Monetary Regimes and Policy on a Global Scale: The Oeuvre of Michael D. Bordo

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Abstract

Michael D. Bordo has helped to define the modern field of monetary history, drawing from it important policy lessons for current practitioners. For his seventieth year, we survey his contributions to our understanding of the Great Depression, money and the economy in historical perspective, exchange rate regimes including the gold standard, Bretton Woods, and the European Monetary Union, globalization, financial crises, the Canadian monetary experience, and historical guidance for monetary policy.

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"If I have seen further, it is by standing on the shoulders of giants."
---Sir Isaac Newton

In the field of economics, Michael David Bordo stands out as one of the leading financial and monetary historians of the late twentieth and early twenty-first century. He is known around the globe for giving us a clearer vision of the central issues of monetary policy and choice of exchange rate regimes through the lens of economic history. His energy and enthusiasm make him a favorite collaborator with graduate students and senior scholars alike. One imagines there is scarcely a central bank he has not visited to present his work, advise policy makers and consult with the research staff.

In this paper, we attempt to survey Bordo's immense *oeuvre*, of 244 published articles, chapters, surveys and reviews and 12 books and edited volumes at last count. Given his vast range of interests there is no easy summary of the topics to which he has contributed. We think his work is best understood in terms of the role that it has played in the development of macroeconomics. In a 1994 article in the Journal of Monetary Economics, Jeffrey Miron lamented the yawning gap between Milton Friedman and Anna J. Schwartz's 1963 A Monetary History of the United States, 1867-1960 and contemporary macroeconomics. He wrote:

> The difference between the kind of empirical work presented by Friedman and Schwartz in *A Monetary History* and the kind of empirical work taught in graduate schools and practiced as 'state-of-the-art' is just as striking now as in the early 1980s. [when he was in graduate school] Even more striking is the dramatic difference between the lasting impact of *A Monetary History* and the ephemeral impact achieved by the bulk of more technically endowed research." (p. 18)

Praising the narrative approach employed by Friedman and Schwartz, Miron identified its four main components: a method of identification (by way of natural experiments), the treatment of economic theory, the style of presenting empirical results and the construction of new data.

Miron saw little way to reconcile this enormously fruitful approach with cutting-edge macroeconomics.

Bordo's accomplishment has been precisely to bridge this gap and show how the narrative of A Monetary History can be married to state-of-the art theory and econometrics. His work embodies all of its four components and a fifth, modern econometrics. Not only has this assured him a place of honor on the reading lists of graduate macroeconomics courses, but more importantly his achievement has yielded a growing dialogue between macroeconomists, historians, and policy makers. He has been the right man in the right place. When the certainties of the post-World War II Bretton Woods world of low inflation, fixed exchange rates and minimal crises began to evaporate, he was there to provide evidence that the distant past of the nineteenth century had more to teach policy makers than recent decades. In all of these respects, he has been faithful to his great predecessors.

We begin our survey with Bordo's contributions to the study of the Great Depression, the very heart of A Monetary History. The question he has impressed on so many of us, "What about Canada?" is answered in the second section where we discuss his insightful comparisons of the U.S. and Canada. Respectful of earlier generations of monetary theorists, empiricists and historians, he has also made notable contributions to the history of thought, which are covered in the third section. His work on the gold standard and exchange rates are examined in sections four and five. Bordo's careful comparative analyses of financial market integration and financial crises in the two eras of globalization are discussed in sections six and seven. The always important but oh-so current questions of monetary policy that Bordo has tackled are presented in section eight, leading us to an attempted conclusion.

1. The Great Depression

Michael Bordo was not born during the Great Depression of 1929-1933, but as a student of Milton Friedman and Anna Schwartz, he was certainly born to the Great Depression. His formative text was naturally the 1963 *Monetary History*. According to *A Monetary History*, a mild recession in 1929 was turned into a catastrophe by the Federal Reserve's failure to respond to a series of banking panics that collapsed the money stock, driving down the economy. In later twentieth century terminology (Romer, 1993), the banking panics working through several transmission channels caused aggregate demand to quickly shrink against a relatively static aggregate supply. In addition, the falling price level , if it was expected, produced high real ex ante interest rates (Cecchetti, 1992), slashing consumption and investment; or if it was unexpected, yielded high real ex post interest rates (Hamilton, 1992), adding to debt-deflation. In this evolving analysis, a non-monetary channel of propagation via the disruption of financial intermediation was added by Bernanke (1983).[1]

Could the Great Depression have been avoided by preventing a collapse of the monetary system---keeping money "stable," by following a simple monetary rule? While this classic question had been addressed by McCallum (1990) and others, Bordo, Choudhri and Schwartz (1995) developed a more general model in the spirit of the *Monetary History*. Employing a parsimonious model for money demand, output, prices, and the money stock, where money may have a short-term effect on output, they examined the consequences of both a strong and a weak form of Friedman's constant money growth rule. For the first, the Fed should have kept the money stock at its long-term growth rate by offsetting changes in the money multiplier; and for

[1] Bordo provided global policy makers in the IMF's World Economic Outlook (2002) with a quick summary of the Great Depression literature and its policy relevance.

the second, the Fed could have only observed the money multiplier with a quarter lag and adjusted accordingly to keep money growth at its expected rate. Following these rules, they forecast that the decline in real output for 1929-1933 between 11 and 22 percent. Compared to an actual decline of 36 percent, a Friedman rule would thus have limited the damage; and within this range, it would have been within the bounds of other recessions.

One of the biggest challenges to the Friedman and Schwartz's classic tale of the Fed's failure of intellect or nerve to prevent the collapse of the money stock concerns the gold standard constraint. Both Eichengreen (1992) and Temin (1989) contend that the monetary authorities could not have engaged in expansionary monetary policy because they had to maintain an adequate gold cover to remain on the gold standard. The central threat to any over-expansion by the Fed would have been a speculative attack on the dollar. Bordo, Choudhri and Schwartz (2002) argue that while "golden fetters" may have constrained small economies, the United States, as a large economy, with a vast gold stock, had plenty of latitude to respond to initiating shocks between late 1930 and early 1932. They conduct simulations that show $1 billion interventions at these critical junctures would not have led to a gold outflow sufficient to put U.S. convertibility at risk. Critical to this finding is their estimate of the offset coefficient, the proportion of the increase in U.S. domestic credit that would have been offset by gold outflows. At less than one, a credit expansion would have only been partially offset by gold outflows. Over a wide range of specifications, the U.S. would have been able to maintain its 40 percent gold cover for Federal Reserve notes, thus affirming that Fed officials were not constrained by the gold standard and could have halted the slide into depression.

While no one would disagree with the importance of the Great Depression for the 1930s, its lasting effect on the course of the American and world economy by the end of the twentieth

century is less certain. Exploring the effects of the depression on the international monetary system, Bordo and Barry Eichengreen (1998) simulate the evolution of the post-World War II world without the 1930s collapse, assuming the Federal Reserve would have followed a stable money policy. Their simulation is based on the gold standard model of Bordo and Ellson (1985), which in turn was inspired by Barro's (1979) theoretical model of a world gold standard. A center country holds only gold and the rest of the world holds a mix of gold and foreign exchange. In this long-run model, differential growth rates allocate the distribution of the world gold supply among countries, which allowing for sterilization permitted by the gold exchange standard, would determine price levels. They contend that without the depression, the interwar gold exchange standard would have lasted until the outbreak of World War II. In the absence of a depression, the gold exchange standard would have been seen as a success; and thus there would have been no postwar impetus for a Bretton Woods Conference and its resulting system. After World War II, a gold exchange standard with free capital mobility would have been restored, with the U.S. accepting a deflation to move back to gold at its prewar parity. However, this regime would have been even less suited to manage the post-1945 imbalances. Bordo and Eichengreen calculate that the U.S. would have had to double the size of the Marshall Plan from $13 to $26 billion in order to restart the monetary system. Without capital controls, postwar adjustment would have been far more difficult. The "Triffin Crisis" would have emerged in the late 1950s, well ahead of the actual event. Consequently, this regime would have collapsed more quickly to a system of floating exchange rates than did the Bretton Woods System.

By the late 1990s, the *Monetary History*'s analytical framework was no longer cutting edge. A new challenge to Friedman and Schwartz's interpretation of the depression arose from the real business cycle theorists whose dynamic general equilibrium models found weak, if little

support for a demand-generated economic cataclysm. A central factor in these models is the relationship between output and labor productivity. In a paper with Charles Evans (1995) Bordo found that the relationship to be countercyclical for manufacturing as a whole, assuming that there were no technological shocks. Although there was procyclicality in some sectors, due perhaps to labor hoarding, the finding of countercyclicality is consistent with the basic Friedman-Schwartz story of demand shocks inducing the depression, as falling output caused firms to lay off marginal workers, thereby raising productivity.

Combining forces with Christopher Erceg and Charles Evans (2001), Bordo sought to place the Friedman and Schwartz story into a modern general equilibrium model. In this framework, recovery had little chance since the Federal Reserve's continued failure to offset the banking panic-induced decline in the money stock yielded deflation. In the presence of sticky nominal wages, real wages jumped, contributing to a further decline. They estimated that monetary shocks can account for 70 percent of the drop in output from 1929 to 1932. For the remainder of the thirties, they found that National Industrial Recovery Act wage schedules that raised real wages limited economy recovery. At the same time as Erceg, Evans and Bordo were working on their model, Harold Cole and Lee Ohanian (2001) created an alternative model that conflicted with Friedman and Schwartz's monetary-deflation explanation and Bernanke's (1983) banking crisis-financial intermediation explanation. Their two sector model—manufacturing and agriculture—had a fixed wage above the market clearing rate in the first sector and a market wage in the second sector with an intermediate and a final good. When simulated, neither a monetary nor an intermediation shock could explain the fall in output in their model. Cole and Ohanian concluded that the only credible factor remaining to explain the depression was a very large negative productivity shock. Money and finance played no role in initiating the

depression? Bordo, Erceg and Evans (2001) then probed the Cole and Ohanian paper and discovered that the surprising result was driven by the fact that the whole of the non-manufacturing sector covering 72 percent of the economy was treated as a flexible wage sector. Although farming, accounting for 11 percent of the economy, could be treated as having flexible wages, this was not true for services or especially government, which accounted for the remainder of the non-manufacturing sector. Real wages did not fall as a result of declining productivity, as implied by Cole and Ohanian, but rather remained high and rose, as observed during the depression and replicated by Bordo, Erceg and Evans (2001).

While papers on the Great Depression written before 2008 might have been just considered as part of an academic debate, the specter of the 1930s looms much larger now and policy makers and the public rightfully ask what are the lessons from the 1930s? A central question is whether panics are driven by illiquidity or insolvency. Bernanke and other members of the Federal Reserve Board, who were well versed in the *Monetary History* responded to the panic of 2008 by flooding the market with liquidity. However, what was missed at the outset was that this scramble for liquidity was driven by the widespread insolvency of major financial institutions. Consequently, simple neutral open market operations and lending via the discount window did not relieve the pressure on the financial system, leading to a bailout of what were believed to be systemically important institutions.[2] Was this also true in the Great Depression? In two papers, one with John Landon-Lane (2010a) and one with Harold James (2010), Bordo addressed this question. The cumulative evidence of many researchers indicates that the banking

[2] Bordo and Landon-Lane (2010a) pointed out Bernanke's concern for financial intermediation based on the channel he identified for the Great Depression and the threat of widespread insolvencies let to the creation of an array of targeted lending programs and an expansion of the Fed's balance sheet. As these were not a neutral injection of liquidity, these actions have placed the Fed in an awkward position of politicizing credit and making it difficult to reduce its massive holdings of securities without repercussions.

sector was very weak on the eve of the depression, with their balance sheets continuing to deteriorate. Yet, liquidity problems peaked during the panics. Thus, a combination of these two factors dragged down the financial sector and the Friedman and Schwartz story survives as part of a more complex picture (Richardson and Troost, 2009). Estimates of the relative number of illiquid and insolvent banks depend on the design of the VAR model. Whereas Richardson (2007) concluded that 60 percent of suspensions were attributable to insolvency and 40 percent to liquidity, Bordo and Landon-Lane (2010) offered an alternative where the identifying assumption is that an illiquidity shock caused some insolvent banks to fail contemporaneously but an insolvency shock led failures due to illiquidity only with a lag. Based on this specification, their results showed that 1930 and 1931 are liquidity events primarily and 1933 is mainly a solvency event.

Summing up, Bordo and James (2010) identified key lessons from the 1930s. They found that while the Fed has the tools and the understanding of how to halt financial crises once they begin, they were less certain that the Fed will be able to reduce its balance sheet, as it may face a high political and economic cost of tightening. They also warn that bailouts---as occurred in the U.S. and Germany in the 1930s may cause distortions, lead to economic nationalism, and a retreat from the global economy.

2. Canadian Exceptionalism and a Lesson from Argentina

` For those of us who know MDB as a member of a seminar audience, the question: "What about Canada?" is a familiar one. The history of money and banking in Canada provide important insights into why some banking systems seem prone to repeated crises while others seem resilient to even the largest of shocks. Given the greatly varied regulations, supervision, and customs, cross-country comparisons of financial systems are difficult and not easily

summarized by a series of dummy variables. But, given the great similarity of Canada and the U.S. in these dimensions, a comparison of their banking systems is highly informative. The American banking system has been characterized by easy entry and competition, partly a product of the long prohibition on branching, while the Canadian system of a few branching banks tends towards cartelization. In terms of stability, only one bank failed in Canada between 1920 and 1980, in contrast to the vast number of insolvencies in the U.S. One would expect that there would be a large trade-off between efficiency and stability, but in three papers with Angela Redish and Hugh Rockoff, Bordo (1994, 1996a and 1996b) identified at most a modest trade-off. From the Great Depression to 1980, there seems little evidence of the potential cartel in extracting rents, as yields on loans appear to be roughly equal in both countries and Canadian depositors were paid higher rates of interest than their American peers. The big difference between the two systems is that Canadian banks were more leveraged so that given borrowing and lending rates, they had a significantly higher rate of return on equity than American banks. The ability of Canadian institutions to survive with a smaller equity cushion is a reflection of their greater regional diversification and size that gained them economies of scale. [3]

What is the appropriate mandate for a central bank? The varied history of central banks in all major countries makes answering these questions tortuously difficult, as the contentious literature on the subject makes clear. What is MDB's contribution? Canada, of course; Canada is a very interesting case because it is the last major Western economy to establish a central bank (1935), raising the question of whether or not central banks are truly necessary. Bordo and Redish (1987) examined three hypotheses about central bank origins: (1) central banks naturally evolved out of fractional reserve banking systems, (2) central banks are needed when there is no

[3] For some but not all years, higher reserve requirements and interest rate controls in the U.S. contributed to this result.

nominal anchor like the gold standard for a largely unregulated banking system, and (3) creation of central banks is primarily determined by other political factors. In Canada, at the beginning of the twentieth century, most of the traditional central banking functions were managed by private institutions or directly by the government. Stability appears to have been largely the result of nationwide branching, in contrast to the crisis-prone, unit-banked United States; and clearing and collection of checks was handled by the Montreal Clearing House. Liquidity was usually found in the call money market in New York where most Canadian banks parked their excess funds. However, twice when this market was unable to succor Canada's liquidity needs in 1907 and 1914, the Government of Canada stepped into the breach. Additional liquidity was provided by the Finance Act of 1914 that permitted the issue of Dominion notes to provide discounts by the Treasury Board to banks with appropriate collateral. Hypothesis 2 might be appealing, as Canada returned to the Gold Standard in 1926, then abandoned it provisionally in 1928 and permanently in 1931. Departure from the gold standard did not lead to over expansion by the banks---there was instead deflation and the expectation after 1931 that there would be a return to gold. The Commission responsible for the creation of the Bank of Canada believed that a return to gold would be within a managed system of cooperation between central banks and thus it was imperative that Canada have one. To support this narrative Bordo and Redish searched for regime shifts but found little "policy" effect for the Bank of Canada as there is an absence of any structural breaks in macroeconomic variables at the time of its creation. What they do see behind the system was the demand for inflation to counter the economic decline and attacks on the cartel of banks, which were often conflated, with the banks blamed for deflation as they closed branches in the declining economy. The calls from the political right and left for government intervention and rising nationalism made the creation of a central bank an

advantageous and internationally acceptable act of emphasizing Canada's independence from London and New York, even if there was no regime change.

While most scholars have focused on the big countries--U.S., the U.K., France and Germany—for understanding the Great Depression, Bordo's ever insightful question—What about Canada?---has been most instructive. In the standard story, a monetary shock emanated from the United States to the rest of the world because of the Federal Reserve's failure to counter the effects of banking panics on the money stock. If any country should have been dragged into a recession by this mistake, it was the U.S.'s smaller open economy neighbor to the North. Caroline Betts, Angela Redish and, Bordo (1996) investigated this possible source of the depression for Canada. They provided a small open economy model of the Canadian economy in the Mundell-Fleming tradition, where long-run domestic output is exogenously determined but can deviate from trend in the short run because of nominal rigidities. They found that the onset, depth and duration of the depression in Canada and the U.S. are almost all entirely attributable to a common output shock, although there is a short-run response of the Canadian money stock to shocks from the American monetary shocks.

While in late 2008 the U.S. was engulfed in the worst financial crisis since the Great Depression, Canadians sat snugly and safely north of the border. Was this simply a random result? Hardly. As Bordo and his collaborators (Bordo, Redish and Rockoff, 2013) showed, Canadian exceptionalism has some very important lessons for the U.S. Systemic risk was managed in Canada because the regulations set down in the nineteenth century created a banking system that evolved into a concentrated oligopoly, which entered into a compact with the regulatory authorities, ensuring limited competition in exchange for limited risk-taking. In contrast, the U.S. opted for a unit banking system of thousands of highly competitive and

undiversified banks in the nineteenth century that pushed long-term corporate finance into the securities markets, which had the flexibility and latitude to provide adequate capital for America's growing industrial sector. Whereas, clearing and collection of checks was highly centralized by 1900 in Canada and reserves were based within well-diversified banks, the management of these essential functions in the U.S. was executed within the framework of a delicately structured network of interbank relationships far more vulnerable to shocks. Bordo, Redish and Rockoff identified the concentration of authority over banks in the Canadian federal government as a key element, comparing this arrangement to the uneasily shared authority between the federal government and the states that produced competition among regulators with many opportunities for regulatory arbitrage. Critically, in the mortgage market, the U.S. federal government encouraged the use of 30 year fixed rate amortized mortgages with the borrower pre-payment option. In Canada, mortgages were amortizable over 25 years but only had a five year term, yielding a smaller maturity mismatch. To manage the regulation-induced mortgage problems, U.S. banks securitized their mortgages and moved them off-balance sheet, evading capital requirements, something Canadian banks could not do. The Canadian chartered banks also absorbed the Canadian broker-dealers in the late 1980s, establishing universal banking. This prevented the "shadow banking" problem the U.S. had. Along with a consolidated banking system Canada had a consolidated regulator, the Office of the Superintendent of Financial Institutions. Together, consolidated banking and consolidated regulation made effective regulation easier. Bordo, Redish and Rockoff viewed this as a path dependent outcome, for which there is depressingly little chance of reform, as they underline with a salient quote in 1893 from George Walker President of the Canadian Bank of Commerce. "For over half a century, banking in the United States has been following lines of development opposed in many respects

to the Canadian system, and it may well be that no matter how desirable, it is too late to adopt our practices."

A key point of MDB's oeuvre is that comparisons, especially comparisons with embedded counterfactual questions, can provide profound insights into some of the essential issues of monetary economics. Perhaps, one of his most interesting contributions in this genre is his paper (2002) with Carlos Vegh, "What if Alexander Hamilton had been Argentinean? Not a comparison that many would have dreamed up, as the republic in the Northern hemisphere, after a bout of violent revolutionary war inflation, enjoyed relative price stability that encouraged economic growth while the one in the Southern hemisphere had persistent high inflation detrimental to economic growth and political stability. Yet, both were new-world republics in resource-rich, land-intensive, temperate-zones. As the title implies, perhaps if Hamilton had appeared in Buenos Aires and not New York, Argentina might have established the fiscal and monetary institutions that were so successful. Drawing on the theory of optimal taxation, Bordo and Vegh offer some novel insights. First, in the U.S., while the states and Continental Congress found access to bond issue and taxation difficult and resorted to money finance, the conditions that led to a hyperinflation did not continue into the Constitutional period. In contrast, the continuing wars in Argentina kept tax collection costs high and further reduced access to foreign capital, making the Southern Republic dependent on money creation. Both early histories of government finance may be viewed as optimal choices, given the constraints, though the institutions engineered by Hamilton, in the lull between wars, produced a credible regime that enabled the U.S. to switch to more efficient bond-finance subsequently. Thus, it was the external constraints, not the lack of brilliant men that burdened Argentina.

3. Money and the Economy in Historical Perspective

Much of Bordo's early work in monetary economics was based in the quantity-theory tradition developed by his mentors Milton Friedman and Anna Schwartz. The quantity theory has lost traction in modern macro-economic research. But much of Bordo's work in this area, we believe, is still relevant because it provides empirical insights that transcend the original theoretical framework that gave rise to them. And, as Bordo likes to point out, the reputation of the quantity theory tends to rise and fall with the rate of inflation. If the rate of inflation accelerates once again – not an impossible prospect given our current fiscal difficulties – we can expect the quantity theory to make a comeback.

The debate over the quantity theory was hot and heavy in the 1970s, as the rate of inflation accelerated. The monetarists, led by Milton Friedman, Karl Bruner and Alan Meltzer, maintained that inflation was "always and everywhere a monetary phenomenon" in Friedman's famous statement. But opponents of monetary explanations pointed to a number of alternative factors that could explain the inflation. Perhaps inflation was the result of powerful corporations pushing up prices (administered inflation) or of unions pushing up wages (cost push inflation). Sometimes advocates of non-monetary explanations pointed to (and continue to point to) shortages of fuel and food as factors that were pushing up prices in one sector, creating pressures that would produce a general increase in prices. At one point, for example, it was suggested that the disappearance of anchovies off the coast of South America had contributed to a worldwide shortage of protein, an increase in food prices, and general inflation (Blinder and Rudd, 2013).[4]

Bordo made a number of contributions to this debate. In two papers based on his dissertation Bordo (1975a, 1977) showed that the effects of monetary changes on income were

[4] Neoclassical economists argued, of course, that shocks in individual markets would produce increases in relative prices rather than a general increase in prices.

much the same, even when the sources of monetary change were very different. This evidence supported the claim that a causal relationship ran from money to income. If Bordo had found, on the other hand, that there was a strong correlation between money and income when the Federal Reserve was the source of new money, but no correlation when the U.S. was on the gold standard, the inference would be that there was no causal relationship between money and income. The correlation under the Federal Reserve regime would have been a byproduct of the way the Federal Reserve anticipated changes in income.[5]

With Anna Schwartz, Bordo wrote two papers (1980, 1981) that were critical of the "it is not money that is causing the inflation" view by going back to arguments and data from the nineteenth century. After all, the argument that inflation in the sense of an economy-wide increase in prices could be produced by an increase in prices in one sector was an old argument, one that often surfaced when inflation accelerated. In the nineteenth century Thomas Tooke had argued that inflation was the result of increases in the prices of agricultural produced by events in agricultural markets, and not the product of monetary forces. But despite the attractiveness of this argument to later generations of economic historians, Bordo and Schwartz were able to show that the elasticities of substitution between sectors were not high enough to enable Tooke's explanation to work.

MDB's 1980 Journal of Political Economy paper is a good illustration of how work growing out of the quantity-theory tradition, and perhaps for that reason, likely to be overlooked by the younger generation of monetary economists and historians, still has much to teach us. In that paper he returned to the work of John Elliot Cairnes about whom he had previously studied (1975a). Cairnes, often described as the last of the classical economists, had made a shrewd

[5]This was the claim made in James Tobin's (1970) famous paper "post hoc ergo propter hoc." In addition, Tobin's (1965) review of *A Monetary History* in the *American Economic Review* had argued that changes in the composition of the stock of money could have important effects on the economy.

observation about the effects of the monetary expansion that followed the discovery of gold in California in the 1850s. Prices in highly competitive markets, such as markets for agricultural products, had responded more quickly to the monetary expansion, than had other prices. Cairnes had explained this in terms of differing supply elasticities. Bordo revisited this prediction and found, remarkably, that it held a century later. To explain the relationship, MDB used a modern characteristic of some industries having long-term contracts.

In his first paper with Schwartz (1977), Bordo provided a survey of monetary issues and their impact on economic history at the critical moment when the cliometric revolution had begun to influence macroeconomic history. Revealing very catholic tastes, his periodic surveys of the state of the art of monetary and financial history have been of immense value to beginning students and seasoned researchers alike. His most recent contribution to this genre appeared in The New Palgrave Dictionary of Economics (2008), where he focused on the evolution of monetary theory and central banking.

The Chicago tradition interprets the monetary economy as the result of a money supply equation (based on the quantity of high-powered money and the behavior of banks and the public) and a money demand equation (based on income, interest rates and other variables). In this tradition the equation of exchange is interpreted as the money demand equation. Bordo explored this interpretation in his work with Lars Jonung. Much of this was summarized in a 1987 Cambridge University Press monograph, where Bordo and Jonung identified the key variables determining long-term trends in velocity. Economists interested in the role of finance in economic development are likely to find these results of interest, even if they reject the quantity theory as a tool for short-term macroeconomic management. Bordo and Jonung have continued to update this work (Bordo and Jonung 1999; Bordo, Jonung, and Siklos 1997).

Interest among economists in the field of history of thought has declined in the last few decades. And courses in the history of economic thought have disappeared from most of the leading graduate programs, a development that has troubled Bordo, a contributor to the field. This decline may reflect the sometimes correct perception that historians of thought are mainly interested in resuscitating the reputations of minor figures or previously rejected ideas, or acting as scolds to economists that mislabel ideas. However, in Bordo's hands history of thought becomes a fruitful source of ideas and empirical observations, as was true for his mentors Friedman and Schwartz.[6] One notable contribution was his 1979 paper with Anna Schwartz on the pioneer monetarist Clark Warburton. Friedman and Schwartz had been criticized for not giving sufficient credit to Warburton, although Warburton was acknowledged at various points in *A Monetary History*. In this paper Bordo and Schwartz addressed that issue by acknowledging the many contributions of Warburton to the analysis of monetary history and how Warburton's work based on different data strengthens the case that money matters.

By the end of the twentieth century inflation had moderated to the point that deflation became a major worry. This concern was rooted in the belief that inflation provided a needed "lubricant" for labor markets. Sometimes it was necessary to lower wages, but attempts to lower nominal wages in a regime of stable prices or falling prices would meet stiff resistance. In a regime of moderate inflation, however, nominal wages could be kept constant and real wages would still fall. But deflation also had a bad name because deflation is associated with the Great Depression. In *A Monetary History* Friedman and Schwartz had noted that during the second half of the nineteenth century long periods of mild and anticipated deflation had been associated with rapid growth of industrial production and real per capita income. In two papers with John

[6]MDBl has suggested to us that Friedman's revival of Irving Fisher's distinction between real and nominal interest may be one of the most important examples of history of thought contributing to contemporary economic practice.

Landon-Lane and Angela Redish (2009, 2010) and Andrew Filardo (2005) Bordo and his co-authors used new data and recent time series econometric techniques to confirm that indeed mild and anticipated deflation had not damaged the economy. One way of looking at the policy conclusions from this exercise is to say that policymakers need not avoid a policy of price stability for fear of a short-term mild deflation as economic expansion could continue.

4. The Gold Standard

In this section we consider Bordo's studies of the gold standard and the gold exchange standards of the interwar period. Although this is separate from the next section on Bretton Woods and subsequent exchange rate regimes, we view both sections as an integrated body of work. MDB's examination of the Bretton Woods System and his work on Canada's fluctuating exchange rates, for example, shed additional light, by way of contrast, on the gold standard. These clever comparisons reveal why Bordo is widely regarded as one of the world's leading experts, if not the leading expert, on the history of exchange rate regimes.

Although metallic standards have been used for thousands of years, and although Britain remained on the gold standard from the end of the Napoleonic wars until World War I, the era of the classical gold standard is usually taken to be 1879-1914. It began when the United States returned to the gold standard after the Civil War and ended when the European nations were driven off by World War I. During this period the currencies of all of the leading industrial nations were convertible into gold. Exchange rates were fixed; increases in the money supply were constrained by the need to import or mine gold; and ordinary citizens carried gold coins in their pockets. To many people at the time, and to many subsequent observers, these characteristics defined an ideal monetary system. But, as becomes clear when we explore

Bordo's work, the issue is far more complicated. Most industrial nations, with the important exception of the United States, abandoned gold during World War I. The attempts to revive the gold standard in the 1920s met with mixed success, and most nations including the United States abandoned gold during the Great Depression.

The Bretton Woods system attempted a new exchange rate system that would return to the fixed exchange rates of the gold standard, but would allow individual nations a degree of control over their own money supplies. During the 1950s and 1960s, when Bordo was learning his economics, there was little interest in the gold standard, a monetary and exchange rate system that seemed to be a mysterious obsession of past generations. In the late 1970s and early 1980s, public interest in how the gold standard worked increased, and some enthusiasts began calling for a return to the gold standard. The reason was simply that the existing monetary regime was not working. The rate of inflation around the world was rising. In the United States inflation (the consumer price index) rose from an already high annual rate of 5.6 percent in 1976 to 12.7 percent in 1980. U.S. short term interest rates rose from 5.0 percent in 1976 to a peak of 14.0 percent in 1981.[7] Inflation had become a key political and economic issue. It was natural then, for Bordo to turn his scholarly searchlight on the gold standard that seemed to hold a promise of price stability.

In 1981 he wrote a paper for the *Federal Reserve Bank of St. Louis Review* "The Classical Gold Standard: Some Lessons for Today" that drew a remarkable amount of attention from both scholars and the general public. The paper looked at the history of thought concerning the gold standard and the empirical evidence how it had worked in practice. Some of the

[7] Data from www.measuringworth.com

numbers Bordo presented are reproduced in the table below. We have also updated the table to show more recent periods.[8]

Table 1. Descriptive Statistics of Selected Macro Variables 1870-2011

	Average percentage change in the Price level (1)	Coefficient of variation of annual percentage changes in the price level (2)	Coefficient of variation of annual percentage changes in real per capita income (3)	Average level of the unemployment rate (4)
U.S. Gold Standard (1879-1913)	0.1%	17.0	3.5	6.8% [a]
UK Gold Standard (1870-1913)	-0.7%	-14.9	2.5	5.8%
US Interwar (1919-1940)	-2.5%	-6.2	6.6	11.3%
UK Interwar (1919-1938)	-4.6%	-3.8	4.9	10.4%
Bretton Woods U.S. (1946-1970)	2.8%	.8	1.4	4.7%
Bretton Woods U.K. (1946-1970)	4.3%	0.6	0.8	1.9%
Great Inflation U.S. (1971-1982)	6.9%	0.3	1.7	6.8%
Great Inflation U.K. (1971-1982)	12.4%	0.4	1.6	5.6%
Great Moderation U.S. (1983-2007)	2.7%	0.3	0.7	5.8%
Great Moderation U.K. (1983-2007)	3.6%	0.5	0.6	7.7%
Great Recession U.S. (2008-2011)	1.8%	0.3	-5.0	8.4%
Great Recession U.K. (2008-2010)	2.5%	0.4	-1.6	6.6%

Source. All data except UK unemployment, 1879-1940, Bordo (1981), p. 14. Unemployment, U.S., 1946-1982, *Historical* Carter et. al. (2006), series Ba475; 1982-2011, *Economic Report of the President 2012*, Table B-42. Unemployment U.K., 1870-1999, Boyer and Hatton (2002, table 6, 667); 2000-2010: Global Financial Data.Prices (GDP deflator) and Real GDP per capita, 1946-2011, U.S. and UK., Louis Johnston and Samuel H. Williamson, (2012) [a]1890-1913

[8] Bordo (1993) presented an updated table for the U.S., U.K., Germany, France Japan, and Italy. It included data on interest rates, but not unemployment. We have included the total Bretton Woods regime from that table, and more recent data.

Inflation, in the first column, was lower under the classical gold standard. Indeed, for practical purposes the price level was essentially stable over the life of the gold standard although there were sub-periods of mild deflation and mild inflation. Advocates of a return to the gold standard typically stress this measure of performance above all else. Bordo argued that there were both costs and benefits to the classical gold standard. Some of the other measures are not so favorable. Surprisingly, the rate of price change and the rate of growth of per capita income in columns 2 and 3 were more variable under the classical gold standard than under subsequent regimes. There is also evidence, although mixed, that the rate of unemployment was higher under the gold standard.

The 1980 Republican platform included veiled language suggesting that it might be wise to return to the gold standard. Shortly after the election, Congress established the Gold Commission to examine and report on the appropriate role for gold in the monetary system. Anna J. Schwartz was the research director and MDB, as he tells the story, was the "research staff." The Commission reported on March 31, 1982. Its findings and recommendations did not bring much joy to the two Congressional sponsors of the bill establishing the Commission, Senator Jesse Helms and Congressman Ron Paul.[9] The Commission did not recommend a return to the classical gold standard or any version of it. Instead its main substantive recommendation was that the U.S. Mint be authorized to mint gold coins from the U.S. stock of monetary gold at Fort Knox. The coins would be of specified weight, but not denominated in dollars, and would not be legal tender. The recommendation offered something to numismatists without altering the monetary system. This conclusion was satisfactory to Schwartz and Bordo who both maintained that the classical gold standard, while it accomplished many good things in its time, was not an appropriate system for the modern world.

[9]Schwartz (1987) analyzes the history of the Gold Commission.

In 1982 Bordo and Schwartz organized an NBER conference at Hilton Head, South Carolina on the classical gold standard. The resulting conference volume (1984) has become a basic resource for anyone studying the history of the gold standard. The paper that Bordo wrote for the conference, "The Gold Standard: The Traditional Approach" (1984) defined the classical understanding of how the gold standard worked. Bordo carefully parsed the work of its main developers, Cantillon, Hume, Ricardo, Thornton, Mill, Cairnes, Goschen, Bagehot, among others; and organized their ideas on a number of themes. He then showed how the traditional understanding of the gold standard had been refined and challenged by later writers, such as Fisher, Keynes, Hawtrey, and Sayers. MDB had already published an important essay on Cairnes (1975), and would soon publish one on Cantillon (1983).[10] Another paper with Richard Ellson (1985) developed a model that showed how the physical properties of gold -- a durable, but depletable natural resource -- would shape the behavior of the price level when gold became the base of the money supply.

Interest in the gold standard as a mechanism for maintaining price stability faded when inflation moderated after 1982. From 1982 to 2007, the rate of inflation in the United States averaged 3.06 percent per year; and in the U.K., 3.77 percent. However, even as the world moved to flexible exchanges rates as advocated by Bordo's mentor, Friedman (1953), another feature of the gold standard, the long-term fixing of exchange rates, continued to attract admirers. They maintained that the flexible exchange rates were doing more harm than good, and hankered for a return to the Bretton Woods System or even the gold standard.

In a long series of papers Bordo explored natural experiments in monetary history that illuminated the way that various institutional arrangements influenced the credibility and

[10] Some writers would consider Smith as part of the classical school, but as Bordo noted there is controversy because Smith was the developer of the real bills doctrine. More recent research has tended to reassert Smith's claim to be part of the classical tradition.

ultimately the success of these regimes. MDB would often turn to Canada for natural experiments and contrasts with the United States. It was an obvious and insightful choice for a man born and reared in Montreal. With his frequent co-author Redish, Bordo investigated the strange behavior of Canada's exchange rate after Canada left the gold standard in 1929. One might have expected that by eliminating the gold anchor, the Canadian dollar would depreciate, but Bordo and Redish (1987, 1990) showed that a firm commitment to a stable rate by the Canadian government stabilized the exchange rate. To permit depreciation would have been viewed as reneging on debt payments and would have damaged Canada's reputation as a debtor, hindering its capacity to borrow.

In two papers with Eugene White (1991, 1993) attention was drawn to the informative contrast between British and French finance during the Napoleonic Wars. After 1800, France remained on its traditional bimetallic standard and experienced relatively little inflation; Britain left the gold standard in 1797 and experienced considerable inflation. On the surface it might seem that France was showing greater financial conservatism. But Bordo and White argue persuasively that the reality was very different. Britain had a long tradition of meeting its financial obligations. For that reason it was able to borrow at relatively low cost during the Wars despite relying to some extent on the printing press. France, on the other hand, had suffered from a long series of financial disasters including the assignat inflation. Its ability to borrow was limited and it had to rely more heavily on taxes and maintaining a non-inflationary monetary regime. In an often cited paper with Finn Kydland (1995) Bordo showed that Britain's behavior during the Napoleonic war was well understood by contemporaries. The gold standard was, in the Bordo-Kydland terminology, a "contingent rule." Markets understood that countries could leave the gold standard during emergencies, war being the most important, and countries would

not be punished with higher interest rates, if they convincingly committed to return after the emergency had passed.

In papers with Anna Schwartz (1996) and Hugh Rockoff (1996), Bordo offered more evidence that adherence to the gold standard rule – subject in many cases, especially in peripheral countries, to a degree of uncertainty – influenced investment decisions. The paper with Rockoff which analyzed sovereign bond yields for evidence that adherence (or attempted adherence) to the gold standard lowered interest rates stirred up a storm of comments and extensions, some highly critical and some supportive. In a subsequent paper with Michael Edelstein and Rockoff (2002), Bordo looked at the impact of the return to the gold standard after World War I on sovereign bond yields.[11]

Bordo's work demonstrating that the gold standard was sufficiently flexible to accommodate the special circumstances of war finance, and his papers showing how the spread of the gold standard contributed to the internationalization of the capital market, served to bolster the reputation of the gold standard. Yet, the gold standard's achievements were constrained. With his Ph.D. student Bernhard Eschweiler, Bordo (1994) wrote a study of German monetary history covering the period 1880-1989. They concluded that, in Germany, a regime that combined a fiduciary monetary system controlled by an independent central bank dedicated to price stability had produced better outcomes than alternative monetary regimes, including the classical gold standard.

Bordo's paper with Kydland (1995) and his related work showed that the economic consequences of joining and then leaving the gold standard must be considered part of any full evaluation of the gold standard. Joined by several coauthors, Bordo explored crucial episodes in

[11] A number of MDB's key papers on the gold standard were collected in a volume published by Cambridge University Press (1999).

German, French, Swiss, and British as well as American history to provide a more comprehensive vision of the gold standard. In a paper with Tamin Bayoumi (1998) Bordo compared the United Status's return to gold after the Civil War, which has been treated as a success, with Britain's return to gold after World War I, which has typically been regarded as a failure.[12] They concluded that although policies varied somewhat in the two cases, the main difference in the two outcomes was the result of factors that policymakers could not control. The United States was aided by rapid growth that made it the world's leading industrial country; while Britain was hindered by an anemic postwar performance.

Barry Eichengreen and Bordo (1993) looked at the use of gold as a central bank reserve, even after the world monetary system became increasingly detached from gold. One of their important conclusions was that the development of a world monetary system that combined an inelastically supplied base currency, gold, with elastically supplied foreign exchange to meet central bank liquidity needs was inherently fragile. Ronald MacDonald and Bordo (2002) showed that the interwar gold exchange system was credible, even though it allowed central banks some scope for independent monetary policies. In a subsequent paper, they (2005) returned to the classical gold standard and uncovered evidence that even in that era central banks had some independent control over short-term interest rate movements.[13]

With Pierre-Cyrille Hautcoeur (2007), Bordo explored the French stabilization of its currency in 1926 at a substantial devaluation of its prewar parity and compared it with the policy followed by Britain in 1924. Bordo and Hautcoeur concluded that it would have been difficult or

[12] Before the Civil War the United States was on a de facto gold standard: silver was still legal tender. So, as the advocates of bimetallism liked to point out, technically the United States was establishing a new standard after the Civil War, rather than returning to an old one.

[13] A number of papers on the origin and functioning of the Federal Reserve originally presented at a conference to mark the 100th anniversary of the founding of the Federal Reserve has been published in Bordo and Roberds (2013).

impossible for the French to have followed the British lead because of the debt and monetary overhang in France that resulted from World War I. But they also suggested that if there had been an agency similar to the International Monetary Fund in place that could have coordinated the return of the major European belligerents to the gold standard, the extreme French devaluation which produced a rapid accumulation of gold in France and undermined the international monetary system in the late 1920s might have been avoided.

Joining with Harold James and Thomas Helbing (2007), Bordo investigated Switzerland's decision to adhere to the Gold Standard until 1936. They demonstrated that Switzerland would have been better off devaluing earlier, but a number of factors, including Switzerland's financial conservatism and the difficulties inherent in making economic policy changes in a democracy, explain Switzerland's decision to stick to an overvalued currency. In a paper with Robert D. Dittmar and William T. Gavin (2007), MDB addressed the problem of price stability under alternative exchange rate regimes in a theoretical framework. They determined that a pure inflation target provides more short-term price level stability than the gold standard and that for horizons shorter than 20 years as much long-term price stability as the gold standard. Additionally, they saw that the Taylor rule produced a high degree of long-term uncertainty about the price level, though it can be modified to eliminate this problem.

As one can see from these investigations, MDB has examined the gold standard from every possible angle: history of thought, case studies for a number of countries, and the performance of the gold standard in a variety of statistical and theoretical models. To put it somewhat differently, Bordo is not married to one methodology; he believes in and practices a "full court press." His conclusions therefore have enormous weight. For the gold standard, when

Bordo says that the gold standard made a good deal of sense in its day but is no longer appropriate, policymakers should pay close attention.

5. Bretton Woods, the European Monetary Union, and Other Regimes.

In the late 1980s exchange rates moved to the forefront of the political agenda. The famous Plaza Agreement in 1985 called for a coordinated effort to depreciate the U.S. dollar against a number of key currencies, especially the Japanese yen, because the weakness of U.S exports. The Plaza accord is sometimes held out as a successful case of direct intervention in foreign exchange markets because a significant depreciation of the dollar followed. Yet, Bordo and Schwartz (1991) were skeptical that sterilized exchange operations on the scale that were actually taken in the years following the agreement could have had much effect. They pointed out that unsterilized operations were simply another way of conducting monetary policy and might have unintended effects on interest rates and foreign exchange markets.

It was also a propitious moment for Bordo and Eichengreen to organize an NBER conference on the Bretton Woods System. Held at Bretton Woods, New Hampshire in September 1991 it preceded the 50th anniversary of the international conference that had established the system. Like the earlier conference that Bordo and Schwartz had organized on the gold standard, the Bretton Woods conference produced a landmark scholarly conference volume (1993).. The "Overview" that Bordo (1993) wrote for the conference remains the best account of the history of the Bretton Woods System.

In subsequent work, MDB continued to explore the functioning of the Bretton Woods system and subsequent exchange rate regimes. Bordo, Oliver and MacDonald (2009) used daily data to analyze the Sterling Crisis of 1964 to 1969. They showed that prior to the devaluation in

1967, the British exchange rate was not credible, and that it was only maintained by various rescue operations. Even after the devaluation, doubts remained about the new value of the pound until the Basle agreements in 1968 provided sufficient central bank support to maintain the pound at its new value. The sterling crisis illustrated one of the problems inherent in the Bretton Woods system: the tendency of surplus countries to sterilize inflows and thus shift the burden of adjustment to deficit countries.

While the Sterling Crisis illustrated the weaknesses of the Bretton Woods system, it did not fundamentally undermine it. The central problem was the behavior of the United States, whose currency was supposed to be a gold-equivalent reserve for other currencies. Pressure on the United States from France was one of the key factors leading to the demise of the system. It has often been attributed to the perverse political ambitions of Charles de Gaulle. However, in a paper with Dominique Simard and Eugene White (1995), Bordo argued that France's actions were actually part of a well-intentioned plan to achieve a more balanced international financial system.[14]

What the French failed to realize, and what ultimately brought down the system, was the unwillingness of the United States to subordinate its domestic concerns about unemployment to its international monetary role and foreign nations were no longer willing to passively import American inflation. Even with rapid economic growth, the Bretton Woods System ended after being in full operation for only twelve years. In contrast, the classical gold standard, although it passed through some major trials, lasted 40 years. This comparison was spelled out in a paper Bordo presented at the 1995 meeting of American Economic Association in 1995, where he

[14] Bordo and Fernando Santos (1995) explored the delayed decision of a smaller nation, Portugal, to join the Bretton Woods system. The tradeoff was between economic nationalism and a dislike of institutions dominated by the United States, on one hand, and the desire to become eligible for World Bank loans on the other.

concluded that "the best prescription for world economic stability is for each country independently to pursue stable monetary and fiscal policies**"** (p. 322).

The idea of a fixed exchange rate regime did not die with Bretton Woods. The European Monetary Union was a conscious attempt to gain the advantages of the fixed exchange rates on a more limited European scale. Bordo and Lars Jonung (2003) and more recently Bordo and James (2008, 2010, 2012) have drawn on the history of monetary regimes and monetary unions to consider the future of the EMU. These papers agree with most observers that the EMU began life with a number of weaknesses: there was no central authority for supervising financial institutions, no central fiscal authority, and a set of economically diverse regions that did not constitute an optimal currency area among others. They conclude that only a strong political will can overcome these obstacles in order to achieve a united Europe---and on whether that will is strong enough, the jury is still out.

Finally, we should mention that Bordo, Owen Humpage, and Schwartz have been working for some years on an in-depth study of Federal Reserve exchange market intervention. In their first paper (2007), they trace the history U.S. government exchange market interventions beginning from the Second Bank of the United States to the present. Their forthcoming University of Chicago Press volume will prove to be the defining text for scholars and policy makers studying exchange market intervention.

6. Globalization

By the 1990s, international flows of capital, goods, and labor grew so fast that comparisons with the seemingly ancient pre-1914 era began to be conjured. The trade barriers, immigration restrictions and capital controls, erected during two World Wars and the Great

Depression and sustained through the first two decades of post-World War II recovery, had crumbled, producing a new globalization of markets.

One of Bordo's important gifts to the professions—economics, history, political science---are his broad panoramic, usually exhaustive, surveys. MDB (2003) provided a summary of the empirical evidence on the international integration of financial markets from 1880 to the end of the twentieth century. The striking finding is that globalization of financial markets followed a strong U-shaped pattern over this 120 period for ratios of net flows and stocks of foreign investment to GDP. This pattern emerges no matter the measure, including Feldstein-Horioka correlations of savings and investment, covered interest parity or real interest parity. In this literature Bordo contributed several papers with Jongwoo Kim (1998) and with Barry Eichengreen and Douglas Irwin (2000a, 2000b); and with Alan Taylor and Jeffrey Williamson (2003) he organized an important conference. While there is a pronounced U-shape in foreign investment, the more important change may have been in the composition of foreign investment. Before 1914, it was concentrated in bonds of governments, railways and mines that were relatively easy to monitor at a long distance. In the newer period of globalization, direct foreign investment is more important, with equities equaling debt finance. Although by some measures the pre-1914 era showed greater integration, today's markets are broader and deeper thanks to reductions in information asymmetries because of technological innovation in the collection, transmission and analysis of financial data.

While the open capital markets before World War I served to transfer resources to fast-growing emerging economies, it also made them open to financial crises, with today's more open emergers even more prone to crises. Bordo and Murshid (2006) tackled the difficult problem of comparing the strength of shocks and the patterns of their transmission, focusing on currency

crises for the periods 1880-1914 and 1975-2001. They found that the co-movement of interest rate spreads were greater in the earlier period. Given Bordo's earlier findings of larger relative capital imports and greater persistence in the earlier period, it is not surprising that financial market shocks were more globalized before 1914, a fact which they attributed to the strong links fostered by the gold standard. Using a measure of exchange market pressure, they identified the strongest co-movement for the pre-1914 period. Before 1914, the gold standard and tight trade and investment links between the European core countries (U.K., France and Germany) and the emerging markets (U.S. Canada, Australia and Latin America) meant that financial shocks were disseminated quickly through the globalized economy, generated by the core---primarily the U.K. Similarly, the likelihood of a financial crisis was greater in the past, though it is as high among advanced countries today as it was in the past. In the more recent era of globalization, while the core countries in Europe and the U.S. are affected by each others' shocks, the emerging economies of the late twentieth century do not have the same synchronicity of crises. The growth of new financial centers and the ability of policy authorities to better offset shocks with tools means more insulation.

How much did financial crises cost countries in the two eras of globalization? Bordo and Schwartz (1999) estimated that growth declined by 2 percent relative to trend for single banking or currency crises before 1914 and 3 percent in the post-1973 era. Double crises were more punishing with shortfalls of approximately 5 percent in both periods. These periods also saw rescue packages that reflected different institutional structures. In the pre-World War I era, private bankers arranged loans between central banks to cover short-term current account shortfalls; while in the post-1973 period international institutions brokered larger rescues, though these are believed to have induced moral hazard and contributed to the apparently larger recent

crises. Bordo (2003) concluded that while the benefits of integration were long-term, the short-term costs delivered with the punch of financial crises contributed to political backlash in the pre-1914 era, a warning to the present.

The question, "To float or not to float," in a globalized economy where large capital flows are sensitive to policy failures is addressed by Bordo and Flandreau (2003) who find that emerging nations are often pushed to extreme choices in exchange rate regimes. In the nineteenth century, the gold standard imposed monetary and fiscal discipline on those nations that joined the regime, enabling the development of deep and liquid money and capital markets. These benefits were garnered by the core countries, most importantly, the U.K., France and Germany, with the implied currency bands giving policy makers relatively little leeway to smooth the adjustment for GDP to shocks. By the 1970s, increased financial maturity---deeper markets and new means of signaling commitment to monetary and fiscal sobriety---permitted core countries, including now the U.S. and Japan, to float and gain more policy independence needed to manage the income-smoothing demands of democracy. In both periods, the situation in both periods for countries on the periphery was quite different, owing to their lack of financial maturity. Measuring financial development by M2 to GDP, Bordo and Flandreau provided econometric evidence that countries that joined the gold standard were more financially developed in the decades before 1914, but the ability to float was more closely associated with financial development post-1973. Many emergers lacked the ability to adhere to the rigid strictures of the gold standard; and at the same time, floating endangered their ability to borrow. The upshot was that in both periods, peripheral countries adopted super-hard fixed exchange rates (100 percent gold reserves or currency boards) to limit policy makers' options.

7. Financial Crises

Bordo came of age as an economist just as the Bretton Woods System was breaking down. The certainties about fixed exchange rates, and low inflation were ebbing. For a financial and monetary historian, this was a prime opportunity. The past, the pre-1939 period and even more importantly the pre-1914, when the first era of globalization was in full swing offered the best analogies for understanding the emerging problems. None of these was more important than the reappearance of international financial crises, as capital controls fell into abeyance and global financial markets re-integrated.

For many observers, the last few decades seem to be more crisis-ridden, including the severe combination of twin banking and currency crises that had vanished in the calm times of the mid-twentieth century. To provide a rigorously historical perspective on this question, Bordo, Eichengreen, Daniela Klingebiel and Maria Soledad Martinez-Peria (2001) examined the global record for the last 120 years and found that crises have grown more frequent, notably twin crises, doubling the rate of the Bretton Woods and the classical gold standard eras and matching the turbulent 1920s and 1930s. However, more common, crises were not longer, nor were output losses larger. They attributed the increased frequency to a combination of high capital mobility, which had prevailed under the classical gold standard, and something new, the development of financial safety nets for financial institutions that encouraged them to accumulate foreign currency debt in pegged exchange regimes.

Unfortunately, some countries, chiefly the emerging economics, are particularly prone to crises. In the world of globalized capital markets, they find it difficult to borrow in their own currency and borrow at long maturities. As these are long-standing problems, the phenomenon has been christened the problem of "Original Sin." It is typically measured as the ratio of gold-

back or foreign currency debt to total public debt. This problem existed in the first era of globalization and, naturally, comparisons are instructive for how nations might be able to escape this severe capital market limitation. Bordo, Meissner and Redish (2005) found that sound fiscal institutions, high monetary credibility and broad financial development are not sufficient to escape from Original Sin. Salvation also required some combination of scale, becoming a key currency or membership in the British Empire. These nations issued long term domestic from their earliest years, though their external debt was in foreign currencies or carried gold clauses. The handful of escapees are the U.S., Canada, Australia, New Zealand and South Africa. The U.S.'s chequered history in the nineteenth century, with state defaults and the Greenback suspension, led to most debt requiring some form of a gold clause. Breaking completely free was only possible in 1933 when the U.S. abandoned the gold standard and the gold clause was excusably eliminated. For Canada, the opportunity came when World War I limited the sterling market for the Dominions, with the escape completed with the demise of the Bretton Woods System, which saw the creation of derivatives that enabled the issue of foreign bonds in relatively thin markets. In contrast with today's emergers, the burden of Original Sin was smaller given the escapees' superior fiscal and monetary institutions that left them with fewer, more manageable imbalances.

In the short-run, emerging countries in the present and the past that became dependent on large foreign capital inflows have dreaded "sudden stops." These precipitous breaks or reversals of capital flows have brought economies to an unexpected standstill, as painfully illustrated by the Mexican crisis (1994), the Russian crisis (1998) and the East Asian crisis of the late 1990s. To gain more insight into these phenomena, Bordo, Cavallo and Meissner (2010) studied sudden stops under the classical gold standard, 1880-1913. Their results showed that these were very

similar to the late twentieth century sudden stops. Probit regressions with a variety of definitions of a sudden stop revealed that high levels of foreign currency denominated debt and large current account deficits made nations more prone to experience a sudden stop. The threat was somewhat mitigated by greater trade openness and large international reserves—emphasizing the importance of balance sheet effects. Sudden stops accompanied by financial crises were the most grievous threat to a country and caused output per capita to fall 3 to 4 percent below trend growth. While these momentous events had grave consequences they were temporary, in contrast to un-connected sudden stops that appear to have been associated with a drop in trend growth, reflecting changed fundamentals.

Following this work, Bordo and Meissner (2006) and Bordo, Meissner and Stuckler (2010) investigated whether foreign currency debt has a similar propensity to cause a financial crisis and diminish economic growth for countries in both the gold standard era and the post-Bretton Woods years, 1973-2003. Higher foreign debt to total debt after large foreign capital inflows increased the likelihood of a crisis, though higher reserves and greater policy credibility reduced the probability of a crisis. Worse yet, financial crises driven by foreign debt resulted in permanently lower output, with a one year crisis being associated with the loss of one full year's growth of output. Again, while capital inflows seemed to raise output in the short-term there was a difference between the post-Bretton Woods era where permanent changes to capital flows raised long-term output while in the earlier era they slightly lowered levels of output. In both periods, crises had a permanent negative effect on output, 4% in the first period of globalization and 1.5% for the second. Noting the precarious borrowing practices of contemporary Eastern European countries, Bordo, Meissner and Stuckler (2010) offered out-of-sample forecasts for

them reporting small probabilities of financial crises and expected growth losses, chiefly because the ratio of foreign to total debt is well below 100 percent.

Skill in managing a crisis can limit the penalty from Original Sin. Bordo and Meissner (2006) found this to be the case for the U.S., British Dominions and Scandinavia before 1913. This result is striking because some of these nations, especially the British "offshoots," had the highest level of "Original Sin" but compensated for it with credible institutions and policies---an important historical lesson that does not jump out of the twentieth century data. For emerging markets vulnerable to sudden stops, Bordo, Eichengreen, Klingebiel and Martinez-Peria (2001) recommend monetary, fiscal and exchange rate policies to limit current account deficits, curbing maturity mismatches when borrowing and strengthening market discipline for financial institutions to compensate for the moral hazard created by the safety nets.

A key policy question arising from a currency crisis is should the afflicted country receive aid from other countries or international agencies? That is, should the country get a bailout? Although there has been international assistance during the last two centuries, the size of assistance has grown very rapidly in the past two decades. Bordo (1999) and Bordo and Schwartz (1999) identified the 1990s as a watershed. Previously, rescue packages that headed off a devaluation or abandonment of the gold standard were modest and required remedial policies. In most cases they were successful and the loans were repaid. They were also arranged by private institutions, the Rothschilds, the Barings, or J.P. Morgan, in contrast to the international agencies like the IMF, the BIS and the World Bank that have dominated the scene since World War II. The latter bailouts delivered substantial funds to limit wealth losses of foreign lenders and domestic investors after devaluations of a pegged exchange rates.

The characteristics of successful and unsuccessful earlier international assistance offer key policy insights, and Bordo and Schwartz (2000) provided a connoisseur's guide to vast and diverse international crisis experience. Because fundamentals were sound, the temporary assistance granted in 1825, 1866, and 1890 to the Bank of England by the Bank of France, through the intermediation of the Rothschilds, and the rescue of the U.S. Treasury in 1895 by the Belmont-Morgan syndicate were successful. On the other hand, the interwar rescue efforts in 1931 for Austria, Germany and the U.K. all failed, as the countries were unable to change the underlying fundamentals of deepening national and international deflations and recessions. Initially, after World War II, rescue efforts by the IMF for Britain in 1956, Canada in 1962, and Italy in 1964 replenished central banks' lost reserves on the central bank and staved off collapse. But beginning in the late 1960s, as its fundamentals deteriorated, Britain received assistance on several occasions that only delayed devaluation that came in 1967.

The trend worsened after the collapse of Bretton Woods and the Mexican, Asian and Russian crises. Notably these occurred after capital account reversals—reflecting unsustainable fundamentals, rather than current account reversals that were typical of the previous century. This dismal record, Bordo and Schwartz attributed to the belief that domestic lenders are protected by the safety net from failure. The moral hazard arising from this protection induced banks to take greater risks abroad as well as domestically; and it is worsened by the belief of some countries that they would receive assistance from the IMF if they get into trouble. Intervention after devaluation was justified to avoid the spread of contagion. In an environment of high capital mobility, the underlying problem is that in an environment of high capital mobility countries become invested in a pegged exchange rate and, if subjected to large unexpected shocks, cannot adjust. Instead, they should be on a floating exchange rate. To avoid

large losses, Bordo and Schwartz concluded that contemporary international lenders should lend subject to strict eligibility, with short-term loans at a high rate---following Bagehot's recommendation and the successful lending experience of the nineteenth century.

Finally, there is the very basic question: does IMF assistance help a country? Bordo and Eichengreen (1999) gave us the essential facts. Two features immediately jump out of their summary of IMF assistance to Asia and Latin America. First, some countries are frequent borrowers and poor economic performers, and second there has been the spectacular increase in the size of loans, especially since the Mexican bailout of 1995. To more carefully assess the effects of IMF assistance, Bordo and Schwartz (2000) used a "With-Without" approach to compare countries that experienced similar external shocks but did and did not receive IMF assistance, using ten macro variables to measure the results. The overall picture is not encouraging for those who believe that the IMF has eased the effects of crises. Most importantly, recovery was faster for non-IMF aided countries, though there was eventual growth convergence. Within a medium term window, there is the disturbing result that real GDP per capita and consumption are lower for IMF aid recipients. The tough question is, of course, what would have happened in the absence of IMF intervention? Bordo and Schwartz examined a counterfactual that adjusts for the self-selection bias that countries, which run large fiscal deficits and have rapid monetary expansions with fragile financial systems, tend to be IMF customers and takes into account via a reaction function for policy target variables what actions countries would have taken in the absence of IMF assistance. They concluded that while turning to the IMF may be not be harmful to a country's economic performance, it certainly did not enhance it.

Some contrast is found in Bordo, Mody, and Oomes (2004), where the International Monetary Fund's rescue packages are viewed as having significant benefits in spite of some

scholars misgivings about the agency's role in international capital markets . This trio posed a key question: when an emerging market country experiences a crisis because of a "sudden stop" in capital flows, can IMF programs improve capital flows and macroeconomic performance? To answer this question, they identify a realistic counterfactual for a country in the absence of the IMF program, which must be conditioned on the initial conditions for the country receiving assistance. For the years 1980 to 2002, they provide a simple four bin framework for categorizing initial conditions from very bad to very good, depending on ratios of current account to GDP, reserves to imports, short-term debt to reserves, and external debt to GDP. The positive influence of the IMF is hypothesized to arise from (1) the provision of "good housekeeping" seal of approval (2) the IMG's use of superior information and assessment capabilities as delegated monitor and lender, and (3) the IMF its role as "catalytic lender" that halts otherwise irreversible decline. Bordo and his co-authors uncovered evidence to support (2) and (3) with the greatest success for interventions in countries where the fundamentals are bad but not "too bad."

8. Historical Guidance for Monetary Policy

As we all know, the proper role of a central bank was well understood and agreed upon until 2008. Targeting inflation in ordinary times had secured the Great Moderation, and if there were a financial crisis, the central bank would follow Bagehot's prescription and flood the market with liquidity. But, of course, we all would have been wiser had we been carefully reading Bordo's oeuvre on the subject of central banking and monetary policy. In his 1990 papers, he provided an overview of four schools of thought that have disputed the proper role for a lender of last resort (LOLR) for over a century: (1) The classical Thornton-Bagehot school: the LOLR should discount freely to anyone having good collateral at a high rate with the objective

of channeling funds to illiquid but not insolvent banks in order to halt a panic (2) The Goodfriend and King position: open market operations is the only instrument required to halt a liquidity crisis because discount window lending to selected banks is distortionary and better handled by the private sector (3) The Goodhart view: the LOLR should provide funds to illiquid and insolvent banks because it is impossible to distinguish between them in a crisis and failure of banks severs valuable customer relationships, impeding recovery (4) Free Banking School: there is no role for a LOLR when there is no monopoly of note issue because the public and markets can distinguish between insolvent and solvent banks and runs will not degenerate into panics.

To examine these alternatives, Bordo (1990) drew upon his work (1986) that classified crises for the U.S, the U.K., France, Germany, Sweden and Canada for 1870-1933 into financial, banking and stock market crises. In general, Bordo found that banking panics are rare events, associated typically with serious recessions, with falls in the money stock and price level, exacerbated by bad banking structure.[15] Drawing on this history of crises, he set out the external factors (abrupt relative price changes and changes in the price level) that can lead to a banking run or panic, and the internal factors that can mitigate it (a diversified branch banking system and cooperative clearing houses). But, Bordo emphasized that only a central bank can stem a nationwide panic because of its ability to create high-powered money, noting that while deposit insurance can remove the public's reason for panicking, it needs a lender of last resort (LOLR) to back the insurance system as a system of private clearing houses will not provide sufficient liquidity.

Here and elsewhere, Bordo took seriously the challenge of free banking proponents that a central bank is unnecessary and the claim that a system of competitive banks of issue would be

[15] Although MDB regards deposit insurance as not a necessary institution to prevent panics, it "solved the problem of banking panics in the U.S."

provide more stability. Reviewing the historical evidence, Bordo and Schwartz (1995) rejected the three variants of this school. The classical version is expressed in the "real bills doctrine." Although it informed banking practice in the nineteenth century, it is a destabilizing pro-cyclical policy as banks lend only short-term on what is perceived to be good collateral. Another variant gives clearing houses a central role in the monitoring and control of member banks. Looking at the Scottish, Canadian and American clearinghouses, Bordo and Schwartz did not see them as bulwarks against instability in the monetary system as there was no guard against all banks expanding simultaneously; and in Canada and Scotland there were other factors including branching and unlimited liability that contributed to the success of their banking systems. The third group of free banking proponents identifies competitive note issue by banks as the guarantor of stability. Given that there is no historical episode that conforms to the ideal, it is hard to evaluate.

Unlike the free banking view, the more interventionist approach to central banking embodied in the Goodhart view of the proper conduct for a LOLR holds considerable sway among central bankers and other policy makers. Yet, Bordo's historical survey found no evidence of Goodhart's necessity for lending to insolvent banks, as it was not practiced before the 1970s. Goodhart's modification of the Bagehot-Thornton approach treats discounting as an essential function of a central bank. However, the discount window might be considered a historical artifact of a time when there was no deep market in government securities or other important assets where a central bank could conduct open market operations. Consequently, LOLR functions had to be made through collateralized lending directly to banks, which raises the issue of the quality of collateral, which as Goodhart argued may be impossible to evaluate in a crisis.

Nevertheless, banking policy has important consequences for financial stability; and Bordo (1991) views the particular instability of the U.S. financial system as a product of constraints on the ability of banks to be flexible and diversify in the face of a host of New Deal regulations plus morally hazardous deposit insurance that increases risk-taking. In addition, to eliminating these types of regulation, Bordo and Schwartz (1995) argue that only minimal regulation and supervision would be needed to promote financial stability if owners and managers would have greater liability in the event of the failure of their institution, rather than depositors and taxpayers. The key responsibility of a regulatory agency should be to promptly close insolvent institutions; the agency need not be tied to the central bank and a private agency delegated the task by the legislature.

There are additional issues that have important bearing on the ability to a central bank to conduct monetary policy in ordinary and extraordinary times. Empirically, for monetary policy and LOLR policy to be effective, it is necessary for them to operate via the money channel and not engender large feedback effects from the credit channel. In addition, the pursuit of price stability should not undermine financial stability.

A substantial fraction of Bordo's work on monetary policy studies these complex relationships. After the 2008 crisis, a renewed belief emerged that financial cycles are driven by credit not money—the evolution of the asset side of banks' balance sheets not their liability side. Bordo argued that, it is vital to examine the issue in other periods and environments to ensure that there are no special contemporary circumstances that color empirical findings. Looking at the money versus credit question during gold-standard-National Banking Era 1880-1914 is particularly useful as the U.S. macro-economy seems to have been highly unstable (Bordo, Rappoport and Schwartz, 1992). From a monetarist point of view, changes in the balance of

payments and banking panics affected deposits and spending via aggregate demand and interest rates, whereas the credit view sees changes in bank loans and other forms of credit as critical to driving cycles. The latter class of models posits that credit rationing by banks limits the effects of interest rates on spending so that when faced with restrictive monetary policy banks may cut back further than expected inducing a greater contraction. Bordo, Rappoport and Schwartz found that in structural VAR models it was difficult to disentangle the effects of money and credit as causality seemed to flow both ways---that is, until the effects of the stock market were taken into account. Because a large fraction of bank loans in this period were invested in the stock market, volatility of the stock market can be shown to have affected real activity, as only loans collateralized with securities affected real activity not other loans. In contrast, the effect of money remained robust. They pointed out that this result would have pleased contemporaries who established the Federal Reserve to cope with the "inelasticity" of currency.

In addition, the monetary authorities' targeting of price stability should not undermine financial stability. Based on his studies of recent and historical episodes, Bordo sees considerable evidence that a focus on price stability will not unsettle but instead will steady the financial system. In a 1998 article with David Wheelock, Bordo investigated the "Schwartz hypothesis" that instability in the price level creates financial instability and that a central bank should focus on maintaining price stability because this will lessen the incidence and severity of financial instability. From the vantage point of the 1990s, the sustained and varying inflation of the 1970s and 1980s followed by sharp disinflation was a spur to speculation in the boom and bankruptcies and bank failures in the bust. Exploring the history of the U.S., the U.K. and Canada, Bordo and Wheelock found that these countries experience is broadly consistent with the Schwartz Hypothesis. U.S. data from 1789 through the 1990s shows that banking crises and

financial distress were associated with sharp deflations. However, banking regulation is an important complement to stable monetary policy. While the U.S. suffered from banking panics and failures, the U.K. did not experience banking panics from 1866 until 2008 because of the appropriate LOLR interventions of the Bank of England and the more stable structure of the U.K. banking system. While not experiencing panics like the U.S., and the U.K. and Canada had more subtle symptoms of financial distress when there was a lack of price stability, providing further support for the Schwartz hypothesis.

Furthering this work, Bordo, Michael Dueker and Wheelock (2002, 2003) studied how inflation and inflation variability have affected countries over a long horizon. Constructing a new index of financial conditions, by building on and extending the compilation of economic and financial conditions of Willard Thorp, Hildegarde Thorp, and Wesley Clair Mitchell (1926), they investigated the effects of price/inflation shocks on financial stability in the United States over two centuries, using a dynamic probit model to measure the contribution of these shocks to financial instability. Reflecting the monetary regimes of the gold standard and fiat money, price level shocks were important for 1820-1931 and inflation shocks for 1931-1999. In general they find that "price stability and financial stability are complementary" (p. 164). The danger of a financial crisis or heightened financial distress is that it will exacerbate the business cycle. Bordo and Haubrich (2010) showed that financial distress events—measured by risk spreads--exacerbated business cycle downturns in both the nineteenth and twentieth centuries. Covering the 29 business cycles from 1875 to the present, they followed the Friedman-Schwartz approach by first graphing the data and narrating the developments of each key episode of financial crisis then provide an econometric assessment using the Harding-Pagan algorithm to identify turning points. They saw that financial shocks exacerbated contractions. In addition, they pointed out

that, although quantity of money is not synchronized with business cycles, when cycles do coincide, monetary tightness significantly contributes to major recessions. The 2007-2009 recession thus represented the perfect storm, combining a monetary policy errors, a credit crunch, an asset price bust, and a banking crisis. The frustratingly slow recovery from the recession then became a major focus of attention by economists and policymakers. The conventional wisdom was that recoveries from financial crises are usually slow, and so the current pace of recovery was to be expected. But Bordo and Joseph Haubrich (2012) showed that the historical record for the United States proved the opposite: typically recessions caused by financial crises were severe, but the recoveries were rapid. Although all the evidence is not yet in, the current recovery may be attributed to a failure to adopt appropropriate policies to mitigate the fallout from the real estate bust.

The quest for price stability appears to be often frustrated by constraints on the Federal Reserve. To study how the Fed sought to counter rising inflation, Bordo and Landon-Lane (2010a), looked at the Fed's use of several instruments of monetary policy to to respond to macroeconomic developments over 14 business cycles from 1920 to 2007. Employing descriptive statistics and narrative in the Friedman and Schwartz tradition plus econometric analysis, they discovered that there is a distinct difference in the Fed's behavior between the first and second halves of the twentieth century. In the 1920s and 1950s, the Fed would tighten up when prices started to rise; but after 1960, it did not tighten immediately when inflation started to climb. Instead, the Fed reacted when employment peaked, implying that the Fed missed opportunities to restrain inflation. They pointed out that this difference maps into very different regimes. In the interwar period, gold standard orthodoxy prevailed and the Fed focused on price

stability, while in the post-World War II era, there was increased political pressure to focus on employment and Keynesian-Phillips Curve ideas influenced policy makers.

Questions about the relationship of policies for price and financial stability have, of course, taken on a new life in the twenty-first century following the dot.com bubble and the real estate boom and bust. The central issues are whether monetary policy substantially contributes to the formation and collapse of asset bubbles and whether monetary policy should target asset bubbles with the intention to prick them before they grow so big that their collapse will inflict major costs on the economy.

A key question that has divided economists is whether stock market booms have been associated with low inflation and stable prices or whether they flourish in inflationary periods. To approach this question, Bordo and Wheelock (2007) used a simple metric to identify stock market booms in the U.S. Providing a grand tabular display of booms, busts and "normal" periods with a narrative of each big swing in the tradition of *A Monetary History*, they showed that booms arose in periods of rapid growth of industrial production, real GDP and productivity, implying that they were driven primarily by fundamentals. They see no relationship between booms and inflation. While booms in the nineteenth century tended to occur during a monetary expansion, there is little evidence that they were driven by excessive growth of money and credit. Typically booms ended shortly after monetary policy tightened in response to inflation. Bordo and Wheelock's (2009) next paper looked beyond the U.S. to include Australia, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden and the U.K. and found very similar results. Following on this work, Bordo, Dueker and Wheelock (2008), examined the relationship between the stock market and inflation using a latent variable VAR and discovered that inflation and interest shocks were most strongly felt by the stock market in the post-World War II era.

Their evidence indicated that disinflation shocks contributed to booms while inflation shocks led to busts, leaving them---like Bordo and Wheelock (1998)---to conclude that the best means for central banks to contribute to the stability of financial markets is to minimize the unanticipated changes in inflation. As with his many other contributions, Bordo has presented influential summaries of his research in a variety of policy venues. His work on monetary policy and asset booms was featured in the IMF's World Economic Outlook (2003).

Should a central bank stick strictly to targeting prices or inflation? For a student of *A Monetary History*, this is a center stage issue partly because Friedman and Schwartz blame the Great Depression on the Federal Reserve's failure to concentrate on price stability. Instead the Federal Reserve became obsessed with arresting the stock market boom of 1928-1929 and between 1930 and 1933 with protecting its gold reserve rather than counteracting the banking panic induced declines in the money stock.

For most of his academic writing, Bordo has endorsed the strict central bank focus on price/inflation stability, he has considered an alternative policy. Bordo and Jeanne (2002) developed an argument for pre-emptive monetary policy in the face of an asset boom in equities or real estate. Such intervention, they saw as an insurance policy, and argued that interventions should be rare and dependent on exceptional developments. They contend that a policy of benign neglect of asset market booms, with the central bank only entering on the scene when there is a bust and a collateral-induced credit crunch, implies that the authorities are willing to sacrifice their price stability goals ex post. Hence, some precautionary intervention ex ante might be preferable. Bernanke and Gertler (2001) claimed that asset prices should only be taken into consideration if they convey information about future inflation, while Cecchetti et.al. (2000) emphasized that central banks should identify bubbles and prick them. Bordo and Jeanne stake a

middle ground with a policy that is closely approximated to an augmented Taylor rule for asset prices with the risk of asset price reversal summarized by several macroeconomic variables. The tricky feat is to detect a boom or a bust, which they identify as when an asset price growth in a three year moving-average moves outside of a confidence interval determined by historical first and second moments of the prices.

9. I Want to Be Like Mike

Space does not permit us to mention all of Bordo's papers. Undoubtedly, we will hear from colleagues who were disappointed because we failed to mention one of their favorites. This is inevitable given his productivity. Our recent count found that he had published approximately 244 papers including many in leading economic journals such as the *American Economic Review*, the *Journal of Political Economy*, and the *Review of Economics and Statistics*; and he had written or edited 12 books published by prestigious university presses. But this count does not tell the whole story because he continues to remain highly productive. Indeed, many of his unpublished National Bureau of Economic Research working papers have already been widely cited. Ultimately, Bordo's reputation rests on more than mere numbers of publications. Since the financial crisis of 2008, and recent events in Europe, there has been a surge of interest in precisely the issues—exchange rates, monetary policy, and financial crises—that have long engaged him. Too often, however, policies are advocated on the basis of a single current or historical case study or at the other extreme, on the basis of masses of data gleaned from countries around the globe with little attention to their history or provenance. Bordo's central point has always been that history must be studied in all of its rich variety and in detail to provide effective guidance for policy. Inevitably, history teaches us, as Bordo has thoroughly

demonstrated, that changes in monetary policies and reforms of monetary institutions produce a wide range of effects that must be carefully measured and weighed to assay the tradeoffs before final choices are made. History provides useful lessons, but you need a grandmaster of monetary history to draw the right lessons.

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