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ABSTRACT

This paper is the story of success and failure in the financial markets, the markets for goods and services and in politics. It is a difficult story to tell because the crisis had many causes, but the focus here is on three main factors. First, the incentives that contributed to a credit-fuelled bubble, especially in property markets. Monetary and regulatory policies feature prominently in this part of the story. Second, because the housing bubble alone cannot explain the magnitude of the subsequent events, gearing in the financial sector, which affected asset markets unrelated to sub-prime mortgages will be examined. These developments are explained by reference to private financial sector decisions, including the role of the shadow-banking sector, and their regulatory backdrop. Finally, an answer will be sought to the question of how highly geared banks first became fragile and then failed with such dire consequences for the economy that massive policy intervention had become essential. The consequences of these large policy interventions and the international tensions caused by them are also explored.

Keywords: Financial crisis, Banks, Financial regulation, Monetary policy, Fiscal policy, Currency wars

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Introduction

The logic of the industrial revolution is specialisation with cooperation. Increased specialisation raises productivity but requires a high degree of cooperation from the level of local firms and local economy to national and international levels. Adam Smith, the eighteenth century moral philosopher and pioneer of political economy, realised at the outset that specialisation is held back by the scale and cost of cooperation, or in his words, by the “extent of the market” (Smith, 1776[1981], Book 1, chapter 3). As the industrial revolution gathered momentum over the following centuries, entrepreneurs discovered new ways to specialise in an environment in which international trade was pushing the market outwards while financiers were creating ever more efficient ways for savers and investors to cooperate profitably internationally.

Never before had this cooperation reached the heights of the first decade of this century or the accompanying fastest rise in prosperity ever known to humankind. But this would not last. During 2008 the financial side of this process collapsed with alarming speed as markets failed on a grand scale. The force of the collapse was such that not only the financial markets but also international trade and the production of industrial goods and services suffered severe contractions leading to what is now known as Great Recession. Policy makers found themselves under immense pressure to act decisively. Despite some blunders many successful policies have been implemented but even those contributed to a renewed pressure on international economic and political cooperation. By October 2010 this tension erupted in what has been called the “currency wars”.

This paper is the story of success and failure in the financial markets, the markets for goods and services and in politics. It is a difficult story to tell because the crisis had many causes. The US Bipartisan Commission created in 2009 to study the crisis identified 22 causes while the US Congressional Research Service found four more (Roberts, 2010). But probably the most concise summary of events was offered by the CEO of the ill-fated Bear Sterns who said: “We all [messed] up”. He meant government, rating agencies, Wall Street, commercial banks, regulators, in short, everybody (Roberts, 2010: 5).

To pass the jungle of causes in one short paper allows only pointing out the most important markers on the road to crisis. This possibly controversial selection will focus on three main factors. First, the incentives that contributed to a credit-fuelled bubble, especially in property markets. Second, because the housing bubble alone cannot explain the subsequent events, the gearing in the financial sector,

which affected asset markets unrelated to sub-prime mortgages will be examined. Finally, an answer will be sought to the question of how highly geared banks first became fragile and then failed with such dire consequences for the economy that massive policy intervention had become essential.

When incentives go astray

The sub-prime market

The story of the international financial crisis of 2008/09 starts with credit. The two principal actors involved in credit transactions are the lenders who provide finance on profitable terms but subject to various risks, and the borrowers who acquire finance at the cost of interest. To understand how the credit-fuelled housing bubble emerged, giving rise to the crisis, it is necessary to mention the incentives and opportunities available both to the financial institutions that provide credit and to the borrowers who obtain mortgages.

Since the Great Depression mortgages on residential property in the United States have been supported by a set of state owned institutions known as Fannie Mae and Freddie Mac¹. These institutions do not originate mortgages but buy them from financial institutions who deal directly with potential home owners, such as local savings & loans corporations and local banks. The mortgages Fannie Mae and Freddie Mac acquire in this way are then packaged and sold as portfolios of property investment.² This has been a useful service in a country where, for historical reasons, there is no single bank with a national branch network and the geographically uneven growth places severe limits on the ability of financial institutions to allocate savings efficiently to investments.

Generally speaking there are two types of mortgages. The one is the more traditional originate-and-hold model; the other one is the originate-and-distribute model. In the originate-and-hold model a bank that grants the mortgage retains it as an asset on its balance sheet and is thus strongly motivated to control the credit quality of the mortgages. Paying close attention to the size of the mortgage, the income and credit record of the applicant and the value of the property is the traditional way to control the credit risk associated with the originate-and-hold model.

¹ Fannie Mae is short for the 'Federal National Mortgage Association' and Freddie Mac is short for the 'Federal Home Loan Mortgage Corporation'.

² Such a portfolio is called a Mortgage Backed Security (MBS) and is an example of a broader class of Asset Backed Securities (ABS).

In the originate-and-distribute model the incentives are different because the object here is to persuade others that the assets are of suitably high quality. As is often the case in the financial sector, the prospective home owner and the financial institution have different information, a discrepancy that makes co-operation between lenders and borrowers difficult. Mortgage originators have to overcome an additional information difference to convince potential investors of the credit quality of the mortgages they are selling, a problem alleviated somewhat since the 1970s when mortgage institutions started to use credit rating agencies to close the information gap (White, 2010).

In the USA, the government-backed Fannie Mae and Freddie Mac offered a special version of the credit rating solution. They were willing to buy mortgages from mortgage originators and would then resell portfolios to other investors with the assurance that these investors would face no credit risk: both Fannie Mae and Freddie Mac would buy back any mortgages should these default in the future. This process of securitisation, that is, creating mortgage backed securities (MBS), transformed risky mortgages into risk-free portfolios and played the double role of providing a subsidy to home ownership in the USA as well as serving an important political goal³ (Roberts, 2010). But it left Fannie Mae and Freddie Mac exposed to credit risk, a risk they controlled by using a set of strict guidelines for the mortgages they would be willing to securitise. Mortgages that satisfied these guidelines were known as Standard Conforming Loans.

Needless to say, insisting on ‘standard conforming loans’ restricted the class of potential home owners, a restriction politically unpopular because of its social cost. To sidestep this problem a series of reforms were instituted making possible a class of ‘sub-prime’ mortgages that did not adhere to these strict criteria either by size, credit record, income or wealth of the applicant. The first step was to allow market related and adjustable interest rates on mortgages.⁴ With greater flexibility to reflect the increased credit risk of customers whose credit scores were below the standard requirements, mortgage originators were now able to deal in what became known as the sub-prime market.

The second step was the Tax Reform Act of 1986 that pushed sub-prime to the fore by disallowing tax deductions for consumer credit but retaining it for mortgage debt on a primary and one additional home. Mortgage finance in general, including the sub-prime component, expanded

³ Private sector banks can also buy mortgages from originators to form MBS for later resale to investors and did so on a large scale.

⁴ This was achieved by the combined effect of the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) in 1980 and Alternative Mortgage Transaction Parity Act (AMTPA) two years later.

substantially in the wake of this decision (Chomsisengphet and Pennington-Cross, 2006). Other factors, such as the long economic upswing of the nineties and the stable macroeconomic environment since the mid-eighties as well as political and social pressures, contributed to a dramatic expansion of mortgage lending in the USA over the last twenty years. In 1995 sub-prime mortgage originations amounted to \$65 billion in a market of \$639.4 billion mortgages. By 2003, these numbers grew to \$332 billion and \$3.76 trillion respectively (Chomsisengphet and Pennington-Cross, 2006, table 3). Easy credit financed a dramatic expansion in residential property, driving up prices on existing homes and fuelling new developments. During the height of the 2004 property boom in Las Vegas, for example, a new house went up every twenty minutes on average (Kunzig, 2011). Too much of this was financed with sub-prime mortgages, the cumulative total of which exceeded a trillion dollars by 2007, the year in which the sub-prime boom turned to bust (Lockhart, 2008).

The rapid growth in the sub-prime market could only occur once the high costs associated with lending to this market had been overcome. Sub-prime mortgages are more expensive for both the lender and the mortgage originator since the information asymmetry is more serious in this market segment and the likelihood of default is much higher. These elevated costs are seen in higher application and appraisal fees, higher interest rates, higher default insurance and higher interest rates. Despite the inherent high costs three factors combined to make sub-prime mortgages relatively attractive over this period: monetary policy, financial regulation and politics.

Monetary policy and the 'great divergence'

What role, if any, did monetary policy play in creating the environment for the crisis and allowing it to unfold? Starting with the housing market there seemed to have been acts of omission and commission especially by the Federal Reserve Board (Fed) and other central banks that either encouraged the housing boom or allowed it to run unchecked. Starting with acts of omission, there is little evidence that monetary authorities used policy instruments directly to contain the boom in residential property. In this the policymakers had implemented the modern consensus of responding to asset prices only to the extent that they affect general inflation or risk overheating the economy, leaving scope for strong policy action (or mopping-up) should an asset boom turn to bust (Bernanke and Gertler, 1999). But the severity of the episode has encouraged revision of this 'mop-up-afterwards' approach to asset bubbles and a finer distinction is now being drawn between types of asset price bubbles. The old consensus is still applicable for bubbles on the stock market, where bank

credit played a small part, but not for ‘credit bubbles’ where the provision of cheap credit by banks plays a central role (Mishkin, 2008).

Central banks are financial regulators and are therefore far better informed about lending by banks, and potentially also about the prudence of that lending, than about fundamental support for stock market prices. And central banks have a range of regulatory powers that can be used to reign in credit lending that is fuelling an asset bubble. In other words, they have instruments at their disposal that can influence the behaviour of banks. But to act against credit bubbles requires an *ex ante* reading and there is not much evidence that either the Fed, or other major Central Banks, were able to do that with respect to the recent crisis. In fact, the former Fed Deputy Governor Alan Blinder, when assessing the risks to various dimensions of US monetary policy in August 2005 while the credit bubble was well under way, stated there were moderate risks to inflation, employment and aggregate demand and only a high risk of a supply side shock. Crucially, he identified the level of risk for both the banking sector and credit risk to be low, stable and covered by strong risk management (Blinder, 2005: Table 1).

The Fed did not use policy measures to prevent either the housing boom or the associated development in the derivative markets from accelerating despite the Bernanke-Gertler consensus that requires monetary authorities to care about asset prices to the extent they affect the outlook for price stability and the business cycle. In fact, between 2002 and 2006 the policy interest rate in the United State deviated further from the benchmark ‘Taylor rule’ than at any point since the 1970s. The ‘Taylor rule’ is fundamentally a normative instrument used to calculate the appropriate level of the policy interest rate. It also describes the actual Federal Reserve Board policy since 1980 with a high degree of accuracy, and in a modified version it is comparably accurate for other developed countries (Clarida, Gali and Gertler, 1997). At the same time, deviations from the rule can be interpreted as a measure of the discretion exercised by the Fed. In this sense the path US monetary policy took between 2002 and 2006 can be interpreted as a substantial discretionary departure from normal practice; Taylor has called it the “Great Deviation” and his argument is that the Federal Reserve board fuelled the housing boom, and the associated financial market gearing, by keeping interest rates too low for too long.

There is empirical evidence (Leamer, 2007; Taylor, 2007; Ahrend, Cournède, and Price, 2008) to support the thesis that monetary policy decisions, whether reasonable or not, contributed to the

credit financed housing bubble in the US and elsewhere. But low interest rates had an additional unfortunate effect on the credit bubble that ultimately led to the collapse of key banks and financial institutions and the near collapse of many more internationally. In addition to encouraging lending, low interest rates also tend to change the incentives for banks as they tempt them into relatively more risky behavior in the form of higher gearing on their balance sheets, which means expanding a bank's balance sheets without a corresponding expansion of its capital base.

Theoretically there are two ways in which low interest rates could promote higher gearing at banks (Borio and Zhu, 2008; Adrian and Shin, 2009). First, the low nominal returns on cash might encourage financial firms to pursue higher yielding but more risky investments, especially if they are contracted to deliver a given nominal return. Second, the effect of low interest rates on asset prices and cash flows might allow financial firms to carry more unsafe investments while their balance sheets will appear sound. Leonardo Gambacorta (2009) recently added empirical plausibility to these theoretical results by investigating the hypotheses for the current crisis with a database of 600 listed banks in the USA and Europe.

Financial regulation and moral hazard

The centrality of prices in market co-operation means that low interest rates typically play a large role in explaining asset bubbles, but low interest rates are not the only factor. Institutions, or 'rules of the game', as they are also called in economics (for example, North 1990) make it harder or easier to specialise and co-operate. These institutions affect a vast range of decisions and played a critical role in the financial decisions that led to the international financial crisis. This refers in particular to the rules of financial regulation.

Traditionally there are three justifications for formal financial sector regulation (Goodhart, 2010). The first is to prevent the abuse of potential monopoly power by very large institutions; the second is to protect consumers from the asymmetric distribution of information in many financial transactions. But neither of these two roles had much impact in the run-up to the financial crisis. Instead, it was the third role, the containment of spillover effects from one institution to others that played a key role. These spillovers (or externalities) are caused by the interconnected nature of the modern financial system where the value of the assets of one firm is closely linked to the assets of other financial firms. Stress on a large firm that results in downward pressure on asset prices can

quickly spill over to other firms in this kind of network. Economists call this an externality because individual banks do not typically factor in the risk they pose to the rest of the financial system in which they operate.

The one way to contain potential spillovers is via changes to formal institutions; the others ways include financial innovation and amendments to regulatory practice. While some important changes to financial regulation had indeed been introduced during the last forty years, these often followed in the wake of financial innovation and regulatory practice. Perhaps the most famous single decision that had a bearing on the crisis was the enactment of the Graham-Leach-Bliley Act in the USA at the end of the 1990s, which formally removed the separation between commercial banks funded by insured deposits, and investment banks funded on the capital markets. The separation had been upheld since the 1930s by the Glass-Steagall and Bank Holding Company Acts. Following the Act larger financial groups emerged providing a wider array of financial services in an increasingly complex corporate structure.

The boundaries between commercial and investment banks had long since become blurred because financial innovations, such as money market mutual funds, allowed investment banks to compete with the formerly most profitable part of commercial banking (Kling, 2010) i.e. funding their investment activities by taking deposits on which they paid low interest rates. This, in turn, forced commercial banks to change their own behaviour. They became less dependent on deposits and started funding their investments on the capital markets, especially on the inter-bank and repo markets; since the 1970s to expand their balance sheets, commercial banks supplemented their intake of deposits by using wholesale money markets such as the eurodollar market (Goodhart, 2010). With commercial banks adopting the balance sheet operations of investment banks while the latter offered products that competed directly with commercial banks, the line between these two sectors had become blurred giving rise to a 'shadow banking system'.

The 'shadow banking system' is a term now used to describe a part of the non-commercial bank financial sector that competes with commercial banks to offer financial services, such as credit, to business enterprises. In the USA the shadow banking system became so large that by 2007 its lending exceeded that of the traditional banking system (Geithner, 2008). Although the shadow banking system operates outside the conventional system of bank regulation it is deeply interconnected with

the traditional banking system. Indeed, it is through the shadow banking system that the conventional banking system is now largely funded (Gorton, 2010; Goodhart, 2010).

Loans extended by banks to their customers are typically long-term and are profitable assets for banks. But to conduct this business banks need to finance the assets. Traditionally commercial banks obtained their funding by accepting retail deposits, which are potentially short-term liabilities for banks. The mismatch between the highly liquid but potentially short-term character of the liabilities and the longer-term but less liquid character of the assets exposed traditional banks to the risk of a bank-run. This occurs when a large proportion of a bank's depositors turn up to demand their deposits, which even a fundamentally solvent bank would be unable to satisfy because of the illiquidity of its assets.

Modern banks by contrast extend credit and fund lending by combining loans in securitised portfolios (ABS) in which the portfolios of assets have been re-arranged using structured finance.⁵ This is a set of techniques used to combine and arrange portfolios of assets in such a way as to create portfolios of asset backed securities that have different risk profiles from the original assets. Not all ABS were sold though: during the crisis it emerged that banks held substantial portfolios of ABS, which harmed their balance sheets once the underlying asset prices declined. There were two reasons for holding the risky ABS on a bank's balance sheet. First, to satisfy the demand for another product that has become very important in the modern banking system, i.e. the wish to make risk free highly-liquid deposits by institutional investors and other non-financial firms in the repo market (Gorton, 2010). Second, the Basel II accord incentivised banks to use the highly rated senior tranches of ABS to fulfil their capital adequacy requirements.

The shadow banking system emerged when the traditional funding mechanism of banks via deposits became unprofitable. Since then securitisation of assets came to play a central role in the modern funding of banks while securitised asset portfolios became critical collateral in the repo market. In this way the balance sheets of banks, non-bank financial firms and other large non-financial firms

⁵ An example of structured finance that played an important role during the crisis are so-called Collateralized Debt Obligations (CDOs), which are portfolios constructed by arranging the underlying portfolio into different 'tranches', each with a different priority claim on the income stream of the underlying assets. In this way the senior tranche of a CDO is much less risky than the underlying assets, though the risk attached to the senior tranche is greatly affected by the degree to which the risks of the underlying assets are correlated. The more risky junior tranches of different CDOs can in turn be combined in a new portfolio which can be re-arranged to yield new senior tranches with apparently low risk. When CDOs are combined in this way to create a second generation of CDOs (CDO²), their value is even more sensitive to the underlying assumptions than a CDO. Coval, Jurek, Stafford, (2009) provides an accessible introduction to the role of structured finance in the financial crisis.

became closely intertwined. Large insurance companies also formed part of the same system; American International Group (AIG) in the USA, for example, offered insurance called Credit Default Swaps (CDS) on the securitised portfolios that allowed the portfolios to obtain attractive credit ratings.

The modern banking system has become very depended on extensive cooperation on globally interlinked financial markets. Banks need to finance their balance sheets on a daily basis (Blanchard, 2009), and a healthy capital ratio is the traditional method used by banks to show that they are credit-worthy counterparties in such agreements.

The Basel I and II accords on prudential bank regulation aimed to help banks ensure adequate capital ratios, though they did so in a fundamentally flawed manner. For example, the Basel I accord differentiated between assets on a risk-adjusted basis but the design was faulty and ended up requiring banks to hold higher capital requirements for good loans. The regulation merely enticed banks to either sell the better loans or move them to their shadow banking counterparts. “Basel I...” as Goodhart (2010: 15) observed “...was threatening to turn ‘good’ banks into ‘bad’ banks”.

Basel II was meant to correct this unhappy feature and did so by giving much greater importance to the internal risk assessment of banks. It attempted to extend regulation to assets and liabilities not on the bank’s own balance sheet. But Basel II’s capital requirements would become more accommodating when asset prices were rising thus fuelling a buoyant asset market. The opposite would happen when asset prices declined, at which point capital requirements would tighten, putting further downward pressure on an already fragile market (Goodhart, 2010). Put another way, under Basel II less capital was required when risks appeared small and more capital was needed when risks appeared larger. The unintended consequence of the regulation was that banks were able to expand their balance sheets relative to their capital base in good times and still pass regulatory scrutiny, while they would be required to raise more capital precisely when they were under stress and least able to do so.

For these reasons both banks and non-bank financial institutions became inclined to hold insufficient capital: commercial banks held too little to cover potential losses from bad loans; investment banks held too little to cover potential losses on securitised and other risky financial products; Fannie Mae and Freddie Mac held too little to cover the guarantees they had issued on

MBS; and large insurance companies, such as AIG, held too little to cover guarantees they had issued to banks under Credit Default Swaps (Kling, 2009).

In addition to the inadvertent incentives for risk taking created by financial regulation, governments introduced a moral hazard that strengthened this tendency. Governments and central banks have supported distressed financial institutions since the 19th century to avoid the spillovers of individual failures from disrupting the rest of the financial sector. It was the famous second editor of *The Economist* magazine, Walter Bagehot, who formulated the principle that a central bank should extend liquidity to distressed but fundamentally solvent financial firms that were experiencing difficulties with their short-term obligations.

The underlying principle claiming that an appropriate and limited intervention by a central bank could prevent larger social losses by forestalling the demise of otherwise solvent financial institutions has since been extended to protect the financial sector from losses that would undermine the firms in that sector collectively. In the extended form the Bagehot principle requires central banks to support any financial firm regarded as systemically important, that is, a firm so large or important that its failure might cause the collapse of other solvent financial firms. The wave of bank defaults during the Great Depression, which saw the demise of thousands of banks in the US demonstrated the apparent worth of this principle. Central banks resolved not to make the same mistake again.

In 1984 a large American bank, Continental Illinois, found itself in financial distress. The Fed reasoned that this was a case fitting Bagehot's expanded principle since Continental Illinois was judged to be systemically important; banks such as Continental Illinois had become 'too big to fail', the title of a now famous book by Stern and Felman (2004). The subsequent bailout returned the full value of loans extended to Continental Illinois. To put it differently, the US government lowered dramatically the credit risk associated with loans to large banks such as Continental Illinois. This practice guided subsequent bailouts in the USA, with creditors hardly ever out of pocket even when the financial firms they had lent to were insolvent: for example, 99.7% of all deposits in the 1100 commercial banks that failed in the US during the 1980s were bailed out by government (Roberts, 2010: 10).

Not everyone was bailed out though: shareholders often suffered substantial losses when the share price of a distressed financial firm crashed. But these shareholders were still working in an

institutional setting which had both the profit and loss aspects necessary for effective market allocation. Creditors in the financial sector were operating under a different set of rules though. Their profit and loss had been replaced by a system of profits and bailout, undermining the need to manage risk through prudent screening and expensive monitoring on the part of creditors or the retention of substantial capital in banks to guard against unexpected losses.

Not just large banks, but countries too were perceived to be 'too big to fail'. During the 1990s, Mexico was the most notable case of a US Government bailout, which protected lenders to the Wall Street creditors of the Mexican government (Roberts, 2010). This bailout and the IMF bailouts of East Asian governments in 1997 created the impression that creditors to large emerging market economies with substantial international debt would enjoy the same protection from credit risk to the creditors of large banks in the developed world. Many investors in Russian debt acted on this belief in 1998 by holding the debt of a state at the point of fiscal collapse.

The decision not to bail out the Russian government in August of 1998 sent shockwaves through the international system and worked to encourage more bailouts. At this point the bailout principle was expanded to cover hedge funds, a highly risky financial institution. A prominent hedge fund, Long Term Capital Management (LTCM), suffered massive losses during the crisis and the Fed was concerned about other hedge funds and investment banks who had large investments with LTCM. An insolvent LTCM would cause substantial losses for these creditors and in the heat of the crisis the Fed organised a private sector bailout of LTCM (Roberts, 2010). Once more, the creditors, who had enjoyed considerable upside from their investments in LTCM, were protected from a credit risk associated with their investments.

While the bailout mentioned above created a moral hazard that made banks less prudent and creditors less concerned with the imprudence of the banks they were lending to, there were also other incentives working in the same direction. One of these, the culture of high salaries and bonuses on Wall Street, has been widely discussed. The other, a change in the nature of modern banks finance via a shadow banking system based on the securitised assets and repurchase agreements has received a lot less attention.

The salaries and especially large bonuses tied to short-run performance led to a public outcry in the wake of the bailouts. While it is true that the executives lost capital as the share prices of their firms

and others declined during the crisis, they did not, by any stretch of the imagination, face symmetric risks. The structure of their salaries and bonuses with rewards for short-term profits and share options was such that they gained enormously from good results while their downside risk was considerably smaller (Roberts, 2010). Given this asymmetry it is not really surprising the executives were keen to expand the more risky business which brought them handsome returns while the boom lasted.

Public incentives and the role of politics

Politicians played a role in the run-up to the crisis especially through their support for bailouts. But their involvement in the housing market bears closer scrutiny. The account here focuses on the United States and concerns the specific ways in which home ownership was encouraged, creating incentives that ultimately fuelled the property bubble. Similar incentives were created elsewhere but the particular policies differed from those in the US.

After many decades of encouraging home ownership through tax breaks on mortgage interest and the sponsorship of Fannie Mae and Freddie Mac mortgage associations, the US government became much more aggressive in its promotion of home ownership during the 1990s. To give practical effect to the desire for expanded home ownership in the USA politicians enacted new regulations for Fannie Mae and Freddie Mac in 1993. The regulation not only weakened the prudential safeguards that prevented these companies from doing business at the risky end of the mortgage market but also required them to raise the proportion of loans they supported to families with incomes below the medium for their areas to 40% by 1996 (from 30% for Freddie and 34% for Fannie in 1993). This requirement was pushed up to 42% in 1999 and 55% in 2007, as both firms expanded their business in these market segments in step with the rising targets (Roberts, 2010: 25).

At the same time Fannie Mae and Freddie Mac expanded their business in mortgages with small down payments of less than 5% and eventually with no down payment at all. In the mid 1990s such mortgages accounted for a small fraction (4% or less) of the loans they purchased but by 2007 almost a quarter of their loans had down payments of 5% or less⁶ (Roberts, 2010: Figure 8). In this way political pressure pushed mortgage associations to support a housing bubble that was becoming dangerously overheated and in a market segment where risks were poorly assessed. This is no to

⁶ Fannie and Freddie bought a quarter of 272 billion dollars worth of MBS sold in the first half of 2006 (Roberts, 2010: 23).

suggest that the housing bubble in the US and elsewhere was exclusively or even largely due to incentives of the kind created by politicians. It was not. The private financial sector financed the bulk of the credit-fuelled property bubble and it is the private financial sector that increased its gearing dramatically over the last 20 years, thereby amplifying the potential consequences of mistakes in their investment strategies. But the political incentives meant that public officials had little interest in scrutinising an industry that had become not just wonderfully profitable but also politically expedient.

Financial collapse

The housing bubble fizzled out during the course of 2007 as balance sheets in the household and financial sectors became ever more stretched. An important factor in this loss of momentum for the market was the reversal of the “great deviation” in US monetary policy, with the policy interest rate rising from a level of 1% in 2004 to 5.35% in 2006. Other central banks followed suit, leading to tighter monetary conditions internationally.

The highly geared property market, where the worst quality loans were predicated on the assumption of an uninterrupted rise in property prices, was vulnerable even to stagnation, let alone price declines. When house prices started to decline by early 2007 these loans were soon and predictably under water, though few at the time anticipated the force of the process that started to gather pace.

Large banks, including investment banks and other financial institutions, started to report sub-prime mortgage related losses during the first quarter of 2007. At this time the US based New Century Financial, a mortgage lending specialist of the sub-prime market, filed for bankruptcy. More disturbingly, the prominent investment bank Bear Stearns announced in June 2007 that two of its large hedge funds had suffered massive sub-prime related losses; it became clear that the losses would not be confined to one or even a few banks. Losses started to appear also in large European banks, such as BNP Paribas and the German Sachsen Landesbank in August 2007, and in the UK where in September of that year Northern Rock suffered the most serious traditional run on a British bank since the 19th century. Worse was to come.

By late 2007 insurance companies providing bond insurance for Collateral Debt Obligations (CDOs) were also suffering massive losses. The troubled Bear Stearns finally succumbed in March 2008, though it was supported by the Fed until bought by the rival investment bank JP Morgan. This did

not restore stability as the housing market continued to decline, causing the failure of another mortgage lender, IndyMac, in the USA by June 2007 in what was the second largest bank failure in US history. While the US government had to support Fannie Mae and Freddie Mac to prevent their collapse, the UK government nationalised another bank, Bradford and Bingley, to prevent its collapse.

The financial market turmoil deteriorated further during September 2008: Lehman Brothers, a famous Wall Street investment bank, collapsed and, critically, was not bailed-out by the authorities⁷. Instead it was purchased by its rival Merrill Lynch, which was also heading for collapse and would be bought by Bank of America by the end of the year. The crisis was no less acute in Europe. While Northern Rock had suffered from a traditional run on the bank a year earlier, large continental investment banks faced a modern bank run in the third quarter of 2008 (Blanchard, 2009). At the same time the Belgian government bailed out the insurance and banking giant Fortis, and large Icelandic banks were nearing collapse.

As already mentioned, modern banks are not mainly financed by retail deposits and hence are not greatly exposed to the risk of a traditional bank run. Instead they are financed on the interbank and repo markets on a daily basis. These highly efficient markets allow banks to co-operate to an unprecedented degree, as long as both parties to each transaction feel secure in the value of the assets traded. This trust collapsed in the third quarter of 2008, with banks unable to use their securities as collateral in the interbank market because other banks could no longer judge their value. Banks were now forced to sell other assets, such as shares, corporate bonds and so on, in an attempt to restore liquidity to their balance sheets and to meet the capital requirements of Basel II.

The result was a fire sale in many asset markets unrelated to the housing market. Globally, stock market wealth was halved during the first year of the crisis, a rate of decline steeper than at the onset of the Great Depression (Almunia, Bénétrix, Eichengree, O'Rourke and Rua, 2009). As asset markets declined the financial sector and corporate balance sheets deteriorated even further and companies were pushed towards bankruptcy.

⁷ From a risk perspective Lehman Brothers closely resembled Bear Sterns in early 2008: it's highly leveraged balance sheet had a similar composition to that of Bear Sterns, though Lehman's was many times the larger of the two. The failure of Bear Sterns in March 2008 therefore raised the specter of similar trouble at Lehman's and a declining Lehman's share price reflected these concerns (Roberts, 2010). But the subsequent bailout of Bear Sterns put these fears to bed and five months later it was discovered that Lehman's had done little to strengthen its precarious balance sheet. Only this time the expected bailout did not come. Credit risk, which commanded little attention after 20 years of bailouts returned dramatically, for the creditors (mainly other banks) and for insurance companies involved in securitizing the debt contracts.

By the second half of 2008 much of the developed world had declined into recession and with a downward trajectory that suggested disquieting comparisons with the Great Depression of the 1930s. The economic historian Barry Eichengreen and his co-authors showed these parallels empirically, both for the USA and for the world economy (Almunia, Bénétrix, Eichengree, O'Rourke and Rua, 2009). For the sake of comparison they identified the peak of economic activity that preceded the Great Depression and the Great Recession for June 1929 and April 2008 respectively.

While US industrial production in the recent crisis did not decline as fast as it did in 1929, at the global level the international economy was more fragile and the decline in industrial output was as steep during the first year of the Great Recession as during the comparable period of the Great Depression. As production declined, unemployment rose to levels not seen in the developed world in many decades.

Despite strong policy intervention financial conditions became much more restrictive in the private sectors of developed economies from this point onwards. While policy interest rate declined the interest rates demanded on corporate debt were pushed higher, while other credit requirements such as higher down payments and increased credit-rating requirements also pushed up the cost of borrowing. The higher cost of credit reflects the kind of friction that emerges in financial markets during distress when monitoring costs and uncertainty rise sharply (Hall, 2010). More expensive credit and the massive shocks to aggregate demand were the main factors lowering output during the first months of the crisis.

The world economy is extensively integrated not just financially but also in the flow of goods and services across boundaries. These transactions are another barometer of the extensive co-operation upon which modern economies are based. Each of these transactions requires a financial transaction, which is often a credit transaction. The turmoil on international financial markets, especially the tighter credit conditions in combination with the collapse of demand for imported goods and services and the fact that 70% of international trade was in manufactured goods⁸ (compared with 44% in 1929) created a precipitous decline in international trade. Indeed, Almunia et al. (2009) showed that the contraction of international trade was notably steeper during the first year of the Great Contraction than at the start of the Great Depression.

⁸ Manufacturing production is a volatile component of total production and was particularly adversely affected in the Great Depression and the Great Recession (Almunia et al. 2009).

Policymakers to the rescue

The trauma of the Great Depression was not just the rapidity of the economic collapse but its persistence throughout the 1930s in countries like the USA. During the first months of the Great Recession, though the downward trajectory of production in the developed world resembled that of the Great Depression, the policy response was dramatically different. Although policy makers did not stand idly by during the early years of the Great Depression, there was far greater policy activism at the macroeconomic level in response to the Great Recession. The activism has been most evident in the monetary and fiscal policies pursued during the crisis and the considerable efforts to prevent the fragmentation of the global economy through beggar-thy-neighbour policy responses.

There were undoubtedly many factors that pushed policy makers towards greater activism this time around, including the nature of the political system, a topic explored elsewhere in this book. But the two major economic factors were, first, the lessons learnt from the Great Depression, especially the role economists attributed to policy failures of that era and, second, the flexibility of the modern international financial system, which allowed policy makers to respond more dynamically to the pressures that emerged in their own economies.

Since the early 1990s, a durable and flexible international financial system emerged in which most developed and emerging market economies have become integrated with global co-operation in the production of goods, services and the investment of capital. By combining largely free capital flows with market determined exchange rates, this system created scope for considerable domestic discretion in monetary policy, which has mainly been exercised in the direction of pursuing low and stable inflation and output stability. Explicit inflation targeting is the exemplar of this system, but many countries, including the USA, followed an implicit inflation targeting system that can hardly be distinguished in operational terms from explicit inflation targeting (Greenspan, 2004).

At the start of the Great Depression the international financial system was ordered by the gold standard, a system with little scope for the kind of monetary activism seen in response to the Great Recession (Almunia et al, 2009). The post-War Bretton Woods system was an explicit attempt to design an international financial order that served both the ends of stability and policy flexibility. But

it was inherently unstable and collapsed barely 13 years after the European economies joined it (Rose, 2006; Reinhart and Rogoff, 2004).

The system that emerged after the collapse of Bretton Woods is unplanned and is not maintained by any central direction, authority, or a reference point such as gold convertibility. It is a spontaneous order resulting from a rules-based system of international trade and investment with flexible currency markets. The system proved durable and flexible (Rose, 2006) though the aftermath of the Great Recession has put it under unexpected pressure. Yet its flexibility created scope for policy makers to intervene as the extent of the crisis became obvious in the course of 2008.

In light of the unnerving parallels with the early months of the Great Depression, monetary authorities were unlikely to repeat the inadvertent error of their predecessors by tightening monetary policy in the midst of a financial crisis; according to the standard interpretation of those unhappy events by Friedman and Schwartz (1963), the monetary contraction between 1929 and 1932 in the United States shouldered a large proportion of the blame for the depth and persistence of the Great Depression.

The Fed and the Bank of England reduced their policy interest rate aggressively as the crisis became more serious in late 2008. Money supply data also testify to the accommodating stance of monetary authorities as the crisis deepened, with the narrow stock of money expanding briskly despite the financial crisis because of the introduction by central banks of large quantities of liquidity to prevent a repetition of the monetary contraction that exacerbated the Great Depression (Almunia et al., 2009: Figures 9 and 10). In conventional terms then, that is, using a policy interest rate to measure the stance of monetary policy, monetary authorities responded quickly and sharply to the unfolding crisis. But there is a limit to interest policy as it is not possible to implement a negative nominal interest rate.

Despite the prominence of interest rate policy, central banks have other policy instruments at their disposal. They can alter broader monetary or other asset market conditions directly by changing the size, composition and risk profile of their balance sheet. These policy actions are collectively called 'balance sheet operations' and have been an important part of the policy response to the Great Recession (Borio and Disyatat, 2009). To give an indication of the size of these balance sheet operations it will suffice to say that the total assets on the Fed's balance sheet expanded from \$880

billion to \$2.3 trillion between July 2007 and December 2010, including \$1 trillion of Mortgage Backed Securities bought from the financial sector by the Fed to shore up private sector balance sheets. In late 2010 Fed Chairman, Ben, S. Bernanke, announced that there would be a further round of balance sheets questions, which has become known as Quantitative Easing 2 (QE2) and would amount to a further \$600 billion expansion of the Fed's balance sheet. In addition, fiscal authorities responded vigorously to the crisis with highly accommodating discretionary policies including bailouts for large financial and non-financial firms, tax rebates and tax cuts for households.

Have these policies been a success? It is difficult to say. For a start, the question is not whether the policies were successful in some ultimate sense, but whether they were better than the alternatives. For each country the appropriate evaluation is a comparison with the outcomes of particular forms of monetary and fiscal interventions with counterfactual outcomes under alternative policy regimes. Those counterfactuals, however, can never be observed. Two additional problems contribute to the difficulty of evaluating the policy initiatives: First, outcomes cannot be associated on a one-to-one basis with policy decisions given the complex and dynamic interactions in the economy; and, secondly "other", that is non-policy, factors impact continuously on the economy with far reaching effects on the outcomes generated under any policy regime.

As a result of such evaluation difficulties there is still no consensus on what role policy played in the eventual recovery from the Great Depression. In an influential paper Romer (1992) claimed that the reversal of monetary policy from contractionary to expansionary in the 1930s did far more to turn the economic corner than did fiscal policy. But behind this claim lies the observation that fiscal deficits were not very large during the 1930s; the historical record cannot tell us what would have happened had the fiscal authorities during the Great Depression adopted policies as expansionary as their successors did in 2009.

There are two reasons for expecting policies of recent years have been more important than during the Great Depression. First, the power of fiscal policy rises relative to conventional monetary policy when the latter nears zero bound on nominal interest rates (for example IMF, 2009, but also Keynes, 1936). Second, there is evidence that the fiscal policies of the 1930s, modest though they were, still had a positive impact on the recovery (Almunia et al., 2009). This time around the fiscal authorities have been much more active, and if the transmission mechanism had stayed approximately the same, the impact on output was powerfully enhanced.

The evaluation of monetary policy is no less difficult: The rapid interest rate response by monetary authorities avoided the inadvertent mistakes of the 1930s and after some months the various credit markets returned to stability. But it is very difficult to determine whether stability returned because of or in spite of the extensive balance sheet operations used by central banks. A further complication emerged in the course of 2010, with the inadvertent but unwelcome impact of expansionary monetary policies especially in the USA on the exchange rates of developing countries such as Brazil just as these economies were starting to recover from the recession.

Consequences of policy activism

Policy makers around the world, as well as the IMF, supported the active monetary and fiscal policy interventions of 2008 and 2009 and committed themselves to maintain an open and integrated global economy. They were going to avoid the beggar-they-neighbour policies that featured so prominently and cost the world so dearly in the 1930s. On the whole they succeeded. There were only sporadic protectionist responses to the crisis and international co-operation was sustained.

But in the course of 2010 the spillover effects in developing countries of the policies pursued by developed countries cast a shadow over continued international co-operation. The Fed's move towards a further large round of quantitative easing in September and October 2010 pushed the issue to breaking point. "We're in the midst of an international currency war, a general weakening of currency..." claimed an alarmed Guido Mantega, the Brazilian Finance Minister in September 2010. This war, he continued "threatens us because it takes away our competitiveness". The problem, according to Minister Mantega, was the influence of US monetary policy on the international value of the dollar, which implied appreciating currencies for developing countries like Brazil and South Africa. According to Minister Mantega the US monetary policy had, in effect, become another example of the beggar-they-neighbour policies by which a government tries to gain an economic advantage by manipulating the international price of goods and services.

Minister Mantega is not right. The depreciation of the dollar has not been the intention of the US monetary authorities, nor it is not inappropriate given the imbalances in trade and capital flows internationally. A substantial depreciation of the dollar had long been expected because of the said imbalances (Obstfeld and Rogoff, 2005). But Minister Mantega was not wrong to argue that beggar-

they-neighbour policies have been disrupting the global economy; it is the Chinese government that has manipulated currency market outcomes in its favour on an unprecedented scale over the last decade Wolf (2010a).

The accumulation of approximately \$2.5 trillion in foreign currency reserves, a third of all such reserves internationally and equal to half the annual size of the Chinese economy, is a major evidence of currency manipulation. It is the combination of reserve accumulation with tight controls on the inflow of capital into China that creates the scope for this kind of market distortion. By preventing a rise in domestic demand and a real appreciation of the Chinese currency, its government is subsidising Chinese exports internationally. Since the Chinese economy is now the largest exporter in the world this kind of distortion matters (Wolf, 2010b).

While the Chinese government had, in the past, denied that its currency was undervalued, it has lately offered a different explanation: a rapid appreciation of the Chinese currency would undermine the profitability of Chinese exporters and risk social unrest which would, in the words of Premier Wen Jiabao “...be a disaster for the world” (Beattie, Chaffin and Brown, 2010). This argument is not very persuasive outside China; it merely suggests that Chinese export firms might be competitive only on account of the undervalued currency.

While international trade has the potential to leave all parties better off, that will only happen if the goods and services are produced internationally where there is comparative (cost) advantage to do so. The rules-based system for international trade, maintained by the World Trade Organization (WTO), has been designed to ensure open international co-operation that is beneficial for all parties concerned. The asymmetric manner in which the Chinese economy has entered this system over the last decade, exporting capital on an unprecedented scale while restricting capital inflows to China and maintaining an undervalued Chinese currency, has put tremendous strain on international co-operation.

The strain became visible with the retreat from co-operation by countries such as Brazil, Russia, Thailand and others as they re-imposed various capital controls. Consequently the currency war was high on the agenda when the G20 heads of state met in South Korea in November 2010. In Seoul the American delegation proposed a three-point plan to untangle the currency wars by, first, putting numerical limits on current account imbalances with policy commitments to keep them effective;

second, a stronger role for the IMF to monitor behaviour relative to these limits; and, third, sufficient exchange rate flexibility and openness to ensure an orderly rebalancing of the world economy. These suggestions along with that of World Bank chief Robert Zoellick (2010) who recommended the return to a form of a gold standard, are meant to reduce the tensions in international economic co-operation by designing a new more co-operative international order. But the inflexibility of the former gold standard and the instability of the Bretton Woods system suggest that these are not promising ideas. Nor did the G20 heads of state find them attractive in Seoul, preferring the much watered down “indicative guidelines” on international balances. At the time of writing, the pressures created by the policy responses during the Great Recession remained a substantial threat to the open rules-based international order.

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