort to discretionary interventions in housing or durable good markets, such as lowering required loan to value ratios in housing or requiring larger down payments for automobile purchases.

These policies are also becoming more popular in inflation targeting countries with flexible exchange rates. Discouraged from leaving interest rates at appropriate levels because of exchange rate concerns, they turn to such market specific measures. But so-called macro-prudential actions are inherently discretionary, and they expand the mission of central banks and bring them closer to politically sensitive areas. They also run the risk of becoming permanent even after unconventional policies abroad are removed. A regulatory regime aimed at containing risk taking is entirely appropriate, but that entails getting the levels right, not manipulating them as a substitute for overall monetary policy.

Capital Flows and Exchange Rate Volatility

The outflow of capital to emerging markets and the reversal of the past two years as well as the recent swings in exchange rates seem quite related in time to changes in monetary policy. Regarding the volatility of capital flows Rey (2014) writes that “our VAR analysis suggests that one important determinant of the global financial cycle is monetary policy in the center country, which affects leverage of global banks, credit flows and credit growth in the international financial system.” Figure 7, which is from Carstens (2015), shows a marked increase in volatility of capital flows to emerging markets since the recent deviation from rules-based policy began.

More work needs to be done, however, on the correlation between the documented deviations from rules-based monetary policy and the volatility of capital flows; additional tests of causation are also important. This empirical task is made more difficult by the lack of comparable data going back to the 1980s and 1990s and the staggered timing of countries adhering to and deviating from rules-based policy.

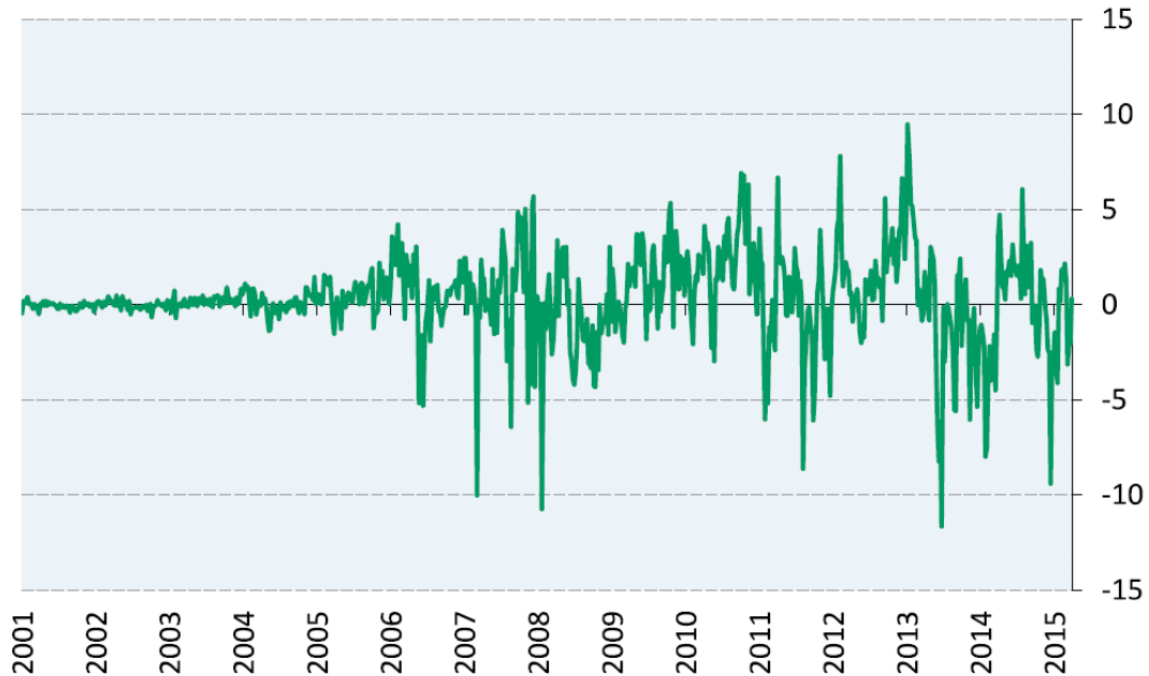


Figure 7. Emerging Market Capital Flows (Debt and Equity), Weekly, \$Billions
 Source of Chart: Agustin Carstens (2015)

Regarding exchange rate volatility, there has also been an increase in volatility. Figure 8 shows the 12 month percent change in the U.S. dollar index against “major” currencies as currently defined by the Federal Reserve (Euro Area, Canada, Japan, United Kingdom, Switzerland, Australia, and Sweden). The period shown is from the end of the Plaza-Louvre Accords through the present, with a marker indicating the time about which many have noted a shift away from rules-based policy. There is an increase in volatility in the second period compared to the first. The standard deviation during the post Plaza-Louvre period is 5.7 percent and increases to 8.2 percent in recent years. The max-min spreads also increase from (+12%, -12%) to (+20%, -15%). Note that the percent change in the past 12 months is the largest 12-month change in the entire period.

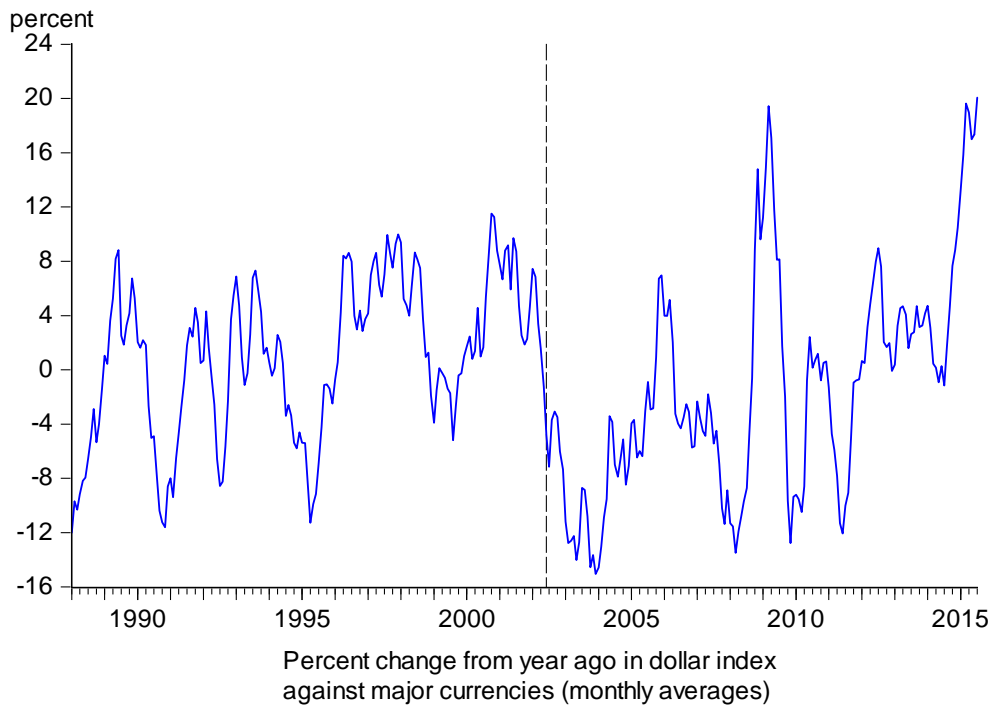


Figure 8. Exchange Rate Volatility: January 1988 – July 2015

4. Implementation

The evidence presented in this paper indicates that the key foundation of a rules-based international monetary system is simply a rules-based monetary policy in each nation. There is already an established body of research showing that the move toward rules-based monetary policy in the 1980s led to improved national and international performance in the 1980s and 1990s and until recently. And, although more research is needed, recent economic evidence indicates that the spread and amplification of deviations from rules-based monetary policy in the global economy are drivers of current instabilities in the international monetary system. Finally, research shows that each country following a rules-based monetary policy consistent with achieving national economic stability—and expecting other countries to do same—would take the world toward an international cooperative equilibrium.

Lessons from the Plaza Accord indicate that the process of each country reporting on its monetary policy strategy and agreeing to commit to that strategy can be an important means of building this foundation. The lessons also indicate that it is essential that the process not impinge on other countries' domestically optimal monetary strategies nor focus on sterilized currency intervention as an instrument. And, in keeping with the expansion of the global economy since the Plaza Accord, emerging market countries should be part of the process. It's a topic for the G20 and beyond, perhaps the BIS, but not just the G5 or the G7. A clear commitment by the Federal Reserve—still the world's most significant central bank with responsibility for the world's most significant currency—to move in this rules-based direction would help start the process. The staff of the International Monetary Fund or the Bank for International Settlements could be asked to help monitor and keep track of the strategies.

The barriers to implementing an international understanding and agreement along these lines may be surprising low. Of course some form of re-normalization of monetary policy, or at least intent to renormalize, is needed. After that comes goals and strategies for the instruments of policy to achieve the goals. 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.

Such a process poses no threat to either the national or international independence of central banks. It would be the job of each central bank to formulate and describe its strategy. Participants in the process or parties to the agreement would not have a say in the strategies of central banks in other countries or currency unions other than that they 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 in strategy and the reasons for it would presumably be part of the agreement.

Many have called for a new approach to the international monetary system, reflecting concerns about instabilities, international policy spillovers, volatile capital flows, risks of crises, or simply less than stellar economic performance. The Bank for International Settlements has been researching the issues and Jaime Caruana, the General Manager of the Bank for International Settlements, has made the practical case¹⁰. The approach suggested here may not be the most important part of such a reform, but it is supported by experience—including the lessons from Plaza Accord—and extensive research over the years. And it has the key prerequisites of a good, feasible reform: Each country can choose its own independent strategy, avoid interfering with the principles of free and open markets, and contribute to the common good of global stability and growth.

¹⁰ See Caruana (2012).

References

- Ahrend, Rudiger (2010), “Monetary Ease: A Factor Behind Financial Crises? Some Evidence from OECD Countries,” *Economics: The Open Access, Open Assessment E-Journal*, 4
- Bergsten, C. Fred (2013), “Currency Wars, the Economy of the United States and Reform of the International Monetary System,” Stavros Niarchos Foundation Lecture. May 16, Peterson Institute for International Economics
- Bernanke, Ben (2013), “Monetary Policy and the Global Economy,” London School of Economics, March 25
- Bordo, Michael D., Owen F. Humpage, and Anna J. Schwartz (2015), *Strained Relations: US Foreign Exchange Operations and Monetary Policy in the Twentieth Century*, University of Chicago Press, Chicago
- Carabenciov, Ioan, Charles Freedman, Roberto Garcia-Saltos, Douglas Laxton, Ondra Kamenik, Petar Manchev (2013) “GPM6: The Global Projection Model with 6 Regions,” IMF Working Paper, WP/13/87
- Carlozzi, Nicholas and John B. Taylor (1985), “International Capital Mobility and the Coordination of Monetary Rules” in J. Bhandhari (ed.) *Exchange Rate Management Under Uncertainty*, MIT Press,
[http://web.stanford.edu/~johntayl/Onlinepaperscombinedbyyear/1985/International Capital Mobility and the Coordination of Monetary Rules.pdf](http://web.stanford.edu/~johntayl/Onlinepaperscombinedbyyear/1985/International_Capital_Mobility_and_the_Coordination_of_Monetary_Rules.pdf)
- Carstens, Agustin (2015), “Challenges for Emerging Economies in the Face of Unconventional Monetary Policies in Advanced Economies,” Stavros Niarchos Foundation Lecture, Peterson Institute for International Economics, April 20

- Caruana, Jamie (2012), "Policymaking in an Interconnected World," presented at Federal Reserve Bank of Kansas City Policy Symposium on The Changing Policy Landscape, Jackson Hole, Wyoming, August 31
- Chen, Qianying, Andrew Filardo, Dong He and Feng Zhu (2012), "International Spillovers of Central Bank Balance Sheet Policies," BIS Papers, Number 66
- Clarida, Richard, Jordi Gali and Mark Gertler (2002), "A Simple Framework for International Monetary Policy Analysis," *Journal of Monetary Economics* 49: 879-904
- De Gregorio, Jose (2014) *How Latin America Weathered the Global Financial Crisis*, Peterson Institute for International Economics
- Edwards, Sebastian (2015) "Monetary Policy Independence under Flexible Exchange Rates: An Illusion?" NBER Working Paper No. 20893.
- Frankel, Jeffrey (1994), "Exchange Rate Policy: 1," in Martin Feldstein (Ed) *American Economic Policy in the 1980s*, National Bureau of Economic Research, University of Chicago Press, Chicago, pp. 293-341
- International Monetary Fund (2011), "Did the Plaza Accord Cause Japan's Lost Decades?" Box 1-4, *World Economic Outlook*, April
- Hofmann, Boris and Bilyana Bogdanova (2012), "Taylor Rules and Monetary Policy: A Global Great Deviation?" *BIS Quarterly Review*, September.
- Jinushi, Toshiki, Yoshihiro Kuroki and Ryuzo Miyao (2000), "Monetary Policy in Japan Since the Late 1980s, Delayed Policy Actions and Some Explanations," in *Japan's Financial Crisis and Its Parallels to U.S. Experience*, Ryoichi Mikitani and Adam S. Posen (Eds.), Institute for International Economics.

- Kahn, George A. (2010), “Taylor Rule Deviations and Financial Imbalances.” Federal Reserve Bank of Kansas City *Economic Review*, Second Quarter, 63–99.
- King, Mervyn (2012), “Twenty years of Inflation Targeting,” Stamp Memorial Lecture, London School of Economics, London, October 9
- Leigh, Daniel (2010), “Monetary Policy and the Lost Decade: Lessons from Japan,” *Journal of Money, Credit and Banking*, Vol. 42, No. 5, pp. 833–57.
- Louvre Accord Communique (1987) “Statement of the G6 Finance Ministers and Central Bank Governors: Canada, France, Germany, Japan, United Kingdom, United States,” Paris, February 22
- Nikolsko-Rzhevskyy, Alex, David H. Papell, Ruxandra Prodan (2014), “Deviations from Rules-Based Policy and Their Effects,” in *Frameworks for Central Banking in the Next Century*, Michael Bordo and John B. Taylor (Eds.), a Special Issue of the *Journal of Economic Dynamics and Control*, Volume 49, December, pp. 4-18.
- Obstfeld, Maurice (1990), “The Effectiveness of Foreign- Exchange Intervention: Recent Experience, 1985-88, in *International Policy Coordination and Exchange Rate Fluctuations*, W.H. Branson Ed.), Chicago: University of Chicago Press
- Plaza Accord Communique (1985), “Announcement the Ministers of Finance and Central Bank Governors of France, Germany, Japan, the United Kingdom, and the United States,” New York, September 22
- Rey, Helene (2014) “Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence,” presented at the August 2014 Jackson Hole Conference of the Kansas City Federal Reserve Bank.

- Taylor, John B. (1985), "International Coordination in the Design of Macroeconomic Policy Rules," *European Economic Review*, 28, 1985, pp. 53-81.
- Taylor, John B. (2007a), *Global Financial Warriors: The Untold Story of International Finance in the Post-9/11 World*, W.W. Norton, New York
- Taylor, John B. (2007b), "Housing and Monetary Policy," in *Housing, Housing Finance, and Monetary Policy*, Federal Reserve Bank of Kansas City, Sept., pp. 463-476.
- Taylor, John B. (2013), "International Monetary Coordination and the Great Deviation," *Journal of Policy Modeling*, 35 (3), May/June, pp. 463-472.
- Volcker, Paul A. (1994), "Monetary Policy: 2," in Martin Feldstein (Ed) *American Economic Policy in the 1980s*, National Bureau of Economic Research, University of Chicago Press, Chicago, pp. 145-156.
- Volcker, Paul A. (2014), "Remarks," Bretton Woods Committee Annual Meeting, June 17
<http://www.brettonwoods.org/sites/default/files/publications/Paul%20Volcker%20final%20Remarks%20June%202017.pdf>
- Wieland, Volker, Tobias Cwik, Gernot J. Müller, Sebastian Schmidt and Maik Wolters (2012), "A New comparative approach to macroeconomic modeling and policy analysis", *Journal of Economic Behavior and Organization*, August, Vol. 83, 523-541.