This Time, It Is *Not* Different:
The Persistent Concerns of Financial Macroeconomics

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ABSTRACT

When the *Financial Times's* Martin Wolf asked former U.S. Treasury Secretary Lawrence Summers what in economics had proved useful in understanding the financial crisis and the recession, Summers answered: “There is a lot about the recent financial crisis in Bagehot...”. “Bagehot” here is Walter Bagehot’s 1873 book, *Lombard Street*. How is it that a book written 150 years ago is still state-of-the-art in economists’ analysis of episodes like the one that we hope is just about to end? There are three reasons. The first is that modern academic economics has long possessed drives toward analyzing empirical issues that can be successfully treated statistically and theoretical issues that can be successfully modeled on the foundation of individual rationality. But those drives are disabilities in analyzing episodes like major financial crises that come too rarely for statistical tools to have much bite, and for which a major *ex post* question asked of wealth holders and their portfolios is: “just what were they thinking?”. The second is that even though the causes of financial collapses like the one we saw in 2007-9 are diverse, the transmission mechanism in the form of the flight to liquidity and/or safety in asset holdings and the consequences for the real economy in the freezing-up of the spending flow and its implications have always been very similar since at least the first proper industrial business cycle in 1825. Thus a nineteenth-century author like Walter Bagehot is in no wise at a disadvantage in analyzing the downward financial spiral. The third is that the proposed cures for current financial crises still bear a remarkable family resemblance to those proposed by Walter Bagehot. And so he is remarkably close to the best we can do, even today.

I. Introduction

At the spring 2011 INET Conference in Bretton Woods, New Hampshire, *Financial Times* correspondent and columnist Martin Wolf asked:

> [Doesn't] what has happened in the past few years simply suggest that [academic] economists did not understand what was going on?...

Former U.S. Treasury Secretary Lawrence Summers, in the course of his long answer, said:

> There is a lot in [Walter] Bagehot that is about the crisis we just went through. There is more in [Hyman] Minsky, and perhaps more still in [Charles] Kindleberger...[1]

Walter Bagehot (1826-1877) refers to his *Lombard Street*, published in 1873.[2] Hyman Minsky (1919-1996) is a twentieth-century observer and theorist of financial crises best approached not through his books[3] or his collected essay volume—*Can "It" Happen Again?*—but rather through the use that economic historian Charles Kindleberger (1910-2003) made of his work in Kindleberger's 1978 *Manias, Panics, and Crashes: A History of Financial Crises*.[4] Asked to name where to turn in the works of economists to understand what was going on in 2005-2011, Summers cited three dead economists—one of them long dead. Summers did then enlarge his answer to include living economists, starting with the economic historian Barry Eichengreen and then moving on to mention "[George] Akerlof, [Robert] Shiller, many, many others...". Summers he stressed the success of empirical work in aiding understanding, in contrast to the failure of

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[1] See "Larry Summers and Martin Wolf on New Economic Thinking" (April 8, 2011 video) <http://tinyurl.com/dl201108a>.

[2] Walter Bagehot (1873), *Lombard Street: A Study of the Money Market* (London: Henry S. King) <http://www.econlib.org/library/Bagehot/bagLomCover.html>.

[3] Hyman Minsky (1986), *Stabilizing an Unstable Economy* (New York: Twentieth Century Fund) <http://books.google.com/books?id=MD3zrAe5iOYC>; Hyman Minsky (1982), *Can "It" Happen Again?: Essays on Instability and Finance* (New York: M.E. Sharpe) <http://books.google.com/books?id=dNCZAAAAIAAJ>; Janet Yellen (2009), "A Minsky Meltdown: Lessons for Central Bankers" (San Francisco, CA: Federal Reserve Bank of San Francisco) <http://www.frbsf.org/news/speeches/2009/0416.html>.

[4] Charles Kindleberger (1978), *Manias, Panics, and Crashes: A History of Financial Crises* (New York: John Wiley) <http://books.google.com/books?id=nBb-xYi9O-sC>.

modern "macroeconomic [theory to] keep up with [the] revolution" in finance "as it was realized that asset prices show large volatility that does not reflect anything about fundamentals".[5]

How is it that Walter Bagehot (1873), *Lombard Street: A Study of the Money Market*, a book written 150 years ago is still state-of-the-art in economists' analysis of episodes like the one that we hope will be dated as ending next year, in 2013? And what, exactly did Bagehot say that is still useful?

There are three reasons that Bagehot (1873) still has considerable authority:

The first reason is that modern academic macroeconomics has long possessed two drives. It has possessed a drive toward analyzing empirical issues that can be successfully treated statistically. It has possessed a drive toward analyzing theoretical issues that can be successfully modeled on the foundation of a representative agent possessing individual rationality. These drives are often very useful: most of the successes of modern macroeconomics as a policy science are built on top of them. These drives, however, become positive disabilities in analyzing episodes like major financial crises. Major financial crises come too rarely for statistical tools to have much bite. Given that a major *ex post* question asked of wealth holders and their portfolios after a crisis is "just what were they thinking?", a baseline assumption of individual rationality forecloses too many issues—as does any assumption of a representative agent.

The second reason is that, while the causes of financial collapses are diverse, the effects are pretty much constant across time. Since 1825 we have seen a single mechanism transmit financial distress to the real economy of production and employment. transmission mechanism, in the form of the flight to liquidity and/or safety in asset holdings, and the consequences for the real economy, in the freezing-up of the spending flow and its implications for employment and production, looks much the same in episode after episode. The transmission mechanism and the consequences have typically been very similar since at least the first proper industrial business cycle in 1825.

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[5] See Robert Shiller (1980), "Do Stock Prices Move too Much to Be Justified by Subsequent Movements in Dividends?" (Cambridge: NBER Working Paper 456) <http://www.nber.org/papers/w0456.pdf>. The conclusion of a very long subsequent literature was that Shiller was right: assuming that standard tools for constructing estimates of rational expectations apply, only a small part of aggregate equity price variation comes from revisions of rational expectations of future dividends and earnings flows.

Thus a nineteenth-century author like Walter Bagehot is in no wise at a disadvantage in analyzing the causes and spread of the downward financial spiral, or in analyzing its consequences for the real economy.

The basic story is simple. Through the arrival of new information, through sheer panic, or through the effects of government policies, wealth-holders lose their confidence that a good chunk of the financial assets that they had thought were safe, liquid stores of value and potential means of payment are in fact safe and liquid. Such assets thus lose their attractiveness as safe stores of value and liquid potential means of payment. This causes wealth-holders to attempt to dump their holdings of such now-impaired assets to try to rebalance their portfolios with respect to safety and liquidity. But the dumping of the now-impaired assets makes them even less safe and less liquid. The recognition of reality (or the simple panic) triggers an attempted shift of portfolios in the direction of holding more safe, liquid stores of value just at the moment that the value of assets that count as such declines. This was the story in 2007-9. And this was also the story in 1825-6. Thus it is not surprising that a good analysis of 1825-6 and like financial crisis-driven downturns like Bagehot (1873) is still a (nearly) state-of-the-art analysis of 2007-9.

Bagehot's (1873) key relevant insight was that expansionary policies affect both the demand for and the supply of safe, liquid stores of value. When households and businesses are convinced that they need to hold more safe, liquid stores of value, they will try to push their spending on currently-produced goods and services below their incomes. But since economy-wide incomes are nothing but spending on currently-produced goods and services, the net effect is only to push incomes, production, and spending down until households and businesses feel so poor that they forget about building up their stocks of safe, liquid stores of value.

Thus brings us to the third reason, the additional feature of the situation that Bagehot saw back in 1873. The natural cure for the financial system and for the real economy is for something to lead households and businesses to lower their demand for or something to expand the supply of safe, liquid savings vehicles. If this is accomplished so that desired safe and liquid asset holdings at full employment are once again equal to asset supplies, the economy will recover. Bagehot (1873) saw aggressive expansionary policies as desirable both to increase the supplies of the safe, liquid stores of value that households and businesses wish to hold and to damp down demand for such assets by demonstrating that risks will be managed and reduced. And those are still the policies, in many different flavors it is true, advocated today.

Thus Walter Bagehot (1873) is remarkably close to the best we can do, even today.

II. Aggregate Supply and Aggregate Demand

A. Say's Law

At the beginning of economics, back at the very start of the nineteenth century, Jean-Baptiste Say (1803) wrote that the idea of a "general glut"—of economy-wide "overproduction" and consequent mass unemployment—was incoherent.[6] Nobody, Say argued, would ever produce anything beyond what they expected to use themselves unless they planned to sell it, and nobody would sell anything unless they expected to use the money they earned in order to buy something else.

Thus, "by a metaphysical necessity"[7], as John Stuart Mill put it back in 1829, there can be no imbalance between the aggregate value of planned production-for-sale, the aggregate value of planned sales, and the aggregate value of planned purchases. This is what would become "Say's Law". Say pointed out that producers could certainly guess wrong about what consumers wanted—and thus produce an excess of washing machines when what consumers really wanted were more yoga lessons. But, Say argued, that would produce a clear market signal in the form of an excess demand for and high profits in making commodities short supply and an excess supply of and losses in making commodities in surplus. The market system had the incentive and the power to quickly iron out such imbalances. The fact remained that planned spending had to equal planned production. And, in reply to those who claimed that general depression could be produced if the economy's money supply was too low, Say said that producers could and would always give credit:

> to say that sales are dull, owing to the scarcity of money, is to mistake the means for the cause.... Should the increase of traffic require more money to facilitate it, the want is easily supplied... merchants know well enough how to find substitutes for the product serving as the medium of exchange or money...[8]

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[6] Jean-Baptiste Say (1803), *Treatise d'Economie Politique* (Paris); Eng. trans. Biddle <http://tinyurl.com/dl201108b>.

[7] John Stuart Mill (1844), *Essays on Some Unsettled Questions in Political Economy* <http://tinyurl.com/dl201108e>.

[8] Jean-Baptiste Say (1855), *A Treatise on Political Economy*, Eng. trans. Biddle <http://tinyurl.com/dl201108b>.

Thomas Robert Malthus thought at the start of the 1820s that there was something wrong with Say's argument. Malthus believed that he could see the excess supply, but not the corresponding excess demand:

> [W]e hear of glutted markets, falling prices, and cotton goods selling at Kamschatka lower than the costs of production. It may be said, perhaps, that the cotton trade happens to be glutted; and it is a tenet of [Say's and Ricardo's] new doctrine on profits and demand that if one trade be overstocked with capital it is a certain sign that some other trade is understocked. But where, I would ask, is there any considerable trade that is confessedly under-stocked, and where high profits have been long pleading in vain for additional capital? The [Napoleonic] war has now been at an end above four years; and though the removal of capital generally occasions some partial loss, yet it is seldom long in taking place, if it be tempted to remove by great demand and high profits...[9]

But Malthus did not have a coherent view of what was wrong with Say's basic argument. Malthus tended to see what we would call cyclical unemployment as, rather, an aspect of his other Malthusian concerns about the causes of poverty—and thus as something, like the rest of poverty, best addressed through long-run reform measures to strengthen monarchy, patriarchy, and religion.[10]

The proper answer to Say was given by John Stuart Mill in a piece he wrote in 1829[11] but did not publish until 1844:

> [T]here cannot be an excess of all other commodities, and an excess of money.... But those who have... affirmed that there was an excess of all commodities, never pretended that money was one of these commodities.... [P]ersons in general, at that particular time, from a general expectation of being called upon to meet sudden demands, liked better to possess money than any other commodity. Money, consequently, was in request, and all other commodities were in comparative disrepute.... When this happens to one single commodity, there is

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[9] Thomas Robert Malthus (1820), *Principles of Political Economy Considered with a View Toward Their Practical Application* (London) <http://goo.gl/IYvxI>.

[10] See Thomas Robert Malthus (1798), *An Essay on the Principle of Population* (London: J. Johnson) <http://goo.gl/OqHVA>. John Maynard Keynes (1936), *The General Theory of Employment, Interest and Money* (London: Macmillan) <http://www.marxists.org/reference/subject/economics/keynes/general-theory/> took Malthus to be in some sense a predecessor, but it is not clear in what sense

[11] John Stuart Mill (1844), *Essays on Some Unsettled Questions in Political Economy* <http://tinyurl.com/dl201108e>.

> said to be a superabundance of that commodity; and if that be a proper expression, there would seem to be in the nature of the case no particular impropriety in saying that there is a superabundance of all or most commodities, when all or most of them are in this same predicament...

What has the potential to break Say's Law—the equality of expected production and incomes on the one hand and planned spending on the other "by metaphysical necessity" as Mill put it—is, Mill said, that people do not just buy currently-produced goods and services with their incomes, they also buy money—or, more generally, financial assets. The easiest way for a wealth holder to build up his or her holdings of financial assets is for him or her not to spend the financial assets he or she already owns: to attempt to cut planned spending below expected income. But while each individual can cut planned spending below expected income, an economy as a whole cannot cut its actual spending below its actual income, because what is one economic agent's income can come from nowhere but some other economic agent's spending.

B. The British Downturn of 1825-1826

It is unfair to expect Jean-Baptiste Say to have seen this back in 1803. He did not live in an industrial economy. He had not seen a deflationary financial panic or elevated cyclical unemployment. John Stuart Mill had the advantage of having seen the first industrial business cycle in Britain in the form of the 1825-6 downturn, a downturn generated by the 1825 financial crisis, which was in its turn produced by the collapse of the early-1820s canal boom.

Figure 1 plots the percentage change in British apparent cotton consumption across the bulk of the nineteenth century. In the forty-five years of peace between the end of the Napoleonic Wars in 1815 and the disruption of the global cotton industry by the U.S. Civil War that started in 1861, apparent cotton consumption by the textile factories of Great Britain declined in only seven episodes. Cotton textile production was the high-tech high-profit rapidly-expanding leading sector of Britain's first industrial revolution, growing at a pace of more than 8% per year on average. 1826 was the second-worst decline in this leading sector, and in British industrial production in general.

It was this episode that John Stuart Mill was looking back on in 1829 when he evolved his view of the relationship between aggregate supply and aggregate demand as mediated by the potential for an excess demand for money and other financial assets.

Figure 1
Annual Percentage Change in Apparent British Cotton Consumption, 1810-1875

Source: Wladimir Woytinsky and Emma Woytinsky (1952), *World Population and Production* <http://tinyurl.com/dl201108d>

And, also in 1829, it was looking back on this episode led Jean-Baptiste Say to revise his doctrine. In his *Complete Course of Applied Political Economy*, Say begins his analysis of 1825-1826 with the Bank of England's recognition in late 1825 that many of its potential counterparties had overleveraged and overinvested in speculative canals, and were now of questionable solvency either on their own account or because many of their debtors had overleveraged and overinvested in speculative canals. The Bank of England therefore decided in 1825 to reduce its own risk by applying stricter standards:

> [It] cease[d] to discount commercial bills. Provincial banks were in consequence obliged to follow the same course, and commerce found itself deprived at a stroke of the advances on which it had counted, be it to create new businesses, or to give a lease of life to the old.

And the consequence, Say wrote, was financial collapse:

> As the bills that businessmen had discounted came to maturity, they were obliged to meet them, and finding no more advances from the bankers, each was forced to use up all the resources at his disposal. They sold goods for half what they had cost. Business assets could not be sold at any price. As every type of merchandise had sunk below its costs of production, a multitude of workers were without work. Many bankruptcies were declared among merchants and among bankers, who having placed more bills in circulation than their personal wealth could cover, could no longer find guarantees to cover their issues beyond the undertakings of individuals, many of whom had themselves become bankrupt...[12]

What of Say's 1803 declaration that when there is a shortage of *money* in an economy, merchants "know well enough how to find substitutes for the product serving as the medium of exchange"?

What Say had missed in 1803 was that such "inside money" can be quite difficult to create. Only those economic agents whose solvency is common knowledge can create money. Only they can create the safe savings vehicles and stores of value that serve as means of payment and mediums of exchange that everybody will accept, and that everybody will accept because everybody will accept.

But what economic agency is of unquestioned solvency in a time of overleverage, overinvestment, and significant but unrealized losses whose location is unknown?

That was the problem created in 1825-1826 by the collapse of the canal boom, and by the Bank of England's first reaction to the potential insolvency of its counterparties.

III. Origins of Central Banking

A. The Market Failure

Thus by late 1825 in Britain the revaluation of assets that was the collapse of the canal boom had created a situation in which "money" was "in request": safe, liquid stores of value were scarce relative to demand both because the financial crisis had

[12] Jean-Baptiste Say (1829), *Cours Complet d'Economie Politique Pratique* <http://tinyurl.com/dl201108c>

led banks and businesses to seek to hold a greater share of their wealth in safe, liquid form and because the financial crisis meant a substantial proportion of safe and liquid "inside" assets—the debts of bankers, merchants, and industrialists presumed to be well-capitalized—were not so.

Note that the assets households and businesses scramble for in and in the aftermath of a financial crisis do not have to be, exclusively, means of payment themselves: assets that are still trusted will do as well, or almost as well. In the fall and winter of 1825-6, all across the British economy, economic agents were attempting to build up their stocks of safe, liquid financial assets out of a fear that they might need them because their creditors, who were also trying to build up their stocks of safe, liquid financial assets, might not roll over their loans. All across the British economy economic agents were trying to cut their flow of spending below their expected flow of income—and finding themselves unable to do so, as one agent's income comes from another agent's spending. The consequence was that currently-produced goods and services became "in comparative disrepute": as spending fell, production and employment fell.

What, then, was it appropriate for the government to do?

Neither Say (1803) nor Say (1829) not Mill (1844) connected the dots and drew out the implications. But they are clear. In normal times, banks exist to undertake and make their profits by undertaking liquidity and safety transformations: turning illiquid and risky claims on the capital stock of the economy and on its income into the safe, liquid claims that businesses and households demand and that are used for transactions purposes. They thus create "inside money". They do this by bearing risks, by figuring out which risks to bear, and by convincing their creditors that they know their business so that their liabilities are safe assets—and thus become liquid means of payment.

But what if the private financial sector is at the moment unable to perform these safety and liquidity transformations at the scale needed to satisfy demand? What if merchants and bankers are not able to create inside-money substitutes for the product serving as the medium of exchange? What if the private market fails?

B. "Inside Money" and "Outside Money"

The natural way to repair this market failure is for the government to temporarily supplement the "inside money" that the financial system can no longer create with its own "outside money". It is then the task of the government to create the safe and liquid financial assets that the private market desires. The central bank should then act as the financial system's lender-of-last-resort.[13]

It can do so through any of a number of channels:

- It can buy relatively risky and illiquid bonds in exchange for its own safe and liquid liabilities: that is called expansionary monetary policy.

- It can take risk onto its balance sheet by guaranteeing the liabilities of private banks: that is called expansionary banking policy.

- It can make investments in bridges, in the human capital of twelve-year-olds, and in social welfare and pay for them by issuing its own relatively safe and liquid debt: that is called expansionary fiscal policy.

All of these were attempts to resolve the problem noted by John Stuart Mill and Jean-Baptiste Say in 1829: an excess demand for safe and liquid financial assets, an excess demand that by Walras's Law is matched by an excess supply of currently-produced goods and services.

Economic theory was not to get to this destination in a clear and coherent fashion until Bagehot (1873). But economic practice and policy ran ahead of theory, getting there at the end of 1825. Such an attempt to compensate for the failure of the market to create sufficient "outside money" to cure a financial crisis and the resulting downturn in real activity—to create the safe, liquid financial assets to match market demand—was undertaken by the Bank of England at the end of 1825. And this first such attempt is the origin of what we today would see as modern central banking.

C. "Outside Money", Financial Crisis Policy, and E.M. Forster's Great-Aunt Marianne

Our best single window into the origin of central banking in 1825 comes from English novelist E.M. Forster, whose great-aunt Marianne Thornton had helped raise him after his father's death and left him a legacy of £8,000 pounds, and who

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[13] Thomas M. Humphrey and Robert E. Keleher (1984), "The Lender of Last Resort : a Historical Perspective" (Richmond: Federal Reserve Bank of Richmond Working Paper 84-3) <http://www.richmondfed.org/publications/research/economic_review/1989/pdf/er750202.pdf>.

as a consequence wrote *Marianne Thornton: A Domestic Biography 1797-1887*,[14] stringing her letters together with scene-setting prose. In the middle of 1825 Marianne Thornton's younger brother, the 25-year-old Henry Thornton, was invited to join what had in earlier generations been the Thornton family bank as the most junior of its six partners. Marianne writes of profits of £40,000 pounds a year to be split among six partners.[15]

In a letter of December 1825 to her friend Hannah More, she wrote that:

> There is just now a great pressure in the mercantile world, in the consequence of the breaking of so many of these scheming stock company bubbles...

And she criticized the management of the bank that young Henry had just joined. The bank's managing partner:

> had been inexcusably imprudent in not keeping more cash in the House, but relying on [the bank's] credit ... which would enable them to borrow whenever they pleased....

Today we would say that the bank was overleveraged, and had made the mistake of including in its core capital reserves assets that had been misclassified as "AAA". Marianne Thornton writes of an "inexcusably imprudent" reliance on the bank's credit. But the essence of the mistake is the same. The story that Marianne Thornton tells in her letter to Hannah More has a modern ring.

Then there came a "dreadful Saturday [Marianne] shall never forget" and a run—a wave of depositors liquidating their accounts and depleting the bank's reserves—leaving the bank vault "literally empty."

According to Marianne, all the other partners of Pole, Thornton, and company panicked:

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[14] E.M. Forster (1956), *Marianne Thornton: A Domestic Biography* (New York: Harcourt Brace) <http://tinyurl.com/dl201108f>.

[15] Jane Austen's hero in her *Pride and Prejudice*, Fitzwilliam Darcy, received £20,000 pounds a year from his estate of Pemberly, and is thus richer than any other non-noble character we meet. See Jane Austen (1813), *Pride and Prejudice* <http://www.pemberley.com/janeinfo/pridprej.html>.

> [The managing partner] insisted on proclaiming themselves bankrupts at once, and raved and self-accused himself.... [Senior partner Scott] cried like a child of 5 years old...

Partner Pole was away at his country estate. Another partner was on a business trip. It fell to 25-year-old Henry to deal with the fact that in the last business hour of Saturday it was expected that Pole, Thornton:

> would have to pay 33,000 [pounds], and they should receive only 12,000 [pounds]. This was certain destruction....

Henry Thornton quickly found another banker John Smith. Smith asked if the bank was solvent. Henry lied, and said that it was. Well, then, Smith said, Pole, Thornton would have all he could spare:

> Never, [Henry] says, shall he forget watching the clock to see when 5 would strike, and end their immediate terror. ... The clock did strike ... as Henry heard the door locked, and the shutters put up, he felt [Pole, Thornton] would not open again but would be forcibly liquidated Monday morning...

There were, however, other wheels that had already been set in motion.

The First Lord of the Treasury, Robert Banks Jenkinson, Lord Liverpool, had been having conversations with Bank of England Governor Cornelius Buller about the need of the Bank of England to do something to calm the crisis by acting as a "lender of last resort".[16] John Smith had gotten wind of these conversations between Liverpool and Buller. And that Saturday evening, after the banks had closed, John Smith told Henry Thornton that if Henry truly believed that Pole, Thornton was solvent he, John Smith, would undertake to get it cash from the Bank of England. This was a shock. As Marianne Thornton wrote:

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[16] See Charles Kindleberger (1984), *A Financial History of Western Europe* (London: Routledge) <http://books.google.com/books?id=s8hiamcsiFQC>: "Critical debate over who should act as lender of last resort... took place behind closed doors in December 1825.... Lord Liverpool, having warned the market... that the speculators were going too far and that the government would not save them... threatened to resign if Exchequer bills were provided.... The emergency required action by someone.... Lord Liverpool... applied enormous pressure on the Bank to force it to issue special advances..."

> [T]he Bank [of England] had never been known to do such a thing in the annals of banking...

Sunday at 8 AM the members of the Court of the Bank of England who were in London were assembled to meet John Smith and Henry Thornton:

> John Smith began by saying that the failure of [Pole, Thornton] would occasion so much ruin that he should really regard it as a national misfortune... then turned to Henry and said, 'I think you give your word the House is solvent?' Henry said he could ... [and] had brought the books.
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> “Well then”, said the governor and the deputy governor of the Bank, “you shall have 400,000 pounds by 8 tomorrow morning, which will I think float you”. Henry said he could scarcely believe what he had heard...

Monday morning, in the pre-dawn dark, Henry Thornton was at the Bank of England as Goveror Buller and Deputy Governor Richards personally counted out £400,000 pounds in bank notes. Marianne Thornton claims that one of the two said:

> I hope this won't overset you, my young man, to see the governor and deputy governor of the Bank [of England] acting as your two clerks...

And:

> rumors that the Bank of England had taken [Pole, Thornton] under its wing soon spread, and people brought back money [on Monday] as fast as they had taken it out on Saturday...

Henry Thornton had been irrationally exuberant and in error when he had sworn that the bank was solvent. The bank was eventually closed. The partners lost their capital shares. The Bank of England had to wait years before getting its emergency loan back in nominal terms, and it never recovered accrued interest. (But it did not care much.)[17]

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[17] Henry Thornton’s career prospered thereafter: even though the bank he had seized command of as a junior partner foundered, the consensus was that he had displayed great energy, good judgment, a cool head, and a facility with figures that made him worth backing. Thereafter Nathan Meyer Rothschild was willing to back him.

The particular intervention to support Pole, Thornton was only a small part of what the Bank of England did in the Panic of 1825. To quote from Bank of England Director Jeremiah Harman:

> We lent [cash] by every possible means and in modes we had never adopted before; we took in stock on security, we purchased Exchequer bills, we made advances on Exchequer bills, we not only discounted outright, but we made advances on the deposit of bills of exchange to an immense amount, in short, by every possible means consistent with the safety of the Bank, and we were not on some occasions over-nice. Seeing the dreadful state in which the public were, we rendered every assistance in our power...[18]

Did it work? Relative to the 8% per year trend rate of increase in cotton consumption in Britain, it appears that cotton consumption in 1826 was some 24% below trend before rebounding with a 30% growth rate in 1827. Relative to trend it looks like a deep, albeit short downturn. There is good reason to fear that the downturn would have been considerably worse had the Bank of England behaved like the U.S. Treasury and Federal Reserve in the early 1930s, and washed their hands of the situation.

From the standpoint of Mill's theory of how the flip side of deficient general demand for currently-produced commodities is an excess demand for safe and liquid financial assets, it is straightforward to understand how the Bank of England's 1825-6 interventions would have boosted the economy. That the Bank of England was willing to guarantee the liabilities of Pole, Thornton turned them from shaky, risky assets back into "inside money"—safe, liquid assets that would satisfy the unusual demand at that moment for near-riskless stores of value and sources of liquidity. That the Bank of England was itself printing up extra banknotes—expanding its balance sheet—raised the supply of "outside money" that the government was providing to the banking system. That the Bank of England was taking action to deal with the crisis may have restored that elusive "confidence" which diminishes desired portfolio demand for an unusually-high amount of safe, liquid assets. And when banks, businesses, and households no longer wish to cut their planned expenditure below their expected income, the economic downturn is over. As A.C. Pigou quotes Alfred Marshall, the industrial depression

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[18] Walter Bagehot (1873), *Lombard Street*, <http://tinyurl.com/dl201108g>.

> could be removed almost in an instant if confidence could return, touch all industries with her magic wand, and make them continue their production and their demand for the wares of others...[19]

IV. The Development of Central Banking Practice in the Mid-Nineteenth Century

A. Robert Peel and "Moral Hazard"

In 1844 the British Parliament took a look at the system of central-bank support for the economy in a financial crisis that the Bank of England's intervention in 1825 had left it. It held a debate on the terms on which the charter of the Bank of England should be renewed. In the end, the conclusion of the 1844 Bank Recharter debate was twofold:[20]

1. The Bank of England should not have the power to print unlimited amounts of money to support the banking system in a financial crisis—in fact, it should be illegal for the Bank of England to print extra banknotes in a crisis. The important principle was that bankers should be on notice that they should not expect a bailout—for that would create too great a risk of substantial losses from moral hazard.

2. In the event of a real emergency coming--which, Prime Minister Robert Peel claimed, should not happen--then the government could and would request that the Bank of England print as many banknotes as needed to fix the financial crisis.

The reason for (1) was very clear to the Parliamentary debaters back in 1844. Any confident expectation on the part of the financial community that the Bank of England did stand behind them and would intervene to prevent large-scale bankruptcy in a financial crisis would greatly amplify the chances of such a crisis by removing fear and caution. Bankers confident that in the last analysis they were gambling with the public's money would do what bankers tend to do in such

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[19] A.C. Pigou (1923), *Essays in Applied Economics* (London: P.S. King and Son) <http://books.google.com/books?id=FXU40tmugnIC>.

[20] Bank Charter Act of 1844 <http://www.ledr.com/bank_act/1844032.htm>. P. Barrett Whale (1944), "A Retrospective View of the Bank Charter Act of 1844", *Economica* NS 11:43 (August), pp. 109ff. J. K. Horsefield (1944), "The Origins of the Bank Charter Act, 1844", *Economica* NS 11:43 (November), pp. 180ff.

situations. Hence, Robert Peel and his majority in the Parliament thought, it was very important to establish the principle that the Bank of England could not be relied upon to bail out the banking system. And, Peel thought, the best way to establish that principle would be to make it illegal for The Bank of England to do so. As of 1844 the worry was that a government backstop for financial markets would enable moral hazard, lead financiers confident of rescue in an emergency to gamble with the government's and the taxpayers' money, and in the end the expectation of rescue would bring on the financial crises that lender-of-last-resort activities were supposed to cure.

This chain of logic leads to the conclusion that, as Charles Kindleberger put it, since "if the market is sure that a lender of last resort exists, its self-reliance is weakened". This led Kindleberger to the conclusion that:

> The lender of last resort... should exist... but his presence should be doubted.... This is a neat trick: always come to the rescue in order to prevent needless deflation, but always leave it uncertain whether rescue will arrive in time or at all, so as to instill caution in other speculators, banks, cities, or countries.... some sleight of hand, some trick with mirrors... [because] fundamentalism has such unhappy consequences for the economic system...[21]

Hence the legal prohibition of unlimited expansions of the note issue: Parliament made it illegal for the Bank of England to expand its balance sheet by buying up other assets and issuing additional Bank of England notes, unless the extra note issues were matched by additional gold reserves. The difficulty is that the supply of "outside money" is thereby rendered inelastic, and as Charles Kindleberger noted:

> The difficulty in making the note issue inelastic... is that it became inelastic at all times, when the requirement in an internal financial crisis is that money be freely available...

And, much earlier, Karl Marx (1848) had complained that the Bank Recharter Act of 1844 was by its nature destructive, for it:

> put into practice a self-acting principle for the circulation of paper money.... The issuing department is by law empowered to issue notes to the amount of fourteen millions sterling.... Beyond these fourteen millions, no note can be issued which is not represented in the vaults of the issuing department by bullion to the same

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[21] Charles Kindleberger (1978), Manias, Panics, and Crashes: A History of Financial Crises (New York: John Wiley) <http://books.google.com/books?id=nBb-xYi9O-sC>.

> amount.... Suppose now that a drain of bullion sets in, and successively abstracts various quantities of bullion from the issuing department.... This is not a mere supposition. On October 30, 1847, the reserve of the banking department had sunk to £1,600,000 while the deposits amounted to £13,000,000. With a few more days of the prevailing alarm, which was only allayed by a financial coup d'état on the part of the Government, the Bank reserve would have been exhausted and the banking department would have been compelled to stop payments.... Sir Robert Peel's much vaunted Bank law does not act at all in common times; adds in difficult times a monetary panic created by law to the monetary panic resulting from the commercial crisis...[22]

And Peel's passing the Bank Recharter Act played a large role in generating Marx's scorn for Peel:

> Peel himself has been apotheosized in the most exaggerated fashion... One thing at least distinguished him from the European 'statesmen' -- he was no mere careerist.... [T]he statesmanship of this son of the bourgeoisie... consisted in the view that there is today only one real aristocracy: the bourgeoisie.... [H]e continually used his leadership of the landed aristocracy to wring concessions from it for the bourgeoisie... Catholic emancipation... the reform of the police... the Bank Acts of 1818 and 1844, which strengthened the financial aristocracy... tariff reform... free trade... with which the aristocracy was nothing short of sacrificed to the industrial bourgeoisie.... His power over the House of Commons was based upon the extraordinary plausibility of his eloquence. If one reads his most famous speeches, one finds that they consist of a massive accumulation of commonplaces, skillfully interspersed with a large amount of statistical data...[23]

And, indeed, Marx's complaints about the 1844 Bank Recharter Act would have been well-taken—if the Act had been applied.

B. Robert Peel's Successors and "Suspension Letters"

But that the 1844 Bank of England Recharter Act made lender-of-last-resort operations illegal did not mean that they were not thereafter undertaken.

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[22] Karl Marx and Friedrich Engels (1980), *Collected Works* (Moscow: Progress Publishers), vol. 15, pp. 379-384 <http://marxengels.public-archive.net/en/ME1033en.html>.

[23] Karl Marx and Friedrich Engels (1850), *Neue Reinische Zeitung Politische-Oekonomische Revue* <http://www.marxists.org/archive/marx/works/1850/11/01.htm>.

As Robert Peel wrote in 1844, looking back on the Bank Recharter Act, the mere fact that the Act had made lender-of-last-resort operations illegal did not mean that they should not or would not be undertaken:

> My confidence is unshaken that we have taken all the Precautions which legislation can prudently take up against the Recurrence of a pecuniary Crisis. It my occur in spite of our Precautions, and if it does, and if it be necessary to assume a grave responsibility for the purpose of meeting it, I dare say men will be found willing to assume such a responsibility. I would rather trust to this than impair the efficiency and probable success of those measures by which one hopes to control evil tendencies in their beginning, and to diminish the risk that extraordinary measures may be necessary...[24]

Peel saw a choice: either (i) give the Bank of England explicit powers (and so run the risk that financiers, expecting that those powers would be used, would exploit moral hazard and so produce irrational exuberance, extravagant overleverage, and repeated frequent financial crises), or (ii) forbid the Bank of England from acting and rely on financial statesmen in the future to take actions *ultra vires* under the principle that in the end *salus populi suprema lex.* Peel chose (ii). To him and his peers, the risks that granting explicit powers would enable moral hazard appeared greater than the risks that when a crisis should come the makers of monetary policy would not understand that their proper role was to create enough "outside money" to satisfy the panic demand for safe, liquid assets and so eliminate the gap between planned economy-wide spending and expected income that would otherwise generate a deep economic downturn.

And, indeed, Peel's expectations of how his successors would act in a crisis were rational. Men were indeed found willing to assume a grave responsibility and go *ultra vires* and undertake actions that they had no legal power to perform—indeed, actions that they were expressly forbidden by the terms of the Bank of England's new charter from undertaking. The Governors of the Bank of England, however, would not expand their balance sheet beyond its legal limit purely on their own initiative, however. They required first a blessing from the government of the day.

The blessing took the form of a "suspension letter" written by the Chancellor of the Exchequer—the British Treasury Secretary. First in 1847 and then in 1857 and then in 1866, the Chancellor would write a letter to the Governor of the Bank of England stating that he was suspending for the duration of the financial crisis those provisions of the 1844 Bank Recharter Act of 1844 that restricted the Bank of

[24] *British Parliamentary Papers* 1847 [1969], Vol. 2, p. xxix.

England's ability to expand its balance sheet. Nothing in the black-letter law or in previous custom gave the Chancellor any such power to at his will suspend provisions of a corporation charter and grant the corporation extra privileges and powers above those Parliament had granted it. Successive Chancellors did so anyway. They judged it, as Peel had foretold: "necessary to assume a grave responsibility for the purpose of meeting" the crisis. They did so. And few people complained.

One who did complain was the irate Karl Marx. He asked whether:

> it [will] be believed that the Committee has contrived to simultaneously vindicate the perpetuity of the law and the periodical recurrence of its infraction? Laws have usually been designed to circumscribe the discretionary power of Government. Here, on the contrary, the law seems only continued in order to continue to the Executive the discretionary power of overruling it. The Government letter, authorizing the Bank of England to meet the demands for discount and advances upon approved securities beyond the limits of the circulation prescribed by the Act of 1844, was issued on Nov. 12...[25]

The reason that few people complained was that the system seemed to work less badly than other systems that could be envisioned. The system was inconsistent—and that annoyed Marx. But the Act's originator's blessing of *ultra vires* lender-of-last-resort powers coupled with the Act's text's forbidding of them accomplished Charles Kindleberger's "neat trick... sleight of hand... trick with mirrors..." and made it possible for the "lender of last resort... [to] exist... but [for] his presence [ex ante] tp be doubted"; for the Bank of England to "come to the rescue in order to prevent needless deflation, but always leave it uncertain whether rescue will arrive in time or at all, so as to instill caution..."

And most frequently, in the third quarter of the nineteenth century at least, the taking on of risk onto the Bank of England's books and the issuing of additional banknotes above the legal limit was not needed: simply the declaration that the Chancellor of the Exchequer had sent a suspension letter to the Governor of the Bank of England, or even was just planning to send a suspension letter, was enough to eliminate the high demand for additional safe, liquid savings vehicles all by itself.

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[25] Karl Marx (1868), "The English Bank Act of 1844", *New York Tribune* (August 23) <http://marxengels.public-archive.net/en/ME1077en.html>.

V. From Practice Back to Theory: Walter Bagehot's *Lombard Street*

A. Bagehot's Rules

Thus when Walter Bagehot settled down to write his *Lombard* Street, he had at his back not only the analytical apparatus of British classical political economy but also half a century's worth of policymakers' experience at dealing with financial crises, and policymakers' memoirs in which they reflected upon their experience. He thus had several rich veins of material to draw upon as he attempted to systematize what was known about how central banking worked in a financial crisis. The mid-nineteenth century practice of central banking he took it upon himself to rationalize and explaican be summed up simply: when, in a financial crisis, private savers want desperately to hold more safe, liquid savings vehicles, *give them what they want.*

And Bagehot explained how a central bank should go about doing this with four rules:

His first rule is that the central bank exists to keep the fall in the supply of safe, liquid savings vehicles in a financial crisis as small as possible, and to do so by lending freely to all--or at least to all who have collateral to indicate that they would be solvent if times were normal and if the financial crisis had passed:

> They must lend to merchants, to minor bankers, to 'this man and that man', whenever the security is good. In wild periods of alarm, one failure makes many, and the best way to prevent the derivative failures is to arrest the primary failure which causes them.... On the surface there seems a great inconsistency... like saying--first, that the reserve should be kept, and then that it should not be kept. But there is no puzzle..... The ultimate banking reserve of a country (by whomsoever kept) is not kept out of show, but for... meeting a demand for cash caused by an alarm within the country..... [W]e keep that treasure for the very reason that in particular cases it should be lent...

Bagehot's second rule is that it is very dangerous to place an *ex ante* limit on how much the monetary authority will commit to operation as a lender of last resort: the central bank needs to stand ready to expand the supply of safe, liquid assets by as much as turns out to be necessary, which may be more (or less) than anybody thinks possible (or necessary):

> [A]n opinion that most people, or very many people, will not pay their creditors; and this too can only be met by enabling all those persons to pay what they owe, which takes a great deal of money.... Just so before 1844, an issue of notes, as in 1825, to quell a panic entirely internal did not diminish the bullion reserve. The notes went out, but they did not return. They were issued as loans to the public, but the public... never presented them for payment..... [W]e must keep a great store of ready money always available, and advance out of it very freely in periods of panic, and in times of incipient alarm...

Bagehot's third rule is that the central bank must not play favorites:

> [A]dvances should be made on all good banking securities, and as largely as the public ask for them.... The object is to stay alarm.... But the way to cause alarm is to refuse some one who has good security to offer.... If it is known that the Bank of England is freely advancing on what in ordinary times is reckoned a good security—on what is then commonly pledged and easily convertible—the alarm of the solvent merchants and bankers will be stayed...

The purpose is to destroy risk. And the risk that a particular firm's assets will not receive symmetrical treatment with the assets of other, more favored firms is not an extra source of risk that needs to be introduced.

Bagehot is often glossed as if he had declared that a central bank in a financial crisis should lend to *illiquid* but not *insolvent* institutions.[26] But it is difficult to see how any institution whose solvency is common knowledge could possibly be illiquid. Indeed, it is only because the central bank's solvency is common knowledge that it can create the safe, liquid "outside money" needed to reflate the financial system in a financial crisis.[27] Bagehot did not say "illiquid but not insolvent". He said something more clever: that the central bank should be seen to be "freely advancing on what in ordinary times is reckoned a good security—on

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[26] "About 431,000" results for a Google search for the string "lend to illiquid but not insolvent institutions", search perfomed on November 17, 2011.

[27] And if the central bank's own solvency is doubted—if it has or accepts sufficient harder-currency liabilities, for example—then its lender-of-last-resort operations directed at supporting the private financial system may well trigger a sovereign debt crisis in which it too needs rescue and support. See Aurel Schubert (1991), *The Credit-Anstalt Crisis of 1931* (Cambridge, UK: Cambridge University Press) <http://books.google.com/books?id=D4gIbPmjzhcC>.

what is then commonly pledged and easily convertible", then "the alarm of the solvent merchants and bankers will be stayed".[28]

And Bagehot's fourth rule is that central bank lending in a financial crisis should be undertaken at a "penalty rate": nobody—no organization, no manager, no trader, and no investor—should end the crisis in any sense happy that they were forced to rely on the government. This would appear to mean, particularly, that equity should be extinguished before the central bank begins providing support at interest rates that are at all concessionary. To the extent that equity rights are preserved as less than a proper penalty rate is charged, the criticism that the central bank has unnecessarily provided incentives for moral hazard is unanswerable.[29]

B. The Great Depression

How effective are these rules? How necessary are these rules? They are a systematization of nineteenth-century British central-banking practice. They do have theoretical banking in John Stuart Mill's observation that deficient aggregate demand—planned total economy-wide spending less than expected income—is the flip side of excess demand for financial assets or for some subset thereof. They do, at least in Peel's formulation, attempt the sleight of hand and tricks with mirrors, the "ambiguity, verging on duplicity... promis[ing] not to rescue banks and merchant houses... to force them to take responsibility for their behavior, and then rescu[ing] them... for otherwise trouble might spread..." that Kindleberger calls for in the hope of minimizing *ex ante* moral hazard. But are there alternative public-policy strategies that would do as well?

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[28] Thus Kindleberger's worries that "the central bank presumably seeks to follow rules of helping only sound houses with good paper. The dilemma is that if it holds off too long, what had been good paper becomes bad..." is not an argument that that Bagehot would recognize for not intervening if the crisis is already bad enough that no financial institution would be solvent if it were immediately marked-to-market. Indeed, since the risk of bankruptcy makes the value of assets to creditors less than the cot of liabilities to debtors, it is hard to see how there could be any institutions that started out with any leverage at all solvent in a mark-to-market sense in a deep financial crisis.

[29] Fabio Castiglionesi and Wolf Wagner (2012), "Turning Bagehot on His Head: Lending at Penalty Rates When Banks Can Become Insolvent", *Journal of Money, Credit and Banking* 44:1 (February), pp. 201–219.

We do not really know. We do however, know that the one major time in a deep financial crisis that Bagehot's rules were *not* followed turned into the Great Depression.[30]

In part this was because of the sovereign-debt aspect. In Europe there was no actor large enough to be a lender of last resort. The United States did not want to step in and serve as a lender-of-last-resort for Europe. In part this was because there was no visible shortage of "liquidity". Money remained very cheap, in the sense of very low safe short-term interest rates. So how could there be a role for the central bank? What point in swapping cash for short-term government bonds when both are indistinguishable zero-yielding government assets? We today would presumably distinguish between a shortage of liquidity pure-and-simple—a situation in which investors are dumping interest-earning assets at almost any price in order to build up their stocks of means of payment—and a shortage of safe assets—in which investors are dumping risky assets in order to build up their stocks of safe assets. We would say that there is a strong case for the central bank to rebalance the economy by increasing the *money supply* in the first case and by increasing the *safe asset supply* in the second.[31] But interwar policymakers did not make that leap.

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[30] Barry J. Eichengreen (1992), *Golden Fetters: The Gold Standard and the Great Depression* (Oxford: Oxford University Press) <http://books.google.com/books/reader?id=Qk1flhynCD8C>; Barry J. Eichengreen (2008), *Globalizing Capital* (Princeton: Princeton University Press) <http://books.google.com/books?id=8wrdqjYloSQC>.

[31] Bailouts and loan guarantees, purchases of long-duration and risky assets for cash and safe near-cash, and the sale of cash and near-cash for other things—equities, roads, bridges, investments in the human capital of twelve-year olds, investments in health, and so forth—retain what power they have to boost the stock of safe assets even when the economy is awash in liquidity, when cash and short-term Treasury bonds are perfect substitutes, and when conventional open-market operations lose their traction. The question of whether such interventions are classified as monetary policy, banking policy, or fiscal policy is in large part a matter of definitions and labels.

In part it was because of the rising Austrian tide. The 1920s and 1930s saw the heyday of the doctrine that business-cycle depressions are the necessary breathing of the economic mechanism.[32]

In part it was out of a fear that large deficits and rising government debt would shake business confidence and add to uncertainty, and raise fears of destructive inflation.[33] Monetary experts like R.G. Hawtrey could denounce those who called for fiscal austerity to fight the danger of inflation as "Crying 'Fire! Fire! in Noah's Flood".[34] But they had little effect on policy at the end of the 1920s, and less effect on policy in the post-trough 1930s than they wished.

Kindleberger's judgment was that Bagehot's rules are applied because they had, more often than not, worked reasonably well:

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[32] See Friedrich von Hayek (1931), "The Fate of the Gold Standard", in *The Collected Works of F. A. Hayek: Good Money*; Joseph A. Schumpeter (1934) 'Depressions", in Douglass Brown, ed., *Economics of the Recovery Program* (New York: McGraw-Hill) <http://books.google.com/books?id=fq7nAAAAMAAJ>; Lionel Robbins (1934), *The Great Depression* (London: Macmillan).

[33] See, for example, Herbert Hoover (1932), "Budget Message for Fiscal 1933" (Washington: GPO): "1933 should ask for only the minimum amounts which are absolutely essential for the operation of the Government.... The appropriation estimates for 1933 reflect a drastic curtailment of the expenses of Federal activities in all directions where a consideration of the public welfare would permit.... The welfare of the country demands that the financial integrity of the Federal Government be maintained.... [W]e are now in a period where Federal finances will not permit of the assumption of any obligations which will enlarge... expenditures.... To those individuals or groups who normally would importune the Congress to enact measures in which they are interested, I wish to say that the most patriotic duty which they can perform at this time is to themselves refrain and to discourage others from seeking any increase in the drain upon public finances..."

[34] R.G. Hawtrey (1938), *A Century of Bank Rate*: "The [United Kingdom's] National Government... made strenuous efforst to balance the budget, but it was too late to stem the flight from the pound. On the 21st September the convertibility of the currency into gold was suspended. On that day Bank Rate was raised to 6 per cent [per year]. Once the gold standard was suspended, there could be no doubt of the purpose of that step. In the face of the exchange risk [created by abandoning the peg to gold] the high rate could not possibly attract foreign money. It could only be intended as a safeguard against inflation. Fantastic fears of inflation were expressed. That was to cry 'Fire! Fire!' in Noah's Flood. It is *after* depression and unemployment have subsided that inflation becomes dangerous..."

> Whether there is a theoretical rationale for letting the market find its way out of a panic or not, the historical fact is that panics that have been met most successfully almost invariably found some source of cash to ease the liquidation of assets before prices fell to ruinous levels...[35]

The fact remains that when policymakers and commentators confronted the financial crisis of 2008-9, they almost invariably reached for the rules of Walter Bagehot. It is in that sense that Lawrence Summers was correct when he said that "there is a lot in Bagehot that is about the crisis we just went through..."

VI. Conclusion: From 1873 to 2009

It is traditional for economic historians and historians of economic thought to lament productive research programs of the past that were then only little further developed, with many threads left dangling for decades if not longer. And it is indeed a fact that the number of economists whose work makes it into the graduate curriculum who build on Bagehot is relatively small: Minsky (1982, 1986) is present to a small degree. Kindleberger (1978, 1984) is present to a somewhat larger one. Eichengreen (1992, 2008) is present in economic history courses. Otherwise, Bagehot (1873) remains remarkably good preparation for reading modern works that attempt to pick up the same or similar threads like Richard Koo (2003, 2009) or Carmen Reinhart and Kenneth Rogoff (2008).

One reason that Bagehot (1873) still has considerable authority is that the tools of modern academic macroeconomics are not of a great deal of help in weaving together the threads trailing off from Bagehot. Rare and complex events like large financial crises that produce deep and lengthy downturns are not frequent enough for statistical methods to have much purchase. Financial crises are generated when leveraged agents make large bets and get them wrong, while modern economics has a hard time sustaining models in which agents make bets at all: it is difficult to construct economic actors who are both believable and who fail to realize that they know less than their potential counterparty, and any deal that their potential counterparty is willing to offer is not one that they should accept. Academic macroeconomics can and has made progress on lots of issues,but working in the tradition of Bagehot goes against the grain.

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[35] Charles Kindleberger (1984), A Financial History of Western Europe (London: Routledge) <http://books.google.com/books?id=s8hiamcsiFQC>.

Alongside the lack of comparative advantage of the analytical tools of modern economics in making progress on Bagehot-type issues is the fact that, qualitatively, our knowledge base is little better than his. As of his writing, Bagehot or his predecessors had seen the industrial-economy financial crises of 1825-6, 1847-8, 1857, and 1866. Since then we have seen global-scale crises in 1873, 1884, 1893, 1907, 1929-33, and 2008-9, alongside a host of local-scale crises. However, the qualitative mechanism has remained the same. Since 1825 we have seen a single mechanism transmit financial distress to the real economy of production and employment. It takes the form of a recognition that previous confidence in the liquidity or safety of assets was built on sand, of an attempted flight to liquidity and/or quality in asset holdings, and the consequent excess demand for financial assets generating, via Walras's Law, deficient demand for currently-produced goods and services. The freezing-up of the spending flow and its implications for employment and production looks much the same in episode after episode. Thus a nineteenth-century author like Walter Bagehot is at little disadvantage in analyzing the causes and spread of the downward financial spiral, or in analyzing its consequences for the real economy.

While it would certainly have been helpful and productive had the threads left dangling by *Lombard Street* been woven further over than they have been over the past 140 years, that failure to make more rapid progress was not a great disability for economics. What was a great disability for economics was a failure to pick up the toolkit of *Lombard Street* and use it to its full effect over the past five years. And here I do not have answers: I have only questions. Specifically:

1. Why were economists so confident that highly-leveraged money-center banks—banks that had just switched from a partnership to a corporate structure—had effective control over their risks?

2. Why were economists so confident that the Federal Reserve had both the power and the will to easily stabilize the growth path of nominal GDP?

3. And what happened to economists' effective consensus on the technocratic goals of macroeconomic policy? The presumption since at least 1936 was that it was the business of government to intervene strategically in asset markets to stabilize the growth path of nominal GDP, and so to attempt to attain both effective price stability and maximum feasible employment and purchasing power.

Yet when the crunch came in late 2008, the technocratic policy consensus on even the goal of maintaining the flow of spending proved to be fragile and ephemeral.

Bagehot, however, was very clear and vocal on the root cause of the problem:

> Any sudden event which creates a great demand for actual cash may cause, and will tend to cause, a panic in a country where cash is much economised, and where debts payable on demand are large.... [S]ome writers have endeavoured to classify panics according to the nature of the particular accidents producing them. But little, however, is, I believe, to be gained by such classifications. There is little difference in the effect of one accident and another upon our credit system. We must be prepared for all of them, and we must prepare for all of them in the same way.... [O]wners of savings not finding, in adequate quantities, their usual kind of investments, rush into anything that promises speciously.... The first taste is for high interest, but that taste soon becomes secondary. There is a second appetite for large gains to be made by selling the principal which is to yield the interest. So long as such sales can be effected the mania continues; when it ceases to be possible to effect them, ruin begins...

And on what needed to be done in response:

> Ordinarily discredit does not at first settle on any particular bank... [it] amounts to a kind of vague conversation: Is A. B. as good as he used to be? Has not C. D. lost money?... A panic, in a word, is a species of neuralgia, and according to the rules of science you must not starve it. The holders of the cash reserve must be ready not only to keep it for their own liabilities, but to advance it most freely for the liabilities of others. They must lend to merchants, to minor bankers, to 'this man and that man'.... The problem of managing a panic must not be thought of as mainly a 'banking' problem. It is primarily a mercantile one.... At the slightest symptom of panic many merchants want to borrow more than usual; they think they will supply themselves with the means of meeting their bills while those means are still forthcoming. If the bankers gratify the merchants, they must lend largely just when they like it least; if they do not gratify them, there is a panic. On the surface there seems a great inconsistency.... First, you establish in some bank or banks a certain reserve.... And then you go on to say that this final treasury is also to be the last lending-house; that out of it unbounded, or at any rate immense, advances are to be made when no one else lends. This seems like saying—first, that the reserve should be kept, and then that it should not be kept. But... the ultimate banking reserve of a country (by whomsoever kept) is not kept out of show, but for certain essential purposes, and one of those purposes is the meeting a demand for cash caused by an alarm within the country...

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