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Centre for International  
Governance Innovation

CIGI Papers No. 179 – July 2018

# Making Policy in Uncertain Times

## Lessons from the Past for Future Policy Frameworks

James A. Haley





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# Table of Contents

vi	About the Author
vii	About the Global Economy Program
1	Executive Summary
1	Introduction
2	Preliminaries: Coordination Failures in Policy Making
5	Past Arrangements for Growth and Stability
18	Lessons from the Crisis: Everything Old Is New Again?
21	Conclusions
25	Works Cited
30	About CIGI
30	À propos du CIGI

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## About the Author

**James A. Haley** is a CIGI senior fellow and former executive director for the Canadian-led constituency at the International Monetary Fund (IMF) in Washington, DC. He is currently a Canada Institute global fellow at the Woodrow Wilson International Center for Scholars in Washington. He served as Canada's executive director to the Inter-American Development Bank from 2012 to 2015. Prior to this appointment, he held a number of senior positions in the Canadian Treasury. As a senior official, he represented Canada at meetings of the Working Party 3 and the Economic Policy Committee of the Organisation for Economic Co-operation and Development, and on numerous international working groups. He also co-chaired the Group of Twenty working group on rebalancing the global economy. His professional experience includes service as research director in the International Department of the Bank of Canada and as a staff member of the Research Department of the IMF. He has lectured on macroeconomics, international finance and international financial institutions at the McCourt School of Public Policy, Georgetown University and at the Norman Paterson School of International Affairs, Carleton University. His published work has focused on international financial issues, the IMF and sovereign debt restructuring.

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# About the Global Economy Program

Addressing limitations in the ways nations tackle shared economic challenges, the Global Economy Program at CIGI strives to inform and guide policy debates through world-leading research and sustained stakeholder engagement.

With experts from academia, national agencies, international institutions and the private sector, the Global Economy Program supports research in the following areas: management of severe sovereign debt crises; central banking and international financial regulation; China's role in the global economy; governance and policies of the Bretton Woods institutions; the Group of Twenty; global, plurilateral and regional trade agreements; and financing sustainable development. Each year, the Global Economy Program hosts, co-hosts and participates in many events worldwide, working with trusted international partners, which allows the program to disseminate policy recommendations to an international audience of policy makers.

Through its research, collaboration and publications, the Global Economy Program informs decision makers, fosters dialogue and debate on policy-relevant ideas and strengthens multilateral responses to the most pressing international governance issues.





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## Executive Summary

This paper reviews lessons from past attempts to anchor fiscal and monetary policies to established policy rules with the aim of achieving better economic performance and financial stability. It is motivated by the observation that macroeconomic stabilization policy will likely be more active in the period ahead. In this environment, attention would focus on rules and policy frameworks to guide decisions. The paper highlights a critical international dimension to this discussion that arises because policies in one country can spillover to others. These interactions are governed by international financial arrangements or the “architecture” of the international monetary and financial system. Such arrangements and the cooperation they support determine the constraints under which domestic policies operate and the effectiveness of policy rules in securing shared objectives. The paper reviews past regimes and contends that in the pre-crisis period ambiguities with respect to these arrangements were a critical factor leading to the global financial crisis. Key lessons to guide the design of policy frameworks for the decades ahead are identified.

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## Introduction

Compared to the frenetic, frightening early days of the global financial crisis, advanced economies’ macroeconomic stabilization policies have been largely on “automatic pilot” for much of the past decade.<sup>1</sup> In the wake of crisis-induced stimulus packages and post-crisis austerity programs that have largely run their course, fiscal policy has been “broadly neutral” (International Monetary Fund [IMF] 2017, 10). Monetary policy was instrumental in arresting the panicked responses of investors and rebooting financial markets seized up in dysfunction at the height of the crisis. Most major central bank balance sheets ballooned in size as central bankers, having effectively reduced policy interest rates to the zero lower bound,

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1 Financial regulation has been where the action is. But financial regulation aimed at crisis prevention is generally not considered stabilization policy, per se. This taxonomy is retained here.

adopted quantitative easing to support recovery.<sup>2</sup> With greatly expanded balance sheets, the only question for major central banks in the transition to full employment has been how to best manage the mountain of assets they had acquired.<sup>3</sup>

The hiatus in stabilization policy is coming to an end, and policy making is about to get more challenging. This assessment reflects several factors. First, while it took far longer than expected, with the global economy now in broad expansion, the time for “normalization” of monetary policy is approaching. For the US Federal Reserve, at least, it has already arrived. Second, we are about to see if concerns of excessive risk taking, resulting from the prolonged period of historically low interest rates associated with the crisis response and quantitative easing, are validated. Third, fiscal policy is once again on the agenda. This renewed focus on fiscal policy is largely driven by US tax cuts and the deterioration in US fiscal balances these cuts are expected to generate. Whether they drive growth through supply side effects, as advocates claim, or not, as history suggests, the tax cuts will have spillover effects on other economies. Policy makers will have to anticipate and respond to these effects. Interest in fiscal policy also reflects a reappraisal of the role that fiscal policy can play, not just in stabilizing

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2 Meeting the challenges of conducting monetary policy in a liquidity trap – in which interest rates are sufficiently low to render bonds and money substitutes – was a key (but perhaps overlooked) lesson from the Great Depression. The supposed impotency of monetary policy led to the aphorism that attempting to stimulate the economy through monetary policy was analogous to “pushing on a string.” Milton Friedman and Anna Schwartz (1963) challenged the notion that monetary policy had lost its potency, amassing a wealth of data supporting the proposition that the Federal Reserve’s refusal to act, and not the impotency of monetary policy, led to the Great Depression (Bernanke 2004). As the global financial crisis (2008-2009) unfolded, that conclusion led to extraordinary efforts on the part of the US Federal Reserve Board and other central banks to avert an economic collapse. The subsequent tepid recovery suggests, however, that the “pushing on the string” metaphor should not be rejected out of hand.

3 This is obviously a caricature. In fact, central bankers were caught between those who warned of the dangers of excessive risk taking that the low interest rate environment would unleash and others warning of the costs of insufficiently aggressive efforts to return inflation to target. Of course, not all major central banks faced the same challenges. The Bank of Canada did not adopt quantitative easing. But, then, Canada did not suffer the same financial sector disruption that the United States and Europe, for example, experienced.

output around potential, but as an instrument for preventing and mitigating financial crises.<sup>4</sup>

Against this background, this paper reviews key issues in stabilization policy going forward and draws out lessons from past efforts to anchor and better coordinate fiscal and monetary policies. Policy rules provide a framework for decision making. In this respect, the paper is motivated by the possibility that such rules may appeal to those seeking stability in uncertain times.<sup>5</sup> This attraction warrants an important caveat: while policy rules reflect attempts to coordinate key instruments to promote better outcomes than what would be achieved in their absence, they can be a double-edged sword. Blind adherence to them when underlying conditions change or fealty to them wavers can have serious consequences.

It is also important to note that, because countries are linked through trade and financial integration, good economic performance is not just a question of getting domestic policies right. International monetary arrangements and the constraints on domestic policy frameworks they entail are critical to the shared objectives of trade, growth and employment. The interaction of policy frameworks is determined by the “architecture” of the international monetary and financial system. As Maurice Obstfeld and Alan M. Taylor (2017, 3) argue, “the architecture of the international monetary and financial system is a major determinant of how close the world economy can come to realizing its potential, and how serious are the risks of crisis and disruption.” The challenging policy environment that lies ahead makes it even more important that the international architecture is “fit for purpose.” In short, this paper looks at the issue of policy frameworks through a decidedly international lens.

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4 See Alan Blinder (2016). Blinder’s basic insight is that the pre-crisis assignment of monetary policy to economic stabilization and of fiscal policy to long-term stability of public finances was insufficient to contain risks of financial instability. The use of macroprudential policies can help limit the accumulation of such risks, but the effectiveness of these policies hinges on subtle interactions with monetary and fiscal policies. As discussed below, fiscal policy has international repercussions that militate for heightened cooperation, if not coordination. For the United States, cooperation and coordination are complicated by Congress’s budgetary responsibilities.

5 For example, in the worst recession since the Great Depression, some US Congressional Republicans called for a return to the gold standard see Appelbaum (2015). Ironically, as discussed more fully below, the gold exchange standard is regarded by most academics as a key cause of the duration and virulence of the Great Depression. Countries that exited the gold standard sooner, freeing domestic monetary policy to support growth, fared better than countries that retained their peg to gold in deference to the prevailing orthodoxy.

The road map for the rest of the paper follows. The analytical framework for the paper is presented in the next section, which demonstrates why otherwise sound domestic policies may not be optimal in an international context. The point is illustrated by recent experience. A key result of this discussion is that first-best outcomes may not be feasible in the absence of some means of supporting cooperation. After this, the next section reviews past efforts to achieve better economic performance through international arrangements (the “rules of the game” under the gold standard) and institutions (the IMF in the Bretton Woods era). It notes that the current system is marked by the absence of hard rules governing international adjustment. In the period leading to the global financial crisis, this lacuna allowed imbalances to accumulate and may have contributed to the crisis. The next section draws out lessons learned from the crisis. Some lessons reflect problems that are an echo of earlier international monetary and financial arrangements. This final section concludes the paper. Rather than a prescriptive proposal for renovations to the international financial architecture, it lays out considerations that should guide such efforts.

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## Preliminaries: Coordination Failures in Policy Making

In the autumn of 2008, global output, employment and trade were all in freefall following the Lehman Brothers bankruptcy. Group of Seven (G7) and Group of Twenty (G20) governments responded to the crisis by agreeing to a collective response that helped arrest the precipitous fall in output, trade and employment that threatened the global economy.<sup>6</sup> But was G7 and G20 action required? Would individual governments, acting in their own self-interest, respond in a similar manner? As outlined below, the answer to the second question is: “not necessarily.” Sometimes each individual country can be worse off if each pursue simple self-interest.

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6 Governments agreed to inject liquidity to support their financial system, resist protectionist measures and provide fiscal stimulus equal to two percent of GDP to support growth.

In such situations, governments can achieve better outcomes for all if they choose policies cooperatively. This answers the first question.

## Theory: Policy Making in a Prisoners' Dilemma

To see these results, consider a simple two-country prisoners' dilemma in fiscal policies (Table 1). The prisoners' dilemma reflects hypothetical trade-offs faced by home and foreign governments, or "players," when selecting optimal policies. This simple model is presented as a heuristic, intended to illustrate the effects of policy interactions on outcomes; it is not presented as a realistic depiction of the complexity of the real world.<sup>7</sup> Fiscal stimulus can reduce unemployment  $U$ , but increases the stock of debt,  $D$ .<sup>8</sup> Ideally, the two players would like to reduce both unemployment and debt. That outcome is not possible here, where the results of policy choices are given as changes in unemployment for the home (**foreign**) country as  $\Delta U$  ( $\Delta U^*$ ) and changes in the level of debt  $\Delta D$  ( $\Delta D^*$ ).<sup>9</sup> Home country outcomes are in the lower left of each cell of the matrix; outcomes for the foreign country are in the upper right of each cell.

The values for the changes in unemployment and debt in each cell reflect intuition and simple economics. Start with the upper-left cell, which describes the outcome when both countries stimulate. When home and foreign countries each undertake fiscal expansion, they enjoy positive spillover effects and higher growth. This conjuncture reduces unemployment by one percentage point, while debt increases by that amount. When neither country stimulates (lower-right cell), debt increases by less (three-quarters of one percentage point) than in the previous scenario, but unemployment falls by only half as much. This outcome may reflect

7 In this respect, as one reviewer rightly pointed out, the discussion here is very much a caricature and that game theoretic results depend on a wide range of considerations, including the number of players, the timeframe of the game ("one shot" versus repeated game context) and the rates of time preference of the various players. The key point is that policy choices that may be optimal in isolation may be inferior given the choices made by other players.

8 Intuition for the values in Table 1 is given below. For simplicity, assume that both central banks have driven short-term interests down to the zero lower bound and are committed to quantitative easing to support growth. There is no scope for coordination of monetary policy.

9 Note, however, that this does not preclude the possibility that fiscal stimulus improves debt sustainability despite an increase in the stock of debt. See note 10.

**Table 1: Prisoners' Dilemma in Fiscal Policies**

		Foreign	
		Stimulate	Do Not Stimulate
Home	Stimulate	$\Delta U^* = -1\%$ $\Delta D^* = 1\%$ $\Delta U = -1\%$ $\Delta D = 1\%$	$\Delta U^* = -0.75\%$ $\Delta D^* = 0.5\%$ $\Delta U = -0.75\%$ $\Delta D = 2\%$
	Do Not Stimulate	$\Delta U^* = -0.75\%$ $\Delta D^* = 2\%$ $\Delta U = -0.75\%$ $\Delta D = 0.5\%$	$\Delta U^* = -0.5\%$ $\Delta D^* = 0.75\%$ $\Delta U = -0.5\%$ $\Delta D = 0.75\%$

Source: Author's tabulation.

the fact that, while neither country is employing active fiscal stimulus, weakness in the economy means that the budget is in deficit (and the stock of debt is rising). Compare these results to the two cases in which one country stimulates and the other does not (bottom-left and upper-right cells). In these situations, the country undertaking fiscal stimulus experiences a large increase in debt (two percentage points) and an intermediate decline in unemployment of three-quarters of one percentage point. The intuition here is that fiscal stimulus adds demand that expands employment. Meanwhile, the country that refrains from injecting fiscal stimulus sees an increase in debt (again, from deficits that reflect economic weakness), but also records lower unemployment as some of the fiscal stimulus of the other country spills over with positive effects.

To determine the optimal play of the two countries, translate these outcomes into policy payoffs. Assume that governments want the biggest reduction in unemployment,  $U$ , for a given increase in the stock of debt. In other words, they seek to maximize  $-\Delta U/\Delta D$ . Calculating these trade-offs for each cell of Table 1 and substituting the transformations for the policy payoffs gives the matrix below (Table 2).

These outcomes are easily ranked. The home and foreign countries would clearly prefer the outcome in which both stimulate to the case in which both opt not to undertake fiscal

**Table 2: Payoffs to Home and Foreign Country**

		Foreign	
		Stimulate	Do Not Stimulate
Home	Stimulate	1	0.375
	Do Not Stimulate	1.5	0.67

Source: Author’s tabulation.

stimulus. But that outcome is dominated by the two cases in which one country stimulates and the other does not — each country would like to “free-ride” on the fiscal expansion of the other, benefiting from lower unemployment while containing the increase in debt.

To find the equilibrium outcome, we need to identify each player’s best play. First, consider the foreign country. It will choose “do not stimulate” because that play yields a higher payoff regardless of the response of the home country. The same is true, however, for the home country. Both, therefore, choose the “do not stimulate” option. Note that, while each country pursues policy to advance its own enlightened self-interest, the resulting outcome (0.67, 0.67) is strictly inferior to the case in which both stimulate (1, 1). A better option is available but, sadly, is seemingly out of their reach.<sup>10</sup>

## Application: Policy in the Great Recession

In the Great Recession that followed the global financial crisis, fiscal policies in key advanced economies turned neutral or embraced austerity after the initial fiscal stimulus orchestrated by then-IMF Managing Director Dominique Strauss-Kahn and adopted in the days after the Lehman Brothers collapse. This coordinated response avoided the pitfalls made 90 years earlier at the outset of the Great Depression and helped to buttress confidence

<sup>10</sup> Admittedly, this example is contrived; necessarily so, since it is intended to illustrate the analytical point above. The simplicity of the example is deceiving, however, since looking at recent events through the lens of a simple prisoners’ dilemma is instructive.

and arrest the collapse in economic activity that threatened the global economy.<sup>11</sup> As time went on, it became clear that the tepid pace of recovery in advanced economies at the epicentre of the financial crisis would not close output gaps or reduce unemployment rates for a protracted period.

In these circumstances, fiscal stimulus could have sped recovery, reducing the economic and social costs of persistently high unemployment. Moreover, as J. Bradford DeLong and Lawrence H. Summers (2012) demonstrate, in the conditions prevailing at the time, fiscal stimulus in key economies could have paid for itself in the higher growth it would have triggered.<sup>12</sup> A potential Pareto improvement — in which at least one person is made better off and none worse off — was, metaphorically speaking, left on the table. This is not supposed to happen.

Why, then, were governments so reluctant to undertake fiscal stimulus? A possible reason is that they felt ensnared in the prisoners’ dilemma game described by Table 2. Each “player” may have worried that, if they alone undertook fiscal stimulus, the benefits would be dissipated as higher spending spillovers to others.<sup>13</sup> Of course, the increase in debt load accompanying the stimulus would not be shared. This free-riding outcome on the part of those sharing in the benefits of fiscal stimulus is equivalent to the upper-right cell in Table 2. In this case, the home government would be exposed to criticism of ineffectual efforts to reduce unemployment and fiscal profligacy.

Political factors may have also played a role — perhaps the leading role — in limiting fiscal stimulus, even as theory and economic indicators pointed to the need for renewed efforts to hasten

<sup>11</sup> On this earlier episode and the lessons learned from it, see Haley (2012).

<sup>12</sup> Intuitively, with long-term government bond yields effectively at (or, in the case of Germany, below) zero and with ample excess capacity, fiscal stimulus that fuels higher growth would promote fiscal sustainability, as measured by the debt-to-GDP ratio. This result arises because, while the stock of debt (D) increases, the denominator (GDP) increases faster; the ratio of the two is reduced.

<sup>13</sup> In the Mundell-Fleming open economy model under flexible exchange rates, expansionary fiscal policy in one country benefits others as the country undertaking expansion imports more (exports from other countries increase). This outcome occurs because the fiscal stimulus generates currency appreciation, which provides a channel for the stimulative effect of fiscal expansion to spillover to other countries.

recovery.<sup>14</sup> Nevertheless, the potential criticisms above, to which governments pursuing stimulus might have been exposed, likely strengthened the potency of those political arguments.

## Cooperation and Institutions

The simple prisoners' dilemma example above illustrates a "folk theorem" of game theory: cooperative outcomes dominate non-cooperative outcomes.<sup>15</sup> This proposition follows from the observation that, were it not the case, the cooperative equilibrium — being voluntary — would not be agreed to; players would "defect" to the non-cooperative equilibrium that offers a higher payoff. However, the example above also reveals that cooperative agreements are unstable; a player may agree to a course of action to gain an advantage, only to change strategies at the other player's expense.

To see this effect, assume that the home country agreed with the foreign country that it would undertake fiscal stimulus provided the foreign country does likewise. If the home country goes ahead and incurs the higher debt associated with stimulus and the foreign country reneges, the home country would be in a position inferior to that of choosing not to stimulate. Symmetry in the payoff matrix given in Table 2 ensures that the foreign country confronts the same dilemma. Both players anticipate the defection of the other and choose the strategy that best protects their interests. They know they could do better if only the other could be trusted to execute the cooperative agreement. They cannot. The superior outcome for both (i.e., choosing "stimulate") is unsustainable without some mechanism to monitor and enforce cooperative agreements.

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14 Different factors may have applied in different countries. In the United States, it is difficult to avoid the conclusion that the dysfunctional nature of congressional politics played a role here, specifically, the desire to hinder the Obama administration for political, or other, reasons. In the United Kingdom, fiscal austerity may have been a cynical ploy to differentiate Oxonian Tories from New Labour. In Germany, which soon returned to full employment, fiscal austerity may have reflected the complexities of coalition government and the political exigency of constraining coalition partners. It should be noted that, in this period, German exports received a boost from existential fears for the euro stemming from the possible exit of highly indebted weaker members of the currency union. German fiscal stimulus would have assisted in the adjustment process for these weaker members and strengthened the euro.

15 In the jargon of game theory, the Nash non-cooperative equilibrium of each player acting on self-interest does not yield the Pareto optimal outcome.

In the context of the post-crisis response, the IMF played a critical role in coordinating a fiscal stimulus. The IMF's managing director at the time used moral suasion and drew on the IMF's analysis to persuade countries that failure to act could jeopardize their individual growth prospects and endanger the global economy. Meanwhile, IMF monitoring of fiscal outcomes would help deter "defections" from the cooperative outcome by reducing the risk of opportunistic behaviour. The appeal to private self-interest and public duty worked. However, once the immediate crisis phase of 2008-2009 passed, key countries returned to domestic policy concerns. Full employment was not quickly restored in most advanced economies, and economic performance remained anemic, a phenomenon Christine Lagarde, the current managing director of the IMF, labelled "the new normal."

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## Past Arrangements for Growth and Stability

In the wake of the economic disruption and extraordinary policy frameworks adopted in the global financial crisis, attention is once again focused on arrangements to promote policy stability and, with it, superior economic performance. This is not just a question of domestic policies. The search for sound policy frameworks must also consider the constraints imposed by international factors and the institutions that monitor and enforce them. These institutions can be "bricks and mortar" institutions with formal legal structures based in domestic law or international treaty obligations, such as the IMF. They can also be informal arrangements embodying a set of rules to anchor policy and condition expectations. The constraints that impinge on domestic policy frameworks are captured in the international trilemma, which links a country's decision to fix its exchange rate, permit free capital mobility and employ monetary policy to support domestic stabilization objectives: a country can pick any two of these policy options, but cannot choose all three.

The search for policy rules is the story of the trilemma; the narrative begins with the gold standard, which combined fixed exchange



rates and mobile capital. The trade-off was that it subordinated domestic policy stabilization to the maintenance of the peg to gold.

## Gold Standards – Old and New

Under the gold exchange standard, member countries fixed their currencies in terms of gold. Bilateral exchange rates were thus determined by the ratio of their “gold fixes.” While participation in the system was entirely voluntary and membership did not impose treaty obligations, as was the case under the Bretton Woods system that followed, or coordinate policies among its members, the efficient functioning of the gold standard relied on adherence to key “rules of the game” (Box 1). In this respect, membership in the gold standard club communicated a country’s commitment to certain policy rules, the quid pro quo that was a “seal of approval” and provided access to the global capital markets of the day — London, most importantly. Adherence to the rules constituted a commitment mechanism that prevented monetary and fiscal authorities from following otherwise time-inconsistent policies (Bordo and Kydland 1995).

The performance of the gold standard depended on how countries played by these rules. This is largely a story of the good, the bad and the ugly. First, consider the “good.” Modern advocates of fixed rules point to the pre-World War I period extending from 1870 to 1914 as the heyday of the classical gold standard. In this period, the system probably operated most closely to its theoretical ideal as described in the rules above.<sup>16</sup> Those four decades mark a transformation of the global economy, which underwent a remarkable process of economic and financial integration.<sup>17</sup>

The gold standard achieved a measure of success in anchoring expectations: if price inflation was observed, individuals would quickly expect deflation. At the same time, members’ commitments to their gold pegs were generally deemed credible. This credibility is evident in

financial markets. For example, once the United States joined the gold standard in the late 1870s, interest rates there converged on those of the United Kingdom.<sup>18</sup> This effect is readily explained in terms of capital mobility, which tends to equalize interest rates and eliminate a risk premium covering a possible exchange rate depreciation.

This outcome would not have been possible had the system lacked credibility. By this measure, the gold standard must be considered successful. However, the evidence also suggests that the system of “golden fetters” was not as rigid as is generally supposed.<sup>19</sup> Exchange rates were not cast in stone, but moved within clear bands; meanwhile, money supplies were not tied inextricably to the accumulation or loss of gold specie. Moreover, the gold standard of the period was notable for periodic bouts of inflation, followed by episodes of deflation.<sup>20</sup> Bank failures and panics were frequent, given the whip saw of price movements. In short, it was not a period of unalloyed stability; nor did the gold standard deliver superior growth (as compared to the post-World War II experience) (Bordo 1993). Nevertheless, conventional wisdom held that the system was synonymous with probity and sound judgment.

The second period of the gold exchange standard — war and debt — marks the “bad.” With the outbreak of war in July 1914, belligerent countries suspended their gold pegs and floated their currencies. This decision reflected the stark reality: the exigencies of maintaining the charnel house of the “war to end all wars” would entail budget deficits and the running down of gold reserves. The combatants knew that it would be impossible to adhere to the strictures of the gold standard had they tried. They did not.

16 Members did not always strictly adhere to the rules; Michael Bordo and Ronald MacDonald (2005) review the evidence on how closely the rules were applied.

17 The era is vividly described by John Maynard Keynes’s depiction of an archetypal English gentleman who, sitting in bed sipping his tea, is engaged in buying and selling commodities, stocks and bonds from around the world. See Keynes (1931). It was a truly remarkable age; indeed, the degree of capital mobility in this earlier age of globalization, as measured by the size of current account imbalances as a share of GDP, was only matched in recent years.

18 This result follows from free capital mobility and the credibility of the commitment to gold peg. With free capital mobility, domestic interest rates,  $r$ , would tend to reflect foreign (United Kingdom) rates,  $r^*$ , and the expected rate of depreciation:  $r = r^* + \theta$ , with  $\theta$  the expected rate of depreciation. If investors believe the commitment to the gold standard,  $\theta = 0$ , and interest rates equalize, then it must be the case that  $r = r^*$ . Interest rates did not equalize precisely, however, in part because of the transport costs involved in shipping gold bullion.

19 Barry Eichengreen (1984) refers to uncritical belief in the automaticity and efficient operation of the classical gold standard as “naïve” that is, at best, partial and, at worst, misleading.

20 See also Jordá, Schularick and Taylor (2016). Periodic episodes of deflation and the unemployment that accompanied them led to populist-inspired movements to abandon gold. In the United States, efforts to abandon the gold standard culminated in the 1896 presidential campaign with the Democratic Party candidate, William Jennings Bryan, declaring that New York bankers, who supported the conventional wisdom, “shall not crucify mankind upon a cross of gold.”

### Box 1: Rules of the Gold Exchange Standard

The gold standard was not a formal agreement, but an informal arrangement based on a set of commonly accepted rules governing countries that sought the stability and accepted the policy constraints that went with them. These rules included:

1. Fix a gold price and commit to convert gold freely between domestic money and gold at that price.
2. Do not restrict the export of gold by private citizens or of capital across countries.
3. Back national banknotes and coinage with gold reserves and tie long-run money growth to gold reserves.
4. In short-run liquidity crises resulting from a gold outflow, have the central bank extend liquidity at higher interest rates (Bagehot's Rule).
5. In the event rule 1 is suspended, restore convertibility at the earliest feasible time at the old parity.
6. Allow the common worldwide price level to be determined endogenously by world demand and supply of gold.

The first three rules constitute the mechanics of the gold standard; the last three are critical policy requirements. In this respect, rules 4, 5 and 6 were central to expectations. Provided the commitment to them was viewed as credible (i.e., countries would follow them), the system was expected to promote timely and orderly balance-of-payments adjustment and long-term price level stability.

These rules were not treaty-based obligations enforced by an international organization. However, key central banks, the Bank of England foremost among them, played a critical role in ensuring the orderly operation of the international payments system. The Bank of England could encourage adherence to the rules through its willingness (or reluctance) to provide liquid reserves to other members of the gold standard club. When the bank's gold reserves were depleted by World War I, its ability to enforce compliance was degraded with terrible consequences. In 1929, the Bank of England could not be a de facto international lender of last resort to a global economy in desperate need of one.

*Source: Ickes (2006).*

The third period in the history of the gold standard — the interwar period from 1925 to 1939 — is outright “ugly.” After World War I, countries were expected to return to the gold standard pursuant to rule 5 above. In 1925, Winston Churchill, then the Chancellor of the Exchequer, bowed to orthodoxy and returned the UK pound to its pre-war parity. This led Keynes to warn of dire consequences for the UK economy (Keynes 1931). Because of large money-financed deficits during the war, inflation soared in the postwar period. Keynes recognized that putting the pound back on gold at the pre-war parity would result in a large overvaluation. He was proven right; soon after the return to gold, the UK economy went into a deep recession.

The UK's woes were exacerbated by international considerations. France also returned to gold in 1926. However, it did so at a depreciated rate, mindful

of its postwar increase in the price level and the deterioration in competitive position that resulted. Moreover, France and the United States, which had accumulated gold reserves in the war as bankers to the belligerents, did not “play by the rules.” Both countries ran current account surpluses, which under the rules of the gold standard would have increased their money supplies. Rather than passively accommodate the increase in prices this would have entailed, both countries sterilized the gold inflows contrary to rule 6 above.

This is a critical point. Under the rules of the “good” pre-war gold standard, the burden of international adjustment is symmetric in the sense that both creditors and debtors share in the adjustment process. The mechanics of this process are straightforward. Current account surpluses add to gold reserves that expand the

money supply. Monetary expansion raises prices through inflation, which reduces competitiveness and, eventually, leads to smaller trade surpluses. In contrast, current account deficits lead to an outflow of gold, resulting in monetary contraction and falling prices, as unemployment drives down wages. Deflation enhances competitiveness and thus reduces trade deficits. In theory, surplus and deficit countries participate in a symmetric adjustment process — one through higher inflation, the other through deflation.

In the 1930s, actual practice was rather different. Because of divergences in adherence to the rules of the game in the interwar period, the burden of international adjustment was no longer symmetric. Deficit countries, bearing the full burden of adjustment, were forced to endure the high unemployment that was required to reduce nominal wages, which in turn would drive down prices and restore competitiveness. The result was international monetary arrangements that were dysfunctional, in contrast to the pre-war version of the gold standard.<sup>21</sup> Indeed, when the Great Depression struck, countries sought to retain their gold reserves by tightening monetary conditions and practising fiscal austerity. When such measures failed to bring relief, they resorted to trade protectionism to limit imports in an ill-fated attempt to prevent trade imbalances. Not surprisingly, these efforts, taken in the pursuit of individual self-interest, deepened and extended the global contraction.

In principle, the gold standard removed discretion from monetary policy, even if the actual operation of the system was more flexible in practice. For example, the pre-commitment embodied in the system implied that monetary policy could not finance large fiscal deficits and still maintain the peg to gold. In terms of the coordination game illustrated by a simple prisoners' dilemma, membership in the gold standard "club" was equivalent to pre-announcing a strategy of

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21 The efficacy of the gold standard in facilitating adjustment was also undermined by social and political developments resulting from the war. A key condition for the smooth operation of the adjustment process was nominal wage flexibility, which facilitates the real wage adjustment needed to ensure a timely return to full employment. Wages were more flexible before the war than afterwards, however. The slaughter of a generation of young men in the trenches of World War I meant that survivors were unwilling to accept the status quo ante — a new labour militancy, which in the United Kingdom was epitomized by the rise of the Labour Party, emerged. In this respect, broadening of the franchise probably rendered the gold standard unsustainable.

cooperation and sticking with it; if a country was on gold, others could form expectations of its policy frameworks. Provided everyone played by the rules, this pre-commitment contributed to an expansion in trade and capital flows that fuelled growth and the first age of globalization.<sup>22</sup>

In contrast, in the interwar period, players "defected" from the cooperative equilibrium of the prisoners' dilemma, as each hoarded gold reserves and sterilized gold inflows, contrary to the rules of the game. The asymmetry introduced by sterilization, under which surplus countries shifted the burden of adjustment to deficit countries, forcing them to deflate, is a fundamental cause of the Great Depression.<sup>23</sup> That outcome reflected the conscious policy decision of the Federal Reserve and the Banque de France to hoard gold reserves. As Charles Kindleberger (1973, 292) perceptively argued, "the 1929 Depression was so wide, so deep and so long because the international economic system was rendered unstable by British inability and United States unwillingness to assume responsibility for stabilizing it...as Britain had done in the nineteenth century and up to 1913. In 1929, the British couldn't and the United States wouldn't." In Kindleberger's telling, the Great Depression was propagated by the absence of an international leader capable of persuading others to adhere to a cooperative outcome, as the Bank of England had done in the pre-World War I period. As a result, non-cooperative policies beget non-cooperative responses, and the global economy sunk into stagnation. Gold was abandoned when the costs of adhering to the pre-commitment equilibrium became too great in terms of the economic, social and political costs.

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22 In practice, private capital flows reinforced the adjustment process, given the commitment of key countries (United Kingdom, France and Germany) to take the measures necessary to maintain convertibility to gold. The credibility of the system, therefore, ultimately rested on international cooperation, which was required when stabilizing speculation and domestic interventions were incapable of facilitating orderly adjustment. In most cases, this entailed tacit cooperation. Larger shocks required coordinated action since individual central banks would be loath to take unilateral action: if one central bank reduced its discount rate, but others failed to follow, that bank would suffer reserve losses and might be forced to reverse course to defend the convertibility of its currency. Forward-looking central banks recognized the shared interest that each had in preserving the system and were prepared to act to safeguard its stability.

23 Bordo and Eichengreen (1998, 41) explain the process succinctly: "... a system which relied on inelastically-supplied precious metal and elastically-supplied foreign exchange to meet the world economy's incremental demand for reserves was intrinsically fragile, prone to confidence problems, and a transmission belt for policy mistakes."

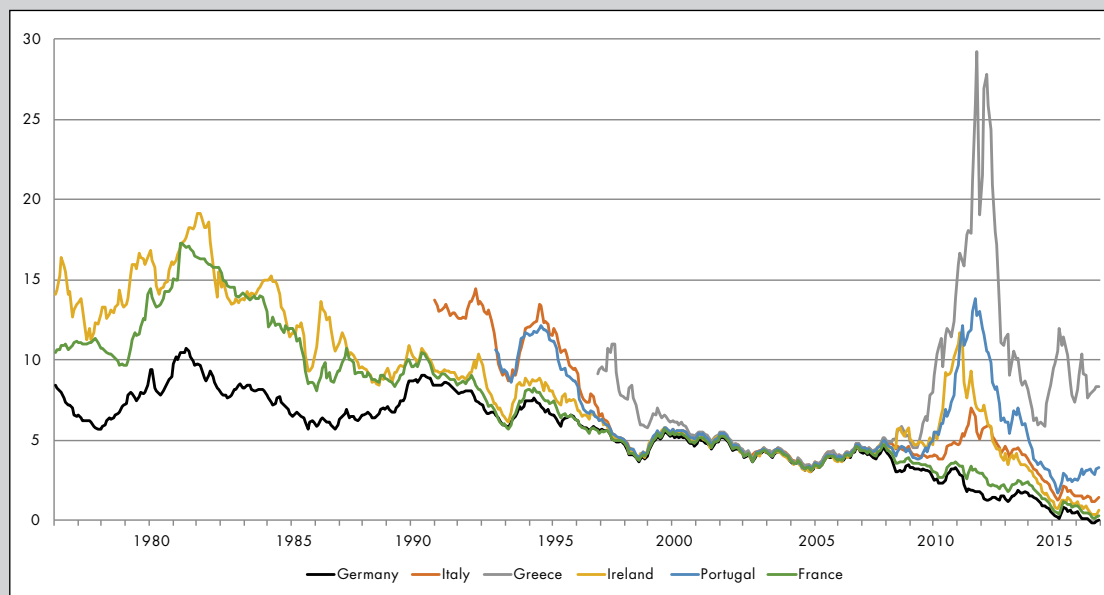


## Box 2: Commitment, Convergence and Performance under the Euro Zone

Efforts to further European integration were bolstered by the introduction of the euro currency in 2000. Adoption of the single currency undoubtedly marked an important step toward integration. A key objective was policy stability. By giving up national currencies, euro-zone members irrevocably committed to a fixed exchange rate vis-à-vis other members. This pre-commitment precluded the use of monetary policy to engineer exchange rate depreciations and, it was hoped, foster deep structural reforms that would unleash growth and transform the euro zone into an optimal currency area.

In this respect, the euro mirrors the gold standard. Just as interest rates converged under the gold standard, interest rates converged dramatically following the introduction of the euro. Indeed, forward-looking markets, anticipating monetary union, started the convergence process even before the actual introduction. This process reflected the decline in depreciation risk, which receded with successful monetary union, and the adoption of credible policy frameworks. Figure 1 shows, however, that the global financial crisis, which led to concerns that some members under severe stress might abandon the euro and reintroduce national currencies, resurrected the risk.

Figure 1: Euro-zone Yield Convergence



Source: Data retrieved from the Federal Reserve of St. Louis (FRED) database.

European monetary union also shared some undesirable features of the dysfunctional interwar gold exchange standard. Most important, the asymmetry of the adjustment burden. As the crisis deepened, it became clear that the fears that some might be forced out of the euro were inciting very large capital outflows. These flows moved to banks at the core of the euro, primarily German banks. Under flexible exchange rates, such outflows (inflows) would lead to a depreciation (appreciation) of currencies, re-balancing demand and reducing pressures on the system. (In this respect, fully flexible exchange rates mirror the theoretical symmetric effects of the gold standard.) In the event, the economic contraction in the euro zone also mirrored the experience of the dysfunctional gold standard of the interwar years. At its peak, unemployment in the most severely affected members matched Great Depression levels. Moreover, most euro-zone countries recorded below-potential output almost a full decade after the onset of the crisis.

Source: Author.

## Bretton Woods

The economic trauma of the Great Depression discredited the gold standard. And even as World War II raged, postwar planning focused on a system that would better balance the desire for monetary stability with the domestic stabilization policy objective of full employment. To achieve this felicitous balance, a different trilemma trade-off from the gold standard was made. The system that emerged from the Bretton Woods international monetary conference in August 1944 featured fixed — but adjustable — exchange rates and was consciously designed to facilitate the pursuit of domestic stabilization objectives. Mindful of the economic dislocation of the 1930s, and fearing the consequences or a relapse to high unemployment, governments committed themselves to full employment. The strictures of the trilemma thus dictated that capital controls be condoned.

The IMF played the role of monitor and enforcer of the cooperative agreement under the Bretton Woods system, assisting countries to deal with the trilemma.<sup>24</sup> Its origins lie in the failure of the United Kingdom or the United States to provide the public good of international financial stability in the interwar period. The two architects of the Bretton Woods system — Keynes and Harry Dexter White — had competing visions for the postwar international monetary order. Keynes sought the orderly recycling (i.e., to prevent “hoarding”) of foreign exchange reserves. This would be achieved by creating a clearing union to provide overdraft facilities through which surplus countries would automatically provide credits to countries with a deficit in their balance of payments. These overdrafts would avoid the need for deficit countries to deflate, as in the 1930s. For the United Kingdom, which was destined to suffer balance-of-payments difficulties for some time after the war, the Keynes plan was sensible indeed.

White rebuffed Keynes’s scheme on behalf of the United States, reflecting the economic and financial realities at the time. The United States held the bulk of global monetary gold reserves and was expected to be in surplus; it would be the one providing these overdrafts. US Treasury officials also worried that the Keynes plan would impart an inflationary bias to global finance that would be detrimental to US interests. At US insistence, the burden of

adjustment was put squarely on countries running balance-of-payments deficits.<sup>25</sup> The White plan therefore substituted an international stabilization fund (the IMF), which would make loans to deficit countries in support of adjustment policies.

Although the two plans differed in design, their underlying goal was the same. Both sought to avoid the dysfunctional features of the interwar gold standard period, when countries already in recession were forced to endure even more unemployment to get the deflation needed to achieve the real exchange rate depreciation required to facilitate international adjustment and payments equilibrium. The catastrophe of the 1930s demonstrated that real-side adjustment is not a frictionless process — forcing real wage adjustment through nominal wage reduction and moving workers from non-traded to traded sectors entails plant closures, unemployment and social and political disruption. The IMF would therefore assist countries to strike the right balance between financing and adjustment, so that they would eschew the beggar-thy-neighbour policies that harm all.<sup>26</sup> While countries could not evade the need for adjustment, adjustment would be spread out over time, reducing the economic, social and political disruption.

The Bretton Woods system fostered international monetary cooperation to prevent a relapse of the monetary disorder that marked the 1930s. It was designed to give governments the flexibility to pursue full employment, but limited discretion over exchange-rate changes. Under the rules of the system, small devaluations of up to three percent were sanctioned since this would reduce the build-up of payments imbalances that might undermine the credibility of the pegged system. However,

<sup>24</sup> Kathryn Dominguez (1993) explains the game theoretic basis for international institutions. Obstfeld and Taylor (2017) discuss the trilemma.

<sup>25</sup> Eichengreen (1992, 398) put it this way: “American dominance of the negotiations also was responsible for the inadequacies of the international adjustment mechanism under Bretton Woods. Owing to American opposition, no sanctions on surplus countries were instituted. No incentives for adjustment by countries persistently gaining reserves, other than the ultimately unworkable scarce currency clause, were incorporated into the Bretton Woods Agreement. Anticipating that the United States would be the main surplus country after the war, American officials used their leverage to eliminate provisions that might have forced them to revalue the dollar or pay a tax on their international reserves.”

<sup>26</sup> Such responses include: beggar-thy-neighbour policies (competitive devaluation) to avoid employment loss; protectionism, which elicits retaliation and tit-for-tat trade measures that eat up the gains from trade and shrinks the global pie; unsound domestic policies, including the pathological recourse to inflationary policies to cover the costs of adjustment or to punish foreign creditors, as was the case in Weimar Germany; and default and debt repudiation, as domestic residents balk at the adjustment costs associated with servicing foreign debt.

### Box 3: Asymmetric Adjustment and the Triffin Paradox

The architects of the Bretton Woods system hoped to avoid the monetary dysfunction that led to the Great Depression. In hindsight, it is fair to say that the new system helped address postwar adjustment challenges, in particular reconstruction and reintegration of former belligerents as trade partners. But the system suffered from a fundamental design flaw, and it eventually failed because it could not cope with the shocks and shifts in the global economy.

Because of US insistence, the burden of adjustment was put squarely on countries running balance-of-payments deficits. One result was an inconsistency in the system — the so-called Triffin paradox, named after the economist who first identified the problem. The paradox arose because growth in the postwar global economy required continual expansion of liquid international reserves — US dollars, which represented high-quality liquid “safe” assets, given the dollar’s anchor to gold. The United States was happy to supply the demand for safe assets since it reaped seigniorage on dollar creation, which led French President Charles de Gaulle to denounce the “exorbitant privilege” enjoyed by the United States under the Bretton Woods system. Yet, to supply needed reserves to the rest of the world, the United States, as the reserve currency country, had to run a balance-of-payments deficit. Paradoxically, this weakened the US reserve position and undermined confidence in the system.

Because of this asymmetry, the United States was relieved of the burden of adjustment. It could, in effect, issue more dollars to finance a current account deficit. Over time, however, the stock of US dollar assets held by foreign central banks exceeded the US Treasury’s stock of gold, and foreign central banks became increasingly worried that the United States would devalue the dollar, leaving them with losses. Confidence eroded. Considerable effort was expended to prevent a “run” on the dollar by encouraging foreign central banks to hold their assets, all to no avail. European central banks demanded gold in exchange for their holdings of US dollar assets. In 1971, President Richard Nixon shocked the world by announcing a devaluation of the dollar vis-à-vis gold. After several attempts to resuscitate the system through new parities, it was abandoned in 1973. The era of pure fiat money had begun.

Source: Author.

larger devaluations could only be made in response to conditions of “fundamental disequilibrium” and had to be sanctioned by the IMF.<sup>27</sup> This rule reflected concerns that large devaluations taken for the wrong reason (to unfairly game the system) would invite a response from the other players.

The Bretton Woods system, thus, combined rules (an “adjustable” peg) with the flexibility by which a national government could adopt stabilization policies in the pursuit of full employment. The system constrained domestic policies because the commitment to fixed exchange rates provided a

nominal anchor that tied down the price level.<sup>28</sup> Moreover, the system was self-enforcing to a degree, given the quid pro quo for Fund resources were painful adjustment policies.<sup>29</sup> Members knew inflationary policies would eventually lead to the loss of reserves that would trigger a distasteful prescription of austerity measures from the IMF “money doctors.” At the same time, because capital controls limited the size of external imbalances, the IMF was effective in resolving balance-of-payments problems, despite its modest size.

27 The fact that “fundamental disequilibrium” was never defined in the IMF *Articles of Agreement* led to bitter disputes as balance-of-payments imbalances mounted through the 1960s. Working Party Three (WP3) of the Organisation for Economic Co-operation and Development was formed as a neutral forum in which representatives of the major economies could discuss policies to foster orderly balance-of-payments adjustment. WP3 remains active today but has lost its cachet as the leading forum for international economic policy discussions.

28 In monetary theory, the price level is indeterminate without some anchor that ties down nominal values. In the gold standard, the anchor was provided by fixing the price of gold in terms of domestic currency. Under the Bretton Woods system, members fixed their currencies to the US dollar, while the dollar was tied to gold at US\$35/oz. This has led observers to call it a “gold-dollar” standard.

29 This effect mirrored the mechanics of adjustment under the gold standard. See note 22.

In terms of the prisoners' dilemma, the system sustained the cooperative equilibrium — provided fixed parities were maintained, members knew that others were not gaming the system with beggar-thy-neighbour devaluations. Meanwhile, the IMF's legal department policed members' adherence to the obligations of membership, particularly the commitment not to introduce restrictions on current account transactions. However, the asymmetry in the system under which the United States was relieved of the burden of adjustment meant that the anchor country at the core of the system was not constrained in the same manner and the system collapsed under the weight of growing imbalances that undermined confidence (Box 3). The currencies of most advanced countries were determined in currency exchange markets, albeit with more or less intervention determining the degree of flexibility.

## Policy without External Anchors: Adjustment under Flexible Exchange Rates

Freed of external constraints by their adoption of flexible exchange rates, major central banks were unmoored from the nominal anchors (gold and the dollar) that had previously guided policy making. But that freedom did not translate into complete independence. In part, this is because the adoption of flexible exchange rates incited private capital flows for hedging against exchange rate risk.<sup>30</sup> Ingenious ways were found to evade the capital controls that had supported fixed exchange rates under the Bretton Woods system, and policy makers soon faced the constraints of fickle private capital flows. In this respect, the trilemma trade-offs dictated that the pursuit of domestic stabilization objectives in an environment with capital mobility be supported by a flexible exchange rate. Under flexible exchange rates, policy choices in one country spilled over to others.

This was not the way it was supposed to be. Far from it. At the time, it was widely believed that smooth, orderly movements of exchange rates would unwind trade imbalances. Like the pre-World War I gold standard, the system of generalized flexible exchange rates envisioned

by Friedman in the 1950s featured an automatic, symmetric adjustment process (Friedman 1953). Currencies of countries with balance-of-payments surpluses (deficits) were expected to appreciate (depreciate), and with prices anchored by central banks, these nominal exchange rate changes would generate the real exchange rate appreciation (depreciation) needed to restore balance-of-payments equilibrium.<sup>31</sup> Provided countries limited their intervention and other manipulation (for example, through tariff policy), the burden of adjustment would be shared by both surplus and deficit countries.

In this respect, the pre-World War I gold standard and flexible exchange rates are close cousins — in one system, the commitment to peg the value of the currency in terms of gold provides the nominal anchor, with domestic prices the adjustment mechanism; in the other, the nominal anchor is supplied by controlling the growth of the money supply with the exchange rate bearing the burden of adjustment.<sup>32</sup> However, the two regimes differ with respect to the role played by private capital flows.

With the advent of flexible exchange rates in the 1970s, it soon became apparent that capital flows could trigger sudden large “jumps” in exchange rates. Rather than smooth, gradual adjustments, exchange rates displayed enormous volatility.<sup>33</sup> Because of these effects, the underlying real exchange rates that determine trade and output were subject to sudden bouts of overvaluation, resulting in large changes in competitiveness that gave domestic firms too little time to adjust and led to unemployment. Under such conditions, the threat of trade protectionism loomed large.

30 The benefits of access to foreign capital to smooth consumption in the wake of shocks to output and the ability to raise investment above domestic savings were also factors in the erosion and eventual removal of capital controls.

31 The real exchange rate is the nominal rate (determined in the foreign exchange market) between countries adjusted for differentials in price levels. If the nominal exchange rate is depreciating at 10 percent and the inflation differential between the same two countries is also 10 percent, the real exchange rate is unchanged. Friedman's framework hinged on price stability that would be delivered by central banks strictly controlling the growth of the money supply.

32 Friedman's framework for stability required central banks to strictly control the money supply and thereby the price level. Note, however, that Friedman's advocacy of flexible exchange rates rested on the Keynesian proposition that allowing one price — the exchange rate — to fluctuate was far less disruptive to the economy than forcing all domestic prices to adjust to preserve the domestic currency price of gold, as was required under the gold standard.

33 Rudiger Dornbusch (1976) captured these erratic movements in his celebrated model of exchange rate “overshooting.” The Dornbusch overshooting result reflects slow adjustment of goods prices combined with rapid forward-looking asset price adjustments.

Concerns were also aroused that private capital flows impeded the adjustment process by financing current account deficits that reflected a sustained misalignment of real exchange rates. This contrasts with the stabilizing role of capital flows in the classical gold standard.<sup>34</sup>

It soon became clear that a country pursuing monetary expansion could elicit a depreciation of its currency that raises output and reduces unemployment. Meanwhile, a series of negative supply side shocks, including abrupt increases in world oil prices in 1973 and 1979, contributed to lower output and higher unemployment. In the turbulent environment of the 1970s, major central banks therefore confronted the difficult decision of whether to force real-side adjustment by anchoring domestic prices to a low stable rate of inflation or pursue full employment by accommodating the shocks through monetary expansion.

Their challenge can be presented as a prisoners' dilemma (Table 3). The issue for each central bank is whether to undertake monetary expansion or refrain from expanding the money supply; once again, the outcome of their decisions depends on the strategy of the other "player." When both central banks expand (upper-left cell), unemployment falls in the two countries. The trade-off is a sharp increase in *home* and *foreign* inflation ( $\Delta\pi$ ,  $\Delta\pi^*$ ). If both refrain from monetary expansion (lower-right cell), the decline in unemployment is more modest, but so too is the increase in inflation. Outcomes in the two cases in which one central bank expands and the other does not (bottom-left and upper-right cells) reveal that each central bank has an incentive to "game" the other. If a central bank successfully convinces the other to refrain from monetary expansion while it expands the money supply, it can reduce unemployment with a moderate rise in inflation.

To determine the equilibrium in this game, assume that each central bank seeks to maximize the reduction in unemployment relative to the change in inflation for the *home* and foreign countries:  $-(\Delta U/\Delta\pi)$  and  $-(\Delta U^*/\Delta\pi^*)$  respectively. Transforming the outcomes for unemployment and inflation in Table 3 defines the payoffs for the two "players" (Table 4).

<sup>34</sup> See the discussion in note 22.

**Table 3: Prisoners' Dilemma in Monetary Policies**

Foreign	Expand	Do Not Expand
Home		
Expand	$\Delta U^* = -0.75\%$ $\Delta\pi^* = 1\%$ $\Delta U = -0.75\%$ $\Delta\pi = 1\%$	$\Delta U^* = 0.25\%$ $\Delta\pi^* = -0.5\%$ $\Delta U = -1.5\%$ $\Delta\pi = 0.75\%$
Do Not Expand	$\Delta U^* = -1.5\%$ $\Delta\pi^* = 0.75\%$ $\Delta U = 0.25\%$ $\Delta\pi = -0.5\%$	$\Delta U^* = -0.25\%$ $\Delta\pi^* = 0.25\%$ $\Delta U = -0.25\%$ $\Delta\pi = 0.25\%$

Source: Author's tabulation.

**Table 4: Payoffs to Home and Foreign Country**

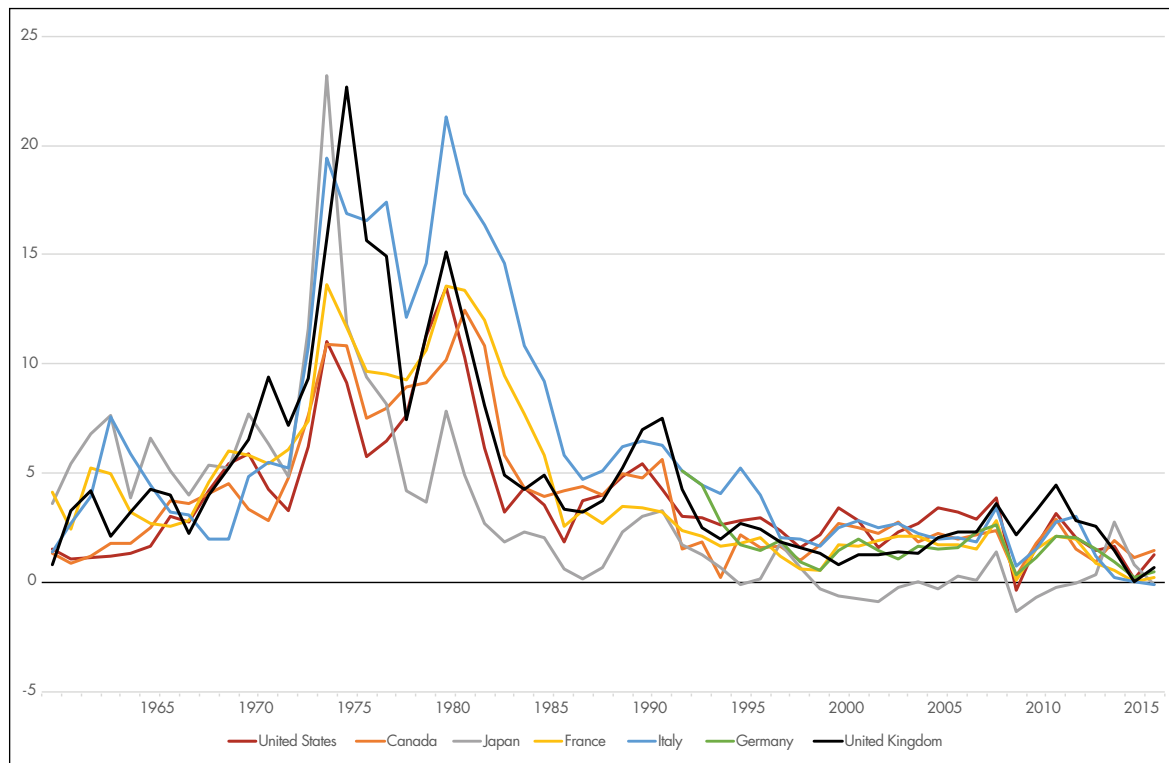
Foreign	Expand	Do Not Expand
Home		
Expand	0.75	0.5
Do Not Expand	2	1

Source: Author's tabulation.

The payoff structure of this game is familiar from the earlier discussion of fiscal stimulus. Here, however, monetary expansion is the dominant strategy. This is because if one central bank does not expand its money supply and the other does, it will suffer an appreciation of its currency with adverse effects on output and employment; currency appreciation leads to modest deflation. It therefore has an incentive to match the monetary expansion of the other "player." Symmetry in the payoff matrix implies that the other central bank has the identical incentive. Both expand. This non-cooperative outcome is inferior to a cooperative equilibrium in which both refrain from monetary expansion. But, as in the case of the prisoners' dilemma over fiscal stimulus, the superior equilibrium is unavailable.



Figure 2: Consumer Price Inflation in G7 Countries



Source: Data retrieved from the FRED database.

The coordination failure in collective decision making results in excessive monetary expansion that once again leaves both countries worse off. By itself, this simple — admittedly contrived — example does not adequately explain monetary policy making in the 1970s. But it does illustrate how the absence of clear rules for the sharing of adjustment burden may have led to a game of “hot potato,” similar to the use of beggar-thy-neighbour policies in the 1930s, as each country sought to use monetary expansion to maintain full employment in the face of real-side disturbances. In any event, the demise of the Bretton Woods system was accompanied by an increase in inflation in G7 countries (Figure 2). From low, stable rates in the 1960s, inflation spiked and remained volatile after oil-price shocks.<sup>35</sup>

<sup>35</sup> As Figure 2 shows, inflation rates did not recede until central bankers, in the 1980s, led by the chairman of the US Federal Reserve, Paul Volcker, embarked on a program of monetary disinflation to wring inflation out of the system and firmly anchor expectations. The success of these efforts — mostly built on inflation-targeting frameworks — has kept inflation low and stable for the past three decades.

Confronted with this experience, international policy makers acknowledged that the costs of non-cooperative outcomes to policy decision making could be high. In response, the major economies undertook efforts to harmonize policies through international policy coordination and cooperation. Their goal was to avoid costly policy errors by exchanging information and making policy commitments of varying credibility.<sup>36</sup>

Policy makers more generally also recognized that the loss of the IMF’s authority over exchange rates had created a lacuna in terms of members’ obligations to the international financial system. This led them to amend the IMF’s *Articles of Agreement* to clarify the role and responsibility of the Fund’s surveillance of members’ policies under flexible exchange rates. The *1977 Surveillance Decision* resulting from this process reflected concerns that flexible exchange rates could lead to large short-

<sup>36</sup> The process started with policy discussions involving the United States, the United Kingdom, France, Germany and Japan. Discussions were subsequently enlarged by the addition of Canada and Italy, to form the G7, which continues to this day.

run exchange rate misalignments (overvaluation, undervaluation) that would trigger large real-side adjustments (taking quarters or years to complete).

Underlying the 1977 Decision is the proposition that surveillance of fiscal and monetary policies could be used to identify situations in which policy inconsistencies were likely to lead to unsustainable imbalances that might be incompatible with long-run “fundamentals” and which might result in a sudden reversal in exchange rates. That view is correct, but the absence of firm obligations with respect to these policies meant that the IMF was less effective in promoting stability. Moreover, an asymmetry was introduced in the operations of the Fund: small members in financial distress and in need of IMF resources were compelled to heed the Fund’s policy strictures; larger members who could borrow in their own currencies were less susceptible to the policy advice and moral suasion of the IMF.<sup>37</sup>

These efforts to coordinate policy and strengthen IMF surveillance sought to assuage coordination failures by internalizing spillovers in decision making. In hindsight, they met with some success, if measured by the stability in the global economy over the past three decades despite large shocks, ranging from the collapse of the Soviet Union to the reintegration of China as an important global economic and financial partner. However, their importance should not be exaggerated. Other factors were also in play. While efforts were being made to improve policy coordination and strengthen IMF surveillance, central bankers around the globe embraced operating rules to guide their actions in the pursuit of growth and macroeconomic stability. Major central banks initially targeted the growth

of “money” (monetary aggregates) before settling on explicit inflation-targeting frameworks.<sup>38</sup>

## Rules, Discretion and Time Inconsistency

Underlying these rules is the recognition that policy making is subject to time inconsistency, the problem that decisions which are “optimal” *ex ante* may be suboptimal, *ex post*. A key result is that policy makers operating with complete discretion at each moment in time might not obtain the best possible long-term outcome. In such circumstances, limiting discretion through strategic pre-commitment to policy rules can improve outcomes.<sup>39</sup>

To better understand the concept, consider a situation in which the central bank sets money supply growth — and thus inflation ( $\pi$ ) — while wages are set by workers before the central bank moves (i.e., this is a sequential game). Workers want to protect their real wage from being eroded by inflation, but when real wages are reduced by high inflation, unemployment ( $u$ ) falls. This result creates an incentive for the central bank to try to game workers, not unlike the prisoners’ dilemma previously discussed. The dilemma is illustrated in a policy game between the central bank and workers making wage demands (Table 5). Outcomes for the different strategies are given by the inflation-unemployment couplets in each cell ( $\pi, u$ ) with inflation and unemployment rates given as percentages.<sup>40</sup>

The time inconsistency problem arises because, while low unemployment and low inflation are preferred, the authorities attach more weight to reducing unemployment. In contrast, workers simply want to protect their real wages. In this

37 Periodic efforts to strengthen surveillance and reduce the degree of asymmetry have been made over the past 40 years. A 2007 decision shifted the emphasis toward an assessment of whether a country’s exchange rate was “fundamentally misaligned,” by which the exchange rate was inconsistent with an equilibrium current account position. This test proved equally difficult to apply in practice, and the IMF subsequently replaced it in favour of more nuanced assessments of sustainability. Perhaps the most significant innovation is the 2012 Integrated Surveillance Decision, which clarifies that surveillance should focus on economic and financial stability at both the individual country and global levels and allows the IMF to discuss with a member country the full range of spillovers from its policies when they may have a significant impact on global stability. Despite these efforts, members’s obligations with respect to policy frameworks remain “soft” compared to the “hard” exchange rate commitments that were embodied in the Bretton Woods agreement. See Boughton (2014) for more on the evolution of IMF surveillance in this period.

38 Initial efforts to target monetary aggregates (following the Simons-Friedman’s “k-percent” rule) failed when relationships between targeted definitions of money and the underlying economy collapsed as near-substitutes for the aggregate were developed. The complete story of the search for a stable nominal anchor in the post-Bretton Woods era is too voluminous to cover here (and may be too sensational for some readers). Similarly, the literature on inflation targeting fills many volumes. Michael Woodford (2003) provides a comprehensive discussion.

39 Finn Kydland and Edward Prescott (1977) introduced time (or dynamic) inconsistency in economics, although the notion of strategic pre-commitment can be traced back to Homer (see Elster 1984). Stephen Cecchetti and Kermit Schoenholtz (2018) provide an excellent and accessible short introduction to the subject.

40 Again, note that the example is intended to illustrate an analytical point; it does not purport to be a wholly accurate explanation of actual outcomes.

**Table 5: The Inflation-Unemployment Game**

Money Growth ( $\pi$ )	High	Low
Wage Demands		
High	(6, 5)	(2, 7)
Low	(6, 3)	(2, 5)

Source: Author's tabulation.

set-up, if workers move first and choose low wages, the authorities choose high inflation to reduce real wages and raise employment. Conversely, if workers make high wage demands, the authorities again opt for high inflation, as this is the only way to minimize unemployment.

Since workers know the authorities will choose high inflation, it follows that workers will make high wage demands to protect real wages. This is not an optimal outcome. Everyone would be better off if wage demands are low and inflation is low. The question is how to sustain this equilibrium. The authorities could promise *ex ante* to deliver low inflation, hoping to induce low wage demands. But this commitment is not time consistent and hence not credible. Workers know the central bank has an incentive to renege on the promise once wages are set, unravelling the first-best outcome.

The problem here is that the authorities have too much discretion. If the authorities were bound by a credible low-inflation rule, workers might choose low wage demands and the superior outcome achieved. The inflation-targeting framework now employed by most central banks evolved in part to assuage this problem.

This framework embodies a clear assignment of policy instruments. Sound monetary and fiscal policies are both necessary conditions for good economic performance, with monetary policy focused exclusively on price stability as defined by an inflation target. This focus reflects the Tinbergen principle, which states that the number of objectives (targets) is limited by the number of independent available policy instruments (Tinbergen 1952). If the condition is not satisfied — if there are two targets, but only one instrument — attempts to achieve one objective may move

you further away from the other (Box 4).<sup>41</sup> By the late 1980s, it was widely believed that this effect accounted for the upward drift in inflation in the 1970s. Central banks had one instrument, but were asked to deliver stable prices and full employment.

Tinbergen's canonical result assumes that both macroeconomic policy instruments — monetary policy (M) and fiscal policy (G) — are determined by a single decision maker. In practice, in major economies, autonomous central banks with independence control M, while democratically accountable governments control G. This begs the question: what happens if two separate bodies control the two policy instruments and do not coordinate? Robert Mundell (1962) provided an answer, demonstrating that if instruments are assigned to the target for which they have the relatively strongest effect, it is possible to arrive at the optimal policy mix in a decentralized manner. Since inflation is most closely linked to money, monetary policy should target inflation. Fiscal policy should be used to target output. This results in the policy rules: M should rise when inflation is below target and fall when inflation is above target; G should rise when output is below target and fall when output is above target.

While Mundell's rules are consistent with an activist role for fiscal policy, as inflation-targeting evolved, the use of fiscal policy receded, and monetary policy increasingly bore the burden of stabilizing output around its potential level.<sup>42</sup> For inflation-targeting central banks, this objective was promoted through transparency of the inflation target and clarity of communications. Over time, success in achieving inflation targets would result in a steady accretion of credibility that would reduce the output costs of returning inflation

41 As an example, in the Mundell-Fleming model under fixed exchange rates and perfect capital mobility, efforts to achieve "external balance" (reducing balance-of-payments deficits) using contractionary fiscal policy moved the economy further from "internal balance" (full employment). To achieve both internal and external balance required another independent instrument — an exchange rate devaluation.

42 John B. Taylor (2000) articulated this view. As Blinder (2016, 5) notes, "These were not idiosyncratic views. There really was such a consensus." While policy makers recognized the possible need to mobilize fiscal policy in response to severe shocks (Taylor's "fail-safe device"), the notion that fiscal policy should eschew stabilization objectives was widely ingrained before the crisis.



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#### Box 4: The Tinbergen Principle

The Tinbergen principle is a simple application of linear algebra. To see this, first, specify the goal of stabilization policy as the maximization of social welfare. Because this is too nebulous to base policy decisions on, define targets consistent with those goals (for example, full unemployment, zero inflation). The final step is to identify policy instruments to achieve the targets — monetary policy (M) and fiscal policy (G).

Consider a simple generic example in which targets are  $T_1$  and  $T_2$ ; instruments  $I_1$  and  $I_2$ .

Assume targets can be expressed as linear functions of the instruments:

$$T_1 = a_1 I_1 + a_2 I_2$$

$$T_2 = b_1 I_1 + b_2 I_2$$

With two equations and two “unknowns” (targets), we can solve this to achieve our desired values ( $T_1^*$ ,  $T_2^*$ ) if the effects of the two instruments are linearly independent. When this condition is not satisfied (i.e., two targets with only one independent instrument), the policy maker will generally be able to achieve  $T_1^*$  or  $T_2^*$  but not both. This result is generalizable: with  $N$  targets, the policy maker requires  $N$  independent instruments. Consider the problem of using monetary instruments alone to reduce inflation and target full employment. Since inflation is a function of the output level, targeting both will generally be impossible — the authorities will have to “pick their poison” and decide which is the greater evil. More generally, when one instrument (i.e.,  $G$ ) is not available, it becomes impossible to achieve two independent targets.

Source: Author.

to target in the face of shocks.<sup>43</sup> Moreover, the importance attached to credibility led policy makers to focus on the need for effective institutions and policy rules: independent, accountable central banks to stabilize long-term inflation expectations, and fiscal rules to avoid excessive debt burdens and potential “fiscal dominance,” which, if left unchecked, might constrain monetary policy.

## Policy Frameworks before the Global Financial Crisis

Before the financial crisis, a broad consensus prevailed among practitioners and academics alike on the objectives of monetary, fiscal and financial

sector policies: monetary policy provided a nominal anchor for the economy; fiscal policy should smooth tax burdens associated with the provision of public goods and services, consistent with a target for public debt; and effective financial sector policies (embodied in microprudential regulation) were needed to safeguard financial stability. The deliberate pursuit of all three objectives, policy makers agreed, would foster long-term growth.

The period of macroeconomic stability preceding the crisis, labelled the “Great Moderation,” confirmed this consensus. Woodford (2003, 2) articulated the prevailing thinking:

This period of improved macroeconomic stability has coincided with a *reduction*, in certain senses, in the ambition of central banks’ efforts at macroeconomic stabilization. Banks around the world have committed themselves more explicitly to relatively straightforward objectives with regard to the control of inflation and have found when they do so that not only is it easier to control inflation that

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43 As Woodford (2003, 15-16) argued, “the present theory implies not only that price stability should matter in addition to stability of the output gap, but also that, at least under certain circumstances...the time-varying efficient level of output is the same (up to a constant, which does not affect the basic point) as the level of output that eliminates any incentives for firms on average to either raise or lower their prices.” Olivier Blanchard and Jordi Gali (2005, 2) referred to this felicitous property as the “divine coincidence.” In practice, central bankers recognized that temporary deviations from the inflation target may be required to close output gaps.

previous experience might have suggested, but that price stability creates a sound basis for real economic activity as well.

Monetary and fiscal politics were complementary in this framework, with good economic performance (stable growth, low inflation) dependent on the effective coordination of the two. As demonstrated above, this need for cooperation between the monetary and fiscal authorities derives from the fact that the non-cooperative equilibrium resulting from independent plays of separate authorities need not be efficient.

Meanwhile, financial sector policies were assigned the task of safeguarding stability. Most policy makers agreed this goal could be achieved through the prudent regulation of individual institutions — that if individual institutions had adequate capital and sound management, the system would be stable.<sup>44</sup> Of course, individual institutions were expected to fail, given the inherent nature of banking — characterized by the issuance of liquid, short-term liabilities and the holding of long-term illiquid assets. Nevertheless, policy makers believed that deposit insurance covering transactions balances, coupled with adequate supervision, would remove the threat of destructive bank runs, protect the payments system and safeguard the stability of the system in the event of individual failures.<sup>45</sup> Moreover, the spillover effects of such failures could be neutralized by timely action by the central bank acting as lender of last resort: a bank failure that triggers a panicked withdrawal of deposits from other institutions into short-term government securities could be offset by central bank liquidity injections that would be reversed once calm is restored and deposits return to the banking system.

In short, the framework used by policy makers before the crises assumed the financial system largely operated independently from the rest of the

economy and that the failure of individual financial institutions would not pose a systemic threat to the macro-economy. The pre-crisis framework was, thus, consistent with the proposition that, in the long run, real output is independent of money and nominal magnitudes, and it likely contributed to the view that credit responds passively to the real economy. In turn, this unidirectional view (the real economy causes credit growth and credit growth does not cause changes in the real economy) probably contributed to the parsimonious treatment of the financial sector in the macro models used for policy analysis.<sup>46</sup>

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## Lessons from the Crisis: Everything Old Is New Again?

The origins of the global financial crisis lie in the remarkably benign period of strong global growth and low interest rates in the pre-crisis years that encouraged excessive credit growth, weakened risk assessments and led to domestic imbalances, most notably asset price bubbles in housing markets. Of course, the risk of asset price bubbles was hotly debated before the crisis.<sup>47</sup> US Federal Reserve Chairman Alan Greenspan (2005) famously acknowledged the possibility of asset price bubbles, but rejected calls to act. He noted that it was difficult to distinguish a priori whether a run-up in asset prices reflected a bubble or the rational discounting of future profits. Acting pre-emptively to “prick” potential bubbles could, Greenspan argued, curtail capital market access for firms that might raise long-term growth through the innovative application of emerging technologies. His preferred approach was to “clean up” or mitigate the effects of collapsing bubbles after the

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44 This view was not universal. The Bank for International Settlements under the leadership of Andrew Crockett, Bill White and Claudio Borio raised the alarm and identified the need to consider systemic risks. Raghuram G. Rajan (2005), economic counsellor and director of research at the IMF at the time, also warned of growing risks.

45 Failures were not only accepted as inevitable, but as necessary to discipline management and avoid the moral hazard that deposit insurance could introduce into the system. While failures could result from a common regional real-side shock, potential interconnections between financial institutions across regions not exposed to such shocks, which could lead to a system-wide withdrawal of liquidity that drives down asset prices, may have been underappreciated.

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46 This approach ignored a growing body of work on the role of financial institutions in bridging information asymmetries and “completing” financial contracts by monitoring investment projects and enforcement of loan covenants and the role of credit constraints in propagating shocks. For the most part, the neglect can be attributed to pragmatic trade-offs in modelling and lags in the incorporation of theoretical insights rather than to willful disregard.

47 Analysis of the minutes of the Federal Open Market Committee shows that concerns over risks to financial stability were growing prior to the crisis (Peek, Rosengren and Tootell 2015).

fact. Greenspan believed that such costs would be contained *ex ante* by effective regulation and the growing sophistication of financial institutions and markets in which competitive pressures would create incentives for prudent risk taking and market discipline would enforce effective risk management frameworks.<sup>48</sup> In hindsight, the Great Moderation may more aptly be called the Great Illusion.

## Framework for Financial Stability

In the event, the crisis revealed significant weaknesses in the theoretical and empirical foundations of the prevailing consensus. Financial disruptions were shown to radiate through the financial system, amplifying the size of the shock and generating severe adverse effects on output and employment, which monetary policy alone had limited capacity to offset. In turn, these real-side effects feed back to the financial system through a range of effects, including falling asset prices and declining net worth, increased delinquency rates and higher loan losses and a loss of confidence.

In this respect, the crisis showed that the real economy is tied to the financial sector, and vice versa. One implication is that price stability is not a sufficient condition for financial stability, so that how monetary and prudential policies interact is of prime importance. Gill Hammond (2012, 16-17) acknowledged this issue in the Bank of England's *State of the Art in Inflation Targeting* report:

A key issue for central banks has been how to combine the goal of financial stability with the goal of price stability. It is clear that low and stable inflation does not guarantee financial stability...While inflation targeting generally resulted in low and stable consumer prices in the 1990s and early part of the 2000s, asset prices were more volatile, and there were long-standing concerns about the build-up of money and credit in some economies.

The policy assignment is more complex than that embodied in the pre-crisis framework. A preoccupation with a microeconomic perspective — the notion that if each individual institution held sufficient capital the system itself would be safe — was a critical weakness in the regulatory

<sup>48</sup> The unintended consequence of this was the moral hazard introduced by expectations that Fed policy would put a "safety net" under institutions taking reckless gambles.

environment. This view ignored externalities in the financial sector that invalidate the assumption that it is sufficient to regulate individual institutions; in fact, sound institutions are not synonymous with a sound and stable financial system.

Because of these weaknesses in policy frameworks, potential risks posed by financial market developments and possible interactions between financial markets and the real economy were underappreciated. The recognition of these risks, and of the role they played in amplifying and transmitting financial disruption throughout the financial system and around the globe, accounts for the widespread acceptance of the need for macroprudential policies. These measures, which are intended to contain the build-up of systemic risks by leaning against credit and asset price cycles, include counter-cyclical capital adequacy, with counter-cyclical capital requirements varied by sector (i.e., commercial real estate), and direct borrower-focused policies, such as loan-to-value ratios, either applied continuously or varied through the cycle. In this respect, the underlying goal of macroprudential policies is to address systemic risk through proactive actions.<sup>49</sup>

The case for macroprudential measures is straightforward when viewed through the lens of the Tinbergen principle. Indeed, defining financial stability as a separate goal alongside price stability provides a compelling justification for the design and deployment of macroprudential measures, given evidence that the credit cycle is distinct from the business cycle, with longer cycles and more pronounced peaks and troughs (Haldane 2014; Aikman, Haldane and Nelson 2013). If the two cycles coincided, one instrument would suffice: monetary policy that smoothed the business cycle would also contain the build-up of risks that could undermine financial stability. In the absence of this felicitous coincidence, macroprudential measures complement monetary policy, freeing the central bank to focus on price stability while the macroprudential regulator targets financial stability.

Policy makers also underestimated the challenges central banks can face in restoring

<sup>49</sup> Xavier Freixas, Luc Laeven and José-Luis Peydró (2015, 73) contend that, "because systemic crises arise from the buildup of imbalances in the financial sector, the *ex ante* prevention of excessive risk-taking and avoidance of the buildup of excessive financial imbalances (not just *ex post* crisis management and resolution) should be a crucial objective of macroprudential policy."

the economy to full employment in the wake of severe financial disruptions.<sup>50</sup> The uneven, uncertain and anemic performance of the global economy in the decade after the onset of the global financial crisis, during which monetary policy struggled to raise inflation to its target and close output gaps, has focused attention on the limitations of monetary policy, and underscores the importance of better coordination of the two key tools of stabilization policy (Furman 2016).

## Fiscal Policy Reconsidered

Such coordination may have been hindered by pre-crisis policy orthodoxy that precluded the use of fiscal policy to achieve short-term stabilization objectives. In the wake of the crisis, this article of faith is under review. Blinder (2016, 22) contends that the proposition that “fiscal policy is superfluous because monetary policy can always do the job” has been proven to be “demonstrably false.” The crisis demonstrates that fiscal policy should support monetary policy in an environment in which the financial sector is engaged in a protracted process of deleveraging. The premature withdrawal of fiscal stimulus in key advanced countries meant that monetary policy single-handedly shouldered responsibility for supporting growth, leading to concerns about the longer-term effects of protracted use of extraordinary monetary policies. A more robust fiscal response to close output gaps earlier might have allowed monetary policy to “renormalize” sooner, reducing threats to financial stability from protracted low interest rates.

## International Dimensions

In the first instance, fundamental weaknesses in domestic policy frameworks were the cause of the financial crisis. However, there is also an international dimension. Fixed or heavily managed exchange rate regimes are implicated here, as rapidly growing reserve holdings by foreign central banks financed large US current account deficits, suppressing interest rate increases that might otherwise have pricked or contained nascent asset price bubbles.<sup>51</sup> Reserve accumulation on the part of foreign central banks may have been a prudent response to the risks associated with sudden

stops and reversals of capital flows following the Asian financial crisis (1997-1998). But as Ben Bernanke (2005) observed, the resulting savings “glut” dampened the rise of US long-term bond yields (a “conundrum” to former Fed chairman Alan Greenspan), providing fertile ground for rising asset prices. Moreover, with the US dollar-remnimb exchange rate effectively fixed, another key channel of adjustment was suppressed, as rapid expansion of the Chinese export sector imparted downward pressure on US goods’ price inflation.

These factors, combined with an uncritical reliance on inflation targeting, cultivated a sense of complacency with respect to growing risks.<sup>52</sup> With the benefit of hindsight, monetary policy, which was primarily focused on Consumer Price Inflation (CPI), failed to incorporate the consequences of latent deflationary pressures “imported” through growing trade imbalances. While goods’ prices were seemingly well contained, in retrospect, that apparent stability masked asset price inflation and the build-up of dangerously overleveraged positions. In short, domestic monetary policy that was judged to be broadly appropriate based on CPI inflation provided fertile ground for growing systemic risks in the context of international policy arrangements.

Prior to the crisis, ambiguities with respect to these arrangements contributed to large external imbalances. The financial counterpart to trade imbalances was the accumulation by central banks of highly rated, liquid US dollar-denominated assets. These so-called safe assets play an important role in providing collateral to the global financial system, in addition to store of value services. In addition, the “financialization” of the global economy was dependent on a growing stock of safe assets outside the United States. This conjuncture was comparable to the Bretton Woods experience, during which the US dollar provided the international reserve asset to finance burgeoning global trade.<sup>53</sup> This expansion of liquidity, which formed the basis of the Triffin paradox in the

52 See Beckworth (2014) for a clear statement of this perspective.

53 These similarities led some to argue that a de facto new Bretton Woods had been established (Dooley, Folkerts-Landau and Garber 2004). A key difference between the two episodes is that, in the latter, safe assets were generated by private markets employing securitization and supposedly sophisticated financial engineering that transformed pools of risky assets into claims on risk-free assets. For a discussion on issues surrounding safe assets, see Caballero, Farhi and Gourinchas (2017).

50 In some respects, Japan’s ongoing battle with deflation following a collapse in real estate prices was an object lesson. Timely, aggressive monetary ease pursued with the necessary resolve would, it was believed, be sufficient to end deflation. See Bernanke (2000).

51 See, for example, Haley (2009).

Bretton Woods era, was ultimately unsustainable, nor was it sustainable in the later period.<sup>54</sup>

The question, although, is what accounts for the accumulation of imbalances and the absence of adjustment in the pre-crisis period. Central bank sterilization of current account surpluses in the pre-crisis period thwarted exchange rate adjustment that would have created stronger consumer demand. In effect, Bernanke's savings "glut" was tantamount to a global paradox of thrift. The fundamental problem was who would bear the burden of adjustment. As the issuer of the international reserve asset and global medium of exchange, the United States was in a difficult position: if other countries pegged their currencies to the dollar, it could only achieve real exchange rate depreciation through deflation.<sup>55</sup> But this would require higher unemployment to bring down wage demands and, eventually, inflation.

In this respect, this experience mirrors the situation in the interwar years during which some central banks hoarded gold reserves and sterilized the effects of higher gold reserves on monetary policy, thereby destroying purchasing power. Their actions forced deflation on countries already in economic distress and led to beggar-thy-neighbour policies in the face of financial crises. In both episodes, confusion over the rules of adjustment and a perceived asymmetry in the burden of adjustment meant that adjustment was deferred.

In another respect, however, the pre-crisis conjuncture shares similarities to the exchange rate policy game in the early years of the post-Bretton Woods period described by the prisoners' dilemma in Table 4. As in that earlier period, the challenge was to sustain full employment in the face of a real-side shock. The dilemma in the pre-crisis period reflected structural changes in the global economy stemming from China's pursuit of a long-term strategy to close

the yawning gap between living standards: a "great leap" across the development divide.

Moreover, in the wake of the crisis, it became clear that not all major players shared the same model or were following the same rules of the game.<sup>56</sup> In the event, given the ambiguities in the rules of the game with respect to obligations for international adjustment and the IMF's limited capacity to exert moral suasion, key economies fell back to non-cooperative strategies that, arguably, prolonged the downturn and saddled economies with legacies of high unemployment and the impotency of existing authorities. These legacies provided the soil in which populism has grown.

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## Conclusions

The global economy is emerging from the long shadow cast by the global financial crisis. Global growth has strengthened — albeit unevenly — and prospects for future growth are probably brighter now than at any time in the past decade. As output gaps close and employment converges to full employment in the advanced countries that were the epicentre of the global financial crisis, monetary authorities will have to begin the process of normalization — transiting from the extraordinary policy responses adopted in the crisis, which were designed to stem financial panic and foster recovery. For the United States at least, that time may have already come.

This transition would be challenging without additional complications. But the current US policy environment is even more difficult given recent fiscal policy actions: large tax cuts, coupled with an expansion in planned fiscal expenditures, increase the risks of possible policy errors associated with the rebalancing of monetary conditions. The stance of US fiscal policy also imparts uncertainty

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54 The ingenious argument made at the time was that the United States could run large persistent imbalances because it was, in effect, exporting invisible services through its role as issuer of the international reserve asset. Foreign central banks and others were prepared to hold US assets, the argument went, because of the stability and transparency of its policy frameworks and the independence of its judiciary and primacy of the rule of law. Such exports were analogous to "dark matter" in theoretical physics, which is invoked to explain why the universe is less entropic than theory suggests (Huasman and Sturzenegger 2005).

55 Hélène Rey and her collaborators have explored the implications of this asymmetry (see, for example, Gourinchas and Rey 2016).

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56 Macroeconomic policy debates at the IMF and in the G20 Imbalances Working Group and other international fora in the post-crisis period revealed clear differences regarding the efficacy of demand management stabilization policy to restore full employment. German authorities disparaged such policies, arguing that structural reforms should be relied on to restore growth. Whether this position reflected their use of a different economic model or merely political factors, as discussed above, is unclear.



with respect to long-term fiscal sustainability.<sup>57</sup> These actions have no support in past policy frameworks. Contrary to popular perception (or intentional misdirection), Keynes was not an advocate of fiscal profligacy. Fiscal policy should, he argued, offset the vagaries of private investment spending, which reflected the “animal spirits” of expectations and confidence. In other words, it was reserved for counter-cyclical stabilization.<sup>58</sup> “The boom, not the slump,” Keynes (1982, 390) argued, “is the right time for austerity at the Treasury.” Recent US fiscal measures invert this logic.

International factors also make policy making in the period ahead challenging. The integration of China into the global economy has been a critical driver of global economic developments for the past two decades. Following China’s accession to the World Trade Organization in 2000, Chinese exports have limited global goods’ price inflation. Provided a near-limitless supply of un- or under-employed labour was available to move from agriculture into industry, global inflationary pressures were muted. That wellspring of Chinese labour may be nearing exhaustion. At the same time, as incomes in China rise, latent pressure on consumer demand will increase. The upshot may well be growing price pressures. Meanwhile, protectionist pressures loom large. The US administration has imposed trade actions that have elicited retaliatory responses. Escalation of such measures and countermeasures could imperil the global trading system, with unknown effects.

In this environment, attention is likely to focus on the use of policy rules to help guide decision

making. Efforts to provide greater predictability and more transparent policy regimes are laudable. This review of theory and history also points to potential pitfalls that may befall those who seek stability through rules.<sup>59</sup> While the attraction of firm rules to guide decision making in a complex and uncertain environment is understandable, blind adherence to them can magnify policy errors that keep economies from full employment or result in the loss of the gains from trade that the international architecture has fostered. The resulting conjuncture would ferment economic nationalism and further fuel populist politics and the polarization of policies.

Avoiding this outcome must be a priority. The conclusions of this paper, which might help prevent this scenario, are presented in the three following broad areas.

## Monetary and Financial Sector Policy Frameworks

*Better integrate financial stability into monetary policy.* In the pre-crisis paradigm that guided most advanced economies, financial institutions, markets and the financial system generally were considered in the context of banks’ role in creating money through the money multiplier. The prevailing consensus on the goals of monetary, fiscal and financial sector policies was reflected in a clear assignment of policy instruments. Central banks were to use policy rates to achieve their inflation targets, while prudential regulators focused on the soundness of individual institutions.<sup>60</sup> Fiscal policy was focused on debt sustainability to prevent large deficits and fiscal dominance interfering with the monetary authorities’ ability to target inflation. Subordination of wider financial stability concerns probably reflected the hegemony of the Tinbergen principle: if the central bank is targeting inflation, it cannot be distracted by

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57 The combined effect of tax cuts skewed to higher incomes and a significant increase in public debt implies that middle- and lower-income families will likely bear a larger share of the debt burden. Coming on top of three decades of growing inequality and loss of social mobility, recent actions could further undermine the social and political consensus on which long-term fiscal sustainability is based. The threat to this consensus was a fundamental factor behind Standard and Poor’s downgrade of US Treasury securities in 2011.

58 Similarly, Friedman argued for counter-cyclical fiscal policy (Friedman 1948). But whereas Keynes saw government spending restoring full through the multiplier, Friedman’s framework relied on the effects of those deficits on the money supply. Money-financed deficits would return output to its full employment level. In his framework, Friedman would bar the government from issuing interest-bearing securities while requiring banks to hold 100 percent reserves – precluding monetary expansion through fractional reserve banking. With the budget balanced over the cycle and government expenditures set to provide key public goods, the stability of the economy would not be imperilled by the harmful effects of discretionary actions of individuals, regardless of their good intentions. In this respect, Friedman was following the policy prescriptions of Henry Simons (1936), who eschewed discretion in favour of rules in the conduct of policy.

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59 It is instructive to note a major change in financial policy in the wake of the crisis, namely the US Congress’s decision to constrain the ability of the Fed to act in exigent circumstances to limit financial panic through extraordinary policy measures. These constraints reflect the presumption that “rules” trump (no pun intended) “discretion.” It is curious, therefore, that the financial meltdown following the bankruptcy of Lehman Brothers was triggered by the decision to adhere to a “no bailout” policy to prevent moral hazard infecting the system. By that point, however, the policy was not dynamically consistent.

60 It was also believed that central banks could always restore calm should it be necessary. Regrettably, this perception led to a problem of time inconsistency – commitments to allow market discipline to work were widely viewed as dynamically inconsistent by “too big to fail” banks that engaged in imprudent risk taking.

other objectives.<sup>61</sup> In the wake of the crisis, there is far less certainty that a 1:1 mapping between policy instruments and targets is possible.<sup>62</sup>

*Distinguish between economic weather and the climate.* The ability of a policy rule to deliver superior economic performance is not invariant to the conditions under which it is applied. This requires policy makers to distinguish the economic “weather” from economic climate change. The former conditions are the shocks from which policy rules provide shelter. In the halcyon days of the Great Moderation, the challenge was to minimize deviations from full employment in the pursuit of price stability, while responding to transitory shocks emanating from domestic and foreign sources. In contrast, changes to the economic climate reflect underlying structural changes in the global economy. The inflation-targeting regime that many central banks adopted in the wake of the inflationary experience of the 1970s and the Volcker deflation provided guidance to policies in the prevailing weather. China’s integration fundamentally changed the economic climate as millions of low-wage workers were added to the global economy. A framework for anchoring nominal values could not cope with the real-side effects that followed China’s re-entry into the global economy.<sup>63</sup>

*Use rules and discretion.* Narayana Kocherlakota (2016) argues that the slow recovery from the Great Recession in the United States reflected the Fed’s adherence to the Taylor rule, according to which the nominal interest rate responds to divergences of actual inflation from target

inflation and of actual GDP from potential GDP.<sup>64</sup> However helpful the rule might have been in anchoring policy before the crisis, its rigid application may have contributed to the anemic recovery. Similarly, monetary policy in the 1930s reflects adherence to pre-Great Depression policy frameworks that were clearly inappropriate. These episodes underscore the importance of getting policy paradigms right; while the pre-crisis policy paradigm made sense for the pre-crisis conjuncture, it may not have been appropriate for post-crisis deleveraging. The issue facing policy makers should not be framed in terms of rules versus discretion, but rather as rules and discretion.<sup>65</sup>

## Rehabilitating Fiscal Policy

*Reassess Mundell’s policy assignment.* The crisis has shaken confidence in the ability of monetary policy to both maintain full employment and secure price stability — the “divine coincidence,” as it has been labelled. A re-evaluation of the pre-crisis orthodoxy should include a reconsideration of the role of fiscal policy in macroeconomic stabilization, even if that is limited to developing more robust automatic stabilizers (Blanchard 2016). Active use of fiscal policy would be wholly consistent with an earlier tradition of policy frameworks associated with Keynes, Friedman and Mundell. At minimum, fiscal policy should not be a source of pro-cyclicality (Claessens 2015). Going further, in recognition of the complexities that interactions between financial stability and the real economy introduce for stabilization policy, the potential use of fiscal policy to dampen credit expansion should be explored. The most

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61 The view that central banks must focus strictly on the price stability objective aligned with central bankers’ desire to establish and then defend their independence. Monetary policy that is expected to achieve multiple policy objectives is at risk of political interference.

62 While this uncertainty does not repudiate the Tinbergen principle, it demonstrates that the need to integrate the interactions and feedback effects between the economy, asset prices and financial institutions increases the complexity of policy frameworks. As Stanley Fischer (2011) put it, in the case where there are more targets than instruments, “we have to find marginal conditions for a maximum, and to talk about trade-offs, in explaining the optimum. So, it is not generally true that because the central bank has only one instrument, it can consider only one target — unless the instrument has no effect on any variable other than the target.”

63 Similarly, the gold standard of the interwar period was ill-equipped to deal with the climate change brought on by World War I.

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64 It should be noted that, at the time, the Fed was heavily criticized by some in Congress for pursuing too much discretion in the crisis response and under congressional pressure from “audit the Fed” supporters to adhere even more strictly to fixed rules.

65 In this respect, while a return to the gold standard is unlikely, consideration has periodically been given to move from inflation targeting to price-level targeting. The latter could, in theory, replicate the felicitous mean-reverting properties of the classical gold standard, by anchoring expectations that a negative economic shock that drove the price level down would be countered automatically by increased monetary expansion to return prices to the equilibrium level. But this feature would depend very much on the actions of others; the risk is replicating the dysfunctional monetary regime of the interwar gold exchange standard.

obvious instrument here is tax policies to correct externalities that lead to excessive leverage.<sup>66</sup>

## International Dimensions

*Restore the consensus on international policy frameworks.* Primary responsibility for the crisis lies with imprudent risk taking and prudential regulations that failed to contain the accumulation of a dangerously over-leveraged position. But there is also an important international dimension to the crisis that should not be overlooked. Just as the roots of the Great Depression lie in the dysfunctional monetary arrangements of the interwar gold standard, ambiguities regarding the rules of (exchange rate) adjustment contributed to the build-up of external imbalances and domestic asset price bubbles in the pre-crisis period (Eichengreen and Temin 2010). Debates over whether the deficit country (United States) or the surplus country (China) should bear the burden of adjustment led to an impasse and the accumulation of claims on the United States, analogous to the Triffin dilemma of the Bretton Woods era.<sup>67</sup> Following the global financial crisis, important steps were taken to address major weaknesses in prudential regulatory frameworks. But there is an imbalance in the response; nothing has been done to address outstanding issues with existing international monetary arrangements. Meanwhile, threats mount of protectionist measures to penalize countries that have unfairly manipulated exchange rates. If these risks materialize, enormous damage to the global economy could result. This would not be in any country's interest.<sup>68</sup> It is imperative, therefore, to secure a new consensus on the rules of the game for international adjustment.

*Restore the credibility, legitimacy and effectiveness of the IMF.* Consensus on countries' obligations with respect to international monetary arrangements would be difficult to sustain without an institution to support the cooperative agreement. The IMF is that institution. Its effectiveness is eroded, however,

by the lack of clarity on members' obligations to each other and the system and by the asymmetry in its surveillance function. These considerations weaken the power of the Fund's moral suasion. Efforts to strengthen the governance of the institution and to restore the credibility, legitimacy and effectiveness of the IMF must be redoubled.

*Create a safe space for trade and global governance adjustment.* A credible, legitimate and effective IMF is also needed to help its members adapt to the economic "climate change" from China's entry into the global economy. Protectionism is not the answer. However, China's currency is not fully convertible, and past perceptions of currency intervention to prevent appreciation and gain an unfair competitive advantage (even if that is no longer the case) continue to animate recent trade measures. In this respect, if the international trading system is not viewed as open, transparent and fair, protectionist measures to punish perceived currency manipulation will be the response. The IMF was created in the wake of such a conjuncture to facilitate trade liberalization and support the cooperative agreement among its members to eschew beggar-thy-neighbour exchange rate devaluations. Today, the challenge is to defeat the forces of economic nationalism and foster a renewed commitment to multilateralism. Strong institutions are needed to enforce the rules of the game. At the same time, it will take leadership to clear the path for transitions in global responsibilities commensurate with growing economic power. In this regard, emerging market economies cannot simultaneously claim an increased quota share in the IMF and influence in the international institutions generally while demanding special safeguards and protections as developing countries in perpetuity, heedless of the level of development.<sup>69</sup>

In sum, there are many steps that can be taken to anchor policies in the uncertain times that lie ahead. While the conclusions above have been presented in three distinct areas, they are not independent. The areas for action are all related, and necessarily so, given the integrated nature of the global economy. Making progress on this agenda will take considerable leadership. The question is whether the will exists to pursue these issues. The answer may determine the fate of the second great age of globalization.

66 A key issue in public finance that applies with respect to financial regulation is whether externalities are more efficiently controlled by Pigovian taxes that incorporate social effects not reflected in the prices of competitive equilibrium or prohibitions on the level of the activity generating the externality. With perfect certainty, it is possible to design equivalent systems. Uncertainty vitiates the equivalence, however, and a large literature has evolved exploring the implications of this result. Martin I. Weitzman's study (1974) is a seminal reference.

67 Bordo and Robert N. McCauley (2018) critically discuss Triffin analogues.

68 See Lombardi, Siklos and St. Amand (2014) on the importance of central bank cooperation.

69 This point is made by Hector Torres (2017).



## Author's Note

Helpful comments from two anonymous reviewers are gratefully acknowledged. They are not responsible for any remaining errors. The views expressed are those of the author and should not be attributed to CIGI or the Wilson Center.

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