12. Inequality, money markets and crisis

Simon Mohun[1]

Many causal factors have been identified for the crisis that erupted in 2007 following the price downturn in the United States housing market about a year earlier. There was the attempt to extend home ownership to populations previously neglected because of poverty, with mortgage debt structured so that refinancing was required after two (or three) years, in which case rising house prices would extend housing equity to these populations. There was a central bank failure to recognize and act on a bubble in house prices and, later, confusion over the relevance of moral hazard. Misaligned incentives were pervasive, including borderline fraudulent practices in loan originations; ratings agencies paid by the creators (rather than potential purchasers) of complex and opaque securities; and extraordinarily large salaries and bonuses paid for satisfying generic rather than unique performance criteria.[2] Not least was the complacency engendered by statistical models relying on uncorrelated risks, with a negligible tail-risk probability seemingly validated by the very weak recession of 1991, the 'great moderation' of the 1990s, and the limited impact of the dot.com bubble burst at the end of that decade.

These features (and doubtless others like them) are important. But well-meaning policies, poor regulation, misaligned incentives, fraud and banking excess are frequent historical occurrences, whereas systemic crises are not. Indeed, it seemed reasonable at the time that the United States Federal Reserve (Fed) Chairman Bernanke could testify to Congress in March 2007 (after nine months of falling house prices) that 'the problems in the subprime market were likely to be contained' (FCIC 2011: 17). Subsequently he remarked, in evidence to the Financial Crisis Inquiry Commission (FCIC), that 'Prospective subprime losses were clearly not large enough on their own to account for the magnitude of the crisis' (FCIC 2011: 27). And 'the stock market goes up and down every day more than the entire value of the subprime mortgages in the country' (FCIC 2011: 227). In fact, by the end of 2009, all impaired Alt-A and subprime mortgage-backed securities amounted to about $300 billion (securities are impaired when they have suffered realized losses or are expected to

suffer realized losses imminently), whereas United States (US) gross domestic product (GDP) in 2009 was $14.4 trillion. Hence the magnitude of impaired mortgages was only about 2 per cent of GDP. Yet Bernanke could tell the FCIC:

> As a scholar of the Great Depression, I honestly believe that September and October of 2008 was the worst financial crisis in global history, including the Great Depression. If you look at the firms that came under pressure in that period . . . only one . . . was not at serious risk of failure . . . So out of . . . 13 of the most important financial institutions in the United States, 12 were at risk of failure within a period of a week or two. (FCIC 2011: 354)

So how did problems in only a small part of the financial system cause the imminent collapse of the whole financial system?

Bernanke did remark that 'what created the contagion, or one of the things that created the contagion, was that the subprime mortgages were entangled in . . . huge securitized pools' (FCIC 2011: 227). The crisis, that is, arose out of something systemic. This chapter follows a 'money view' (Grad et al. 2011; Mehrling 2011; Mehrling et al. 2013; Pozsar et al. [2010] 2012; Pozsar 2014a, 2014b) which focuses on the underlying structure (the 'plumbing') of the US financial system in order to explain the systemic nature of the financial crisis.

Two features in particular are important to this view. First, what instrument counts as 'money' for any market participant depends upon its trading at par on demand, with a credit risk attached to it determined by its proximity to government guarantees. That proximity determines that money instruments are hierarchical, and that promises to use these instruments to pay a debt depend upon their position in the hierarchy and may not therefore be realized. Second, the notion of a 'bank' is elastic, if by 'bank' is meant an institution whose assets are loans of longer-term duration than the money liabilities that fund them (a maturity transformation always subject to liquidity risk). Prior to the crisis, only a subset of such institutions had access to complete liquidity insurance provided by central bank backstops, and the remainder (with either partial or no central bank insurance), which had to purchase private insurance, have come to be called 'shadow banks'. But this terminology throws an unwarranted emphasis on 'legitimate' and 'illegitimate' banking practices, the latter described by Mehrling et al. (2013) as 'regulatory evasion in good times combined with unauthorized access to the public purse in bad times'. With the proliferation of non-bank financial intermediaries, it is better to focus more generically on the whole financial system, called here the 'neoliberal financial system' because of its basis in lightly regulated markets.

There are three difficulties that should be mentioned. First is a difficulty throughout with tenses. The crisis erupted more than seven years ago at the time of writing in early 2015. But the basic structure of the neoliberal financial system has changed little, apart from major transformations in the activities of the central bank. Hence it is difficult to know whether to describe the system in the present or the past tense. Second, the neoliberal financial system is a world system based on the dollar. Most of this chapter is couched in terms of US institutions, but these are better thought of as institutions with a world purview that happen to be based largely on the eastern seaboard of the US, although they are of course subject to the governance of wherever they operate. And third, while the elasticity of the notion of a bank has been mentioned, this creates a terminological difficulty as to whether the referent is a specific institution, or whether it is a specific function. The chapter distinguishes between a neoliberal bank that is a commercial bank and a neoliberal (investment) bank that is a dealer. Prior to 2008, specialist dealers intermediated risk but did not undertake maturity transformation, although at the same time most commercial banks had dealer desks. After 2008, all of the former investment banks that survived have become commercial banks, either through being taken over or through legal transformation.

What this chapter adds to the 'money view' is a more focused historical perspective on the evolution of the system. The large compensation packages paid in the financial sector are generally considered to be one of the proximate causes of the inequality generated by the surge in top incomes. This chapter proposes that this causal chain also works in the opposite direction: the growth in inequality at the top of the income distribution is a major cause of the growth of the neoliberal financial sector and its instabilities. This implies that, because soaring top incomes are a generic characteristic of neoliberalism, so too is the crisis of 2007–2009.

12.1 THEN AND NOW

The neoliberal financial system is a complex organism many more times removed from the real economy of production, trade and consumption than it was in the nineteenth century. This is important, because of a general but mistaken view that finance is a superimposition on the 'real' economy, an epiphenomenon or veil that must be lifted to explore the real economy. The mistake arises out of a failure to focus on the money relations of a capitalist economy. At its most abstract, it is central to how a capitalist economy works that value achieves an independent existence in money-form through its circuits. Since money is a form of debt,[3] financial circuits of debits and credits are the plumbing without which the flows

of the real economy could neither function nor indeed exist. At its most concrete, the plumbing, then, describes the detail of financial circuits, and these, like everything else, evolve historically. A contrast with the nineteenth-century financial system (dominated by London banks) will help to make this clear, showing in passing how the mistaken interpretation of money as a veil could arise.

In Marx's day, firms financed production and trade by issuing bills of exchange (credit notes) with a usual term of 90 days. These were 'accepted' (guaranteed) by banks for a fee. But a bill could be also be 'discounted' (bought) by a bank at less than its face value, also for a fee, with the difference between the bill's face value and its discounted value constituting a rate of interest accruing to the bank for the remainder of the bill's term. Banks financed their discounting with cash or with bank account deposits (subject to prudential liquidity requirements), and the receiving firms spent these payments on other maturing bills. So firms managed their daily cash inflows (from sales revenues and discounted bills) and their cash outflows (for input purchases and maturing bills) through this discounting mechanism, and through it they financed the purchase of inputs in order to produce the outputs whose sale enabled the flow of repayments. In their turn, banks amassed portfolios of bills, with varieties of maturity dates and hence cash inflows, which in turn financed new discounts and hence cash outflows. Banks managed their cash inflows and outflows by adjustments in the discount rate: too many maturing bills and not enough requests for discounting, and the bank would reduce its discount rate; if the opposite, it would increase it.

If a firm experienced problems with selling its outputs, it might have to default on its accepted bills, and the accepting bank would then suffer a cash shortfall. If this could not be managed by commercial borrowings, the accepting bank would have to meet its cash shortfall by using its own resources, reducing its own cash (drawing on its reserves held at the Bank of England), or by borrowing more from the Bank (against any security that would be acceptable in normal times, but at a penal rate of interest; Bagehot [1873] 1999). With this (painfully learnt) procedure, domestic financial problems with one bank, caused by difficulties in the real economy, could be prevented from cascading through the whole delicately balanced system of cash credits and debits.

But bills of exchange accepted and discounted at London banks were also used to finance production and trade the world over, and for foreigners gold alone was an acceptable form of payment. So the Bank of England had to manage its gold inflows (from maturing international bills of exchange) and its gold outflows (from requests for new discounts) through variations in its own discount rate. If outflows exceeded inflows,

the Bank could not create new gold (in contrast to its ability to create new credit domestically), and if it could not stem the imbalance (via for example loans from other central banks), it would ultimately have to suspend convertibility. This could only be avoided if foreigners would accept payment in sterling instead of gold, but the gold standard never in fact evolved into this sort of gold–sterling system.

In sum, the dominant financial asset was the bill of exchange; and problems in the production and sale of output were directly reflected in finance through imbalances in cash flows. Normally, producers and traders paid their debts with bank deposits; banks with their reserves at the Bank of England, and the Bank of England with gold, a hierarchy of money in which each level settled using the claims of entities at the next higher level. But in a crisis, only domestic or foreign cash would do, all at par on demand at rates fixed in gold.

The neoliberal world is different. The US rather than the United Kingdom (UK) is the dominant economy, so that institutionally the Federal Reserve Bank has replaced the Bank of England. The post-1945 Bretton Woods arrangements established a gold–dollar system, which in due course evolved into today's purely dollar system, after the dollar's link to gold was abandoned in 1971. But the most dramatic change is that the dominant financial asset is no longer the bill of exchange with its direct links to the finance of production and trade. Instead the dominant neoliberal financial asset is the 'sale and repurchase agreement' or 'repo', and it is undertaken purely for financial reasons.

In a repo, a borrower of cash sells a bundle of securities for $\$x$ to a lender of cash with an agreement that the cash borrower will repurchase the securities for $\$y$ after a fixed term (often overnight). The ratio $(y - x)/x$ is the repo rate, effectively a rate of interest. The value of the securities, say $\$z$, will generally be of greater value than their sale price, and the ratio $(z - y)/y$ is the 'haircut'.[4] The securities thereby act as collateral for the cash loan, and in the event that the cash borrower defaults on repayment, the cash lender owns the securities to keep or sell. During the interval in which the cash lender owns the securities, they can be used as collateral in further transactions by the cash lender. This 'rehypothecation' of collateral creates a collateral multiplier, although its size is unknown.

Whereas bills of exchange financed production and trade, and so were short-term debt collateralized by real goods, repos finance the holding of purely financial assets. The neoliberal financial system is built around repo-based money dealing activities, organized through dealers who intermediate risk: foreign exchange, duration and credit. With derivatives separating the flow of risks from the flow of funds,[5] the dealers made most of their profits through this intermediation process.[6]

In the modern hierarchy of money, as in Marx's day, each level continues to settle using the claims of entities at the next-higher level. Part of this hierarchy remains the same as in Marx's day. The central bank issues reserves, and commercial banks issue deposits. All traders in the economy settle their debts with commercial bank deposits, and commercial banks settle their debts through their central bank reserve accounts. What is different from Marx's day is what happens both above and below these parts of the hierarchy. Above, central banks settle in dollars or safe dollar-denominated assets (US Treasuries). Below, dealers issue repos, and money market mutual funds issue constant net asset value shares. Neither repos nor money market mutual fund shares can be used to settle debts, but they remain money because they can be traded on demand for a commercial bank deposit at par which can then be used for settlement of debts. At all levels of this hierarchy, the money liabilities issued by institutions are the money assets of institutions below them, which are used in turn to fund their money liabilities. Thus, as in Marx's day, commercial banks (wholesale and retail) issue deposits as money against their central bank reserves. And, not as in Marx's day, dealers issue repos as money against assets of overnight government repos with commercial (wholesale) banks; and money market mutual funds issue constant net asset value shares as money against overnight repos issued by dealers.[7]

Moreover, the money liabilities issued by institutions at each part of the hierarchy are more liquid, shorter-term and safer than their assets. All institutions have this maturity mismatch and therefore incur rollover risk, and in a crisis depend upon their stock of overnight money assets (their liquidity) and their access to secured funding (either to the central bank or to credit lines at commercial banks).

This too is hierarchical. For extra liquidity, money market mutual funds can only lend securities against cash (provided someone wants to borrow), and access credit lines from banks (provided they are maintained). Dealers can in addition borrow against their assets (provided someone will lend). Thus according to the Lehman Brothers bankruptcy report:

> Lehman funded itself through the short-term repo markets and had to borrow tens or hundreds of billions of dollars in those markets each day from counterparties to be able to open for business. Confidence was critical. The moment that repo counterparties were to lose confidence in Lehman and decline to roll over its daily funding, Lehman would be unable to fund itself and continue to operate. (cited by Gorton and Metrick 2012a)

Of course, dealers could also sell assets (provided anyone would buy), but the danger then is a fire sale, with a liquidity crisis becoming a solvency crisis. Moving up the hierarchy, retail and wholesale banks have access to

the central bank as lender of last resort (subject to having sufficient assets to meet the required haircuts), and so are generally not compelled to sell assets. And the central bank can in the last resort print money.

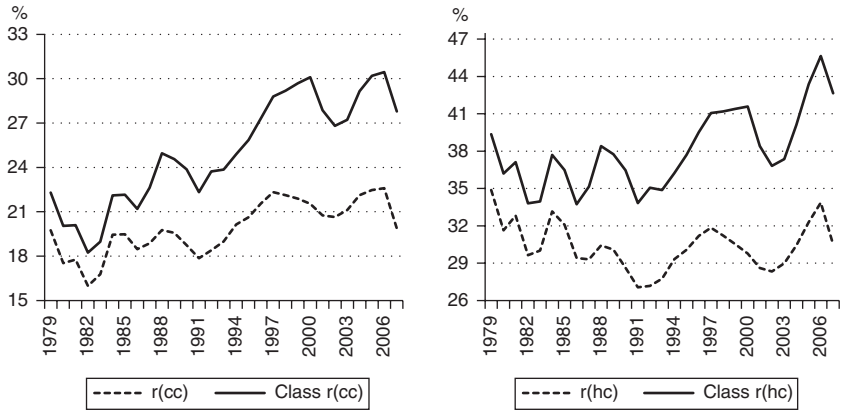
Repos issued by dealers are at the heart of the modern market-based financial system, dealers funding around half of their assets through repo. But the overall size of the repo market is unknown. At the pre-crisis peak, gross outstanding claims were perhaps $10 trillion in the US, $10 trillion in euro markets and a further $1 trillion in the UK (cited in Gorton and Metrick 2012a). Since repos are issued to finance the holding of financial assets, the linkages to the 'real' economy are not the more or less transparent ones of Marx's day. These linkages can however be pursued further by considering the rate of profit.

12.2 THE RELEVANCE OF THE RATE OF PROFIT

A standard approach in the Marxian tradition is to relate crisis to movements in the rate of profit. A secular decline in profitability at some point generates a crisis as investment falls in response to falling profitability, and resolution of the crisis reverses the secular decline that caused it. There are well-known problems of both structure and agency in this approach, but there are also considerable empirical difficulties, and these are the focus here.

The post-1945 'golden age' of a weak form of social democracy, with its commitments to full employment, social protection, the legitimacy of trade unions and state interventions in the economy, fixed exchange rates, and heavily regulated and restricted finance, gradually undermined the conditions of its own existence. By the 1970s, an era of growth had been replaced by stagflation, itself a symptom of a stalemate in the class struggle over the future direction of the economy.[8] The stalemate was resolved at the end of the 1970s with the Fed's dramatic interest rate rise, commonly considered to initiate the era of neoliberalism. This era was one of state-sponsored attacks on trade unions and the working class more generally, combined with a celebration of global capital mobility, a sustained programme of deregulation and privatization, an ideology of free markets that emphasized state failure over market failure, a prejudice against state-financed social expenditures, and a prioritization of direct tax reductions, especially for the rich.

This systematic dismantling of the structures of the 'golden age' successfully stemmed the fall in the average rate of profit that had characterized the latter years of the 'golden age'. Evaluating the fixed capital stock at current replacement cost rather than historic cost, from its post-war peak



Note: The rate of profit (dotted line) is the ratio of the net operating surplus of private industries to the net non-residential private fixed capital stock of private industries (excluding inventories). The class rate of profit (solid line) is the same, except that it includes in the numerator an estimate of the employee compensation accruing to capitalists. The numerator is defined by the current year, the denominator by the December figure of the previous year.

Sources: BEA (NIPA, GPO, FAT, at http://www.bea.gov/national/index.htm#gdp) and Mohun (forthcoming).

Figure 12.1 The rate of profit in the neoliberal era, all private industries, US (left-hand panel: at current cost; right-hand panel: at historic cost)

of 25.8 per cent in 1966, the rate of profit fell to a trough of 16 per cent in 1982, followed by a fluctuating recovery to a peak of 22.6 per cent in 2006. In terms of historic cost capital stock, the pattern is different, for the neoliberal rise in the rate of profit began a decade later, from 27.2 per cent in 1991 to a peak of 33.9 per cent in 2006.

The dotted lines in Figure 12.1 show the details for the neoliberal era from 1979 to 2007. And while each rate of profit fell from 2006 over the following year (2.7 percentage points in current cost; 3.4 percentage points in historic cost), this is hardly evidence of a falling rate of profit of such severity as to imperil the system as a whole.

One of the well-documented features of the neoliberal era is the extraordinary increase in inequality as top incomes soared (Piketty and Saez 2003). Mohun (forthcoming) has used this data to estimate the total pre-tax labour and non-labour personal incomes of the capitalist class, where membership of the latter is defined by possession of sufficient non-labour income that receipt of a labour income is an option rather than a

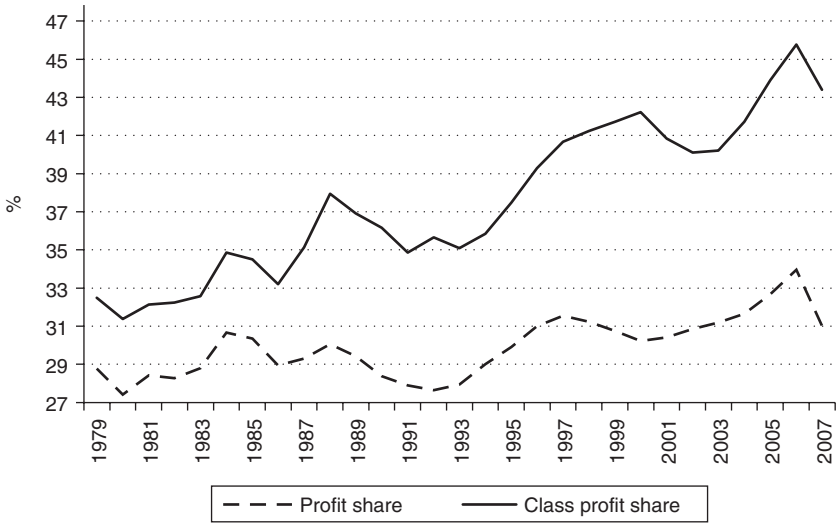
necessity. Since capitalist labour income can be treated in class terms as a form of profit, adding it to the numerator of the rate of profit defines a 'class rate of profit', shown as the solid lines in Figure 12.1. The dramatic rise in the labour income component of capitalist income thereby imports a marked and increasing upward shift to the class rate of profit in both its current cost and historic cost measures. This at least partially resolves an important puzzle of the neoliberal experience: in an era in which the working class has been comprehensively defeated, why didn't the rate of profit rise by more? One answer is that capitalists could divert profit income into their labour income packages, and the construction of a 'class rate of profit' compensates for this. And one consequence is that it makes a falling rate of profit account of the 2007–09 crisis even more implausible.

But there is a further consequence. Consider now the profit share depicted in Figure 12.2, defined as the net operating surplus of all private industries normalized by the net domestic product (NDP) of those industries.[9]

Again the dotted line is the conventionally defined measure, and the solid line adds the labour income component of capitalist personal income to the numerator. From 1980 to 2006, the neoliberal era saw an enormous 14.4 percentage points rise in the 'class profit share', well over twice the 6.5 percentage points rise in the conventionally defined profits share. Since luxury consumption can only account for a limited amount, this implies very large annual additions to amounts of cash seeking a home.

These amounts of cash have a number of different institutional manifestations. Some of them are held by global non-financial corporations, some by asset management and securities lending companies; some are the cash holdings of long-term mutual funds; some are held by insurance companies and pension funds; some are held directly by wealthy individuals, and some by hedge funds.[10] Pozsar (2011) estimates that this cash in 2007 amounted to a total of $3.8 trillion, spread across pools averaging $10 billion each, and each managed by a single central decision-maker (such as a corporate treasurer or an asset manager).

Whatever the institutional manifestation, these cash pools were (and are) generally subject to written mandates regarding cash investment policies, which govern what the cash manager can do. These mandates are conservative: safety of principal comes first, the next priority is liquidity, and only after safety and liquidity are ensured is yield considered. But bank deposits are not an option. Commercial bank deposits were only insured up to $100 000 (fixed in 1980 by the Federal Deposit Insurance Corporation, and raised to $250 000 after 2008), and safety of principal was hardly pursued by holding large uninsured bank deposits (and becoming an uninsured and



Note: Profit share (dotted line) is the ratio of net operating surplus to net domestic product, for all private industries. The class profit share adds capitalist labour income to the numerator.

Sources: BEA (NIPA, GPO, FAT, at http://www.bea.gov/national/index.htm#gdp) and Mohun (forthcoming).

Figure 12.2 Profit share of NDP in the neoliberal era, all private industries, USA

unsecured creditor of the bank). Moreover, institutional cash pools do not want money for transactions purposes, but for liquidity, collateral management and other investment purposes, so that commercial bank deposits are not especially suitable. For non-commercial-bank deposit alternatives which were insured, the obvious choices were instruments guaranteed by the US government (Treasury and agency securities), but in the years running up to the crisis they were in short supply (by an amount estimated by Pozsar 2011 as well over $1 trillion).[11] So seeking investments in 'safe' assets for terms ranging from overnight to a year, the only possibility was to invest in privately insured, privately created instruments. This was done largely through repo.

The time path of the rate of profit is therefore central to the account of the crisis, not because it fell (since it did not), but because it rose, and in class terms rose dramatically with the huge labour income increases at the top of the personal income distribution. It is the cash pools thereby generated and their search for investment safety in repo that is

central to the explanation of the crisis. To see why this is the case, it is helpful to consider the historical evolution of the neoliberal financial system.

12.3 THE EVOLUTION OF THE NEOLIBERAL FINANCIAL SYSTEM

In response to the banking collapses of the Great Depression, banks were subjected to considerable regulation. Commercial banking was separated from investment banking; there were restrictions on the formation of banks and the location of their branches; interest rates were prohibited on checking accounts and subject to a 3 per cent ceiling on deposit accounts; and there were restrictions on what borrowers could be charged. During the 'golden age', banks allegedly operated according to a 3–6–3 rule: collect deposits at 3 per cent, lend them at 6 per cent, and be on the golf course at 3pm. There is some doubt that life really was like that (Walter 2006), but whatever the case, life changed from the end of the 1970s as bank profitability came under considerable pressure.

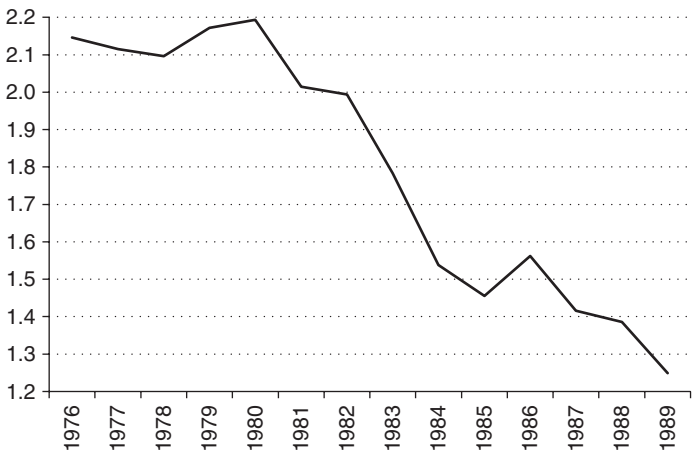
This pressure came from two directions. The first came from the corporate loans side. Large creditworthy US corporations had always historically issued their own bonds directly (because banks were too small to fund the capital requirements of industrialization), but this process spread widely across the corporate sector in the 1980s with the development of (longer-term) 'junk bonds' and (shorter-term) 'commercial paper'.

Junk bonds were issued by corporations as high-yield, because below investment grade (the credit rating of the issuing corporation was BBB or below). Organized originally through underwriting at Drexel Burnham Lambert, and later at competing investment banks, junk bonds were used to finance mergers and acquisitions through leveraged buyouts: the acquirer issued a junk bond to pay for an acquisition, and then used the cash flow of the acquired firm to repay the debt over time. In contrast to junk bonds, commercial paper comprised short-term debt issued directly by the largest and most creditworthy firms. Substituting for short-term unsecured bank loans, through the 1980s it grew at an annual compound rate of 17 per cent. In terms of the impact of junk bonds and commercial paper on bank loans, Gorton and Metrick (2012b) cite studies showing that bank loans accounted for 36.6 per cent of the total credit market debt raised between 1977 and 1983, but only 18.2 per cent of the total debt raised between 1984 and 1989.

As junk bonds and commercial paper were substituted, respectively, for

longer- and shorter-term bank loans in the US, the loss of business put downward pressure on bank profitability, which was further exacerbated by competition from foreign banks in the US domestic market. Gorton (1994) reports that Japanese banks in particular underpriced by more than 0.5 per cent (50 basis points) in order to enter the US domestic banking market for corporate loans, generating a loss to US banks as they were forced to respond by reducing their lending rates.

The second pressure on profitability came from the deposits side. Because of their interest rate ceilings, banks started losing deposits to money market mutual funds from the late 1970s. When the ceilings were removed, banks were then forced to devote considerable resources to price rather than non-price competition for (both wholesale and retail) deposits with money market mutual funds, which was expensive (Gorton 1994; Gorton and Metrick 2012b). The result of these pressures was sharply falling profitability, illustrated in Figure 12.3 in which the rate of profit in banking is normalized to that of all private industries.



Note: Rate of profit defined for banking as the ratio of the gross operating surplus for banking (SIC 1972 and 1987) to the non-residential private fixed capital stock for NAICS 5210 (Federal Reserve Banks) and 5220 (Credit intermediation and related activities). Data limitations preclude excluding Federal Reserve Banks from the ratio, using only SIC or only NAICS data, and using net rather than gross data. SIC is the Standard Industrial Classification (https://www.osha.gov/pls/imis/sic_manual.html); NAICS is the North American Industrial Classification System (http://www.census.gov/eos/www/naics/).

Source: BEA (NIPA, GPO, FAT).

Figure 12.3 Rate of profit in banking as a proportion of the rate of profit in all private industries, US, 1976–89

Because of this steep relative fall in banking profitability, capital left the commercial banking industry for more profitable unregulated bank-like activities, and under this pressure commercial banking was restructured in order to compete more effectively. This restructuring used new developments in information and communications technology to enable market processes to be applied to the division of labour within a bank, so that its traditional loan-making process was broken into its constituent parts, each part becoming a separate market operation. The traditional pre-neoliberal bank originated and approved loans, held them (and their associated credit risks) to maturity, funded them with shorter-term deposits, and made money on the interest rate spread. By contrast, the neoliberal bank was a financial holding company, comprising both a bank (which partly continued to originate loans but also purchased them from specialized loan originators) and a network of subsidiaries (engaged in asset management and dealing, competing with the pre-crisis investment banks). The purpose of this network of subsidiaries was to securitize and distribute the loans via 'special purpose vehicles' (and to retain some of the loans for investment purposes). The only involvement of the bank in this was through the loans and credit guarantees it made to its subsidiaries. Compared with its non-neoliberal predecessor, the neoliberal bank thereby offloaded its credit risks and substituted market risk, earning its money through fees rather than interest rate spread.

Securitization was the central element in this transformation. Banks used special purpose vehicles to hold pools of loans off-balance sheet, and to sell investment-grade securities (typically tranched according to seniority, thereby catering to demands for different amounts of risk) which were backed by the income flows accruing to these pools. The revenues obtained from the sale of the securities created then financed the purchase of the loan pools themselves. The loan pools were formed primarily out of mortgage loans, automobile loans, student debt and credit card receivables, and the corresponding securities were generically called 'asset-backed securities'; those based on mortgages were 'mortgage–backed securities', divided into residential mortgage-backed securities and commercial mortgage-backed securities.[12] If asset-backed securities themselves were tranched and securitized, the resulting security was called a 'collateralized debt obligation'. And collateralized debt obligations in turn could be tranched and securitized, creating collateralized debt obligation squared securities, and so on.

This transformation to neoliberal market-based banking took time to be effected. Noting that much banking deregulation in fact amounted to a validation of trends already being pursued by market participants, legislation in 1980 and 1982 removed interest rate ceilings, allowing banks

to compete with money market funds for deposits; intra-state branching restrictions were relaxed by the banks themselves through the 1980s; 1994 legislation removed inter-state branching restrictions; and in 1999 the legal requirement that investment and commercial banking be separate was repealed. On securitization, financial engineering took time in the 1980s to resolve such issues as early repayments of mortgage debt. And not until 1997 did J.P. Morgan introduce the Broad Index Secured Trust Offering which was the precursor for producing collateralized debt obligations from credit derivatives. Finally for repo, the first Global Master Repurchase Agreement was published in 1992, and revised in 1995 and 2000.

The complexity of neoliberal banking created opacity, but the fundamentals are that the securitization process bundles loans and resells them, funding its operations through repo. In April 2011, outstanding securitized assets in the US amounted to some $11 trillion, substantially more than the total of all outstanding marketable US Treasury securities (Gorton and Metrick 2012b).

If securitization could supply asset-backed securities in such volume, it was only because there was a demand. This demand came from the private cash investors described above.[13] Pozsar (2014a) calls them 'institutional cash pools . . . managed by cash portfolio managers whose mandate is "do not lose"'. Wholesale cash deposits are uninsured, and so are always invested in better credit risk instruments that are interest-earning. As described above, these latter are found in repo.

If cash portfolio managers are invested in repo (either directly or through money market mutual funds), then counterparties must post investment-grade collateral. The counterparties are risk portfolio managers, which are vehicles (such as hedge funds and absolute return funds) that use leverage to 'beat the benchmark'. They require cash in order to fund levered fixed-income positions, to post as collateral in shorting, and to provide margins in derivatives trades. And they get the cash by posting investment-grade securities in repo.

So risk portfolio managers use repo to supply securities and demand cash. Their assets are asset-backed securities and the swaps with which they actively pursue risk, and their liabilities in addition to their equity are the cash obtained from reverse repos. Cash portfolio managers use repo to demand securities and supply cash. Their assets are the money market instruments used in repo, and their liabilities (in addition to their equity) are the swaps (foreign exchange, interest rate and credit default) that they accept to minimize risk (currency, duration and credit). In this manner, the rapidly growing cash pools drove the securitization process.

In the middle are the dealers. As money dealers, their liabilities interface with the asset side of cash portfolio managers as they repo

asset-backed securities as collateral for cash, and their assets interface with the liabilities side of risk portfolio managers as they reverse repo collateralized cash loans; this dual interface makes the markets that establish the price of funding. And as risk dealers, their balance sheet on both sides comprises swaps, interfacing on one side with cash portfolio managers seeking safety, and on the other with risk portfolio managers seeking risk; and this dual interface makes the markets that establish the price of risk. Thus the dealers were (and are) at the heart of the process, interfacing between cash portfolio managers and risk portfolio managers.[14]

In principle, dealers[15] operate matched books: identical long and short positions so that price risk is eliminated. But in practice dealers have to take the opposite side of any trade any customer wants, by virtue of their dealing function, without immediately being able to make an offsetting trade. So dealers must take inventory positions (whether long or short) and, in consequence of their exposure to price risk, must make buying and selling prices according to their inventory positions. For example, suppose cash pools increase in size, so that there is an increased demand for securities in repo. Dealers respond by running down inventories, and to restore their position must increase their buy price of securities, reducing their yield and risk premia, in order to prompt increasing supply of securities through the securitization process.[16]

The flows of money are huge. As of the second quarter of 2012, according to Pozsar (2014b), more than $3 trillion was placed with dealers by cash portfolio managers; the dealers lent on $2.5 trillion, and used the remainder to finance their securities' inventory positions.

12.4 CRISIS IN THE NEOLIBERAL FINANCIAL SYSTEM

In pre-neoliberal commercial banking, banks had to hold a fraction of their deposits as reserves, and in the last resort could borrow from the central bank. In neoliberal banking, when banks engage in repo transactions to borrow money, they are forced to keep a fraction of their assets as reserves via the repo haircut mechanism. And the transactions are 'insured' via the collateralization process.

Once subprime mortgages were impaired (through falling house prices), this affected all institutions holding securitized mortgages on their balance sheets, but the location and size of exposure to subprime risks was unknown. This immediately had an impact in inter-bank markets as the value of collateral used in repo began to fall. And as soon as questions

about dealer stability were raised, so that cash portfolio managers might have to sell the securities they were holding for the cash they were supplying (and sell at whatever market prices they could get), repo rates and haircuts were raised across all private assets. Gorton and Metrick (2012a) describe how this amounted to a run on the dealers: with a repo market of $10 trillion and haircuts of zero, dealers can borrow $10 trillion against equivalent asset-backed securities collateral; with haircuts of 20 per cent, banks are $2 trillion short, and no financial system could survive a drain of that amount.

Suppose the demand for securities falls. Then dealers' inventories rise, and they reduce the buy price of securities to restore their inventory position. But that can prompt questions about the fundamental value of the securities used as collateral, so that the reduced price does not call forth an equilibrating reduction of supply, but rather prompts further haircuts, draining liquidity from dealers and hence risk portfolio managers and forcing deleveraging.[17] Once money markets cease to fund capital markets, the neoliberal financial system faces meltdown.

Hence large-scale deleveraging was forced on the dealers, and just as cash portfolio managers ran on the dealers, dealers ran on the risk portfolio managers, the levered portfolio managers in pursuit of yield.[18] This evaporation of liquidity bankrupted dealers, some of the hedge funds and, but for state bailouts, the commercial banks.

12.5 CONCLUSION

What then was, and remains, destabilizing is the growth of cash portfolio managers, fueled by the neoliberal growth in top incomes. In policy terms, this suggests that unless the issue of soaring top incomes is addressed, the neoliberal financial system remains crisis-prone. But it is not clear just how this issue could be addressed within the framework of neoliberalism. The 1920s saw similar growth of top incomes followed by financial crisis, and that was only resolved by the complete transformation of capitalism via the New Deal and war-time planning into the weak form of social democracy that facilitated the 'golden age'. That historical parallel suggests that only a major transformation of neoliberalism will do.

The second issue prompted by this chapter is the irrelevance of much Marxist theorizing to the financial system. Crises are breaks in the circuit of capital, but those breaks always occur in the markets for short-term debt, and when liquidity evaporates there are hugely damaging consequences that cascade through financial circuits and into the real economy. What then is required is much more attention to precisely how money

markets work, because without their financing there are no capital markets and hence no real economy.

NOTES

1. Many thanks to Sue Himmelweit for helpful comments and discussion. The usual disclaimer applies.
2. In 2006, the labour compensation packages of the chief executive officers of leading investment banks were: Citigroup $25.98m, Bank of America $27.87m, Bear Stearns $33.85m, Lehman Brothers $40.5m, Morgan Stanley $41.41m, Merrill Lynch $48m and Goldman Sachs $54.72m.
3. In the United Kingdom, for example, about 97 per cent of all money is created by the commercial banking system as bank deposits (a liability of the banks). Only about 3 per cent of money is notes and coin issued by the Bank of England (a liability of the central bank).
4. A reverse repo is exactly the same transaction from the point of view of the seller of cash.
5. Duration risk through interest rate swaps, foreign exchange risk on liquidity needs in different currencies through currency swaps, and credit risk through credit default swaps.
6. On the important insurance mechanism of credit default swaps, see Stulz (2010).
7. See Pozsar (2014a, 2014b) for a more detailed elaboration of the hierarchy, using the distinctions between government repos and private repos, banker-dealers' government trading desks and their private credit trading desks, and government-only money market funds and prime money funds. The post-crisis arrangements are now different, since dealers and money market funds currently (early 2015) have access to reserve accounts at the Fed.
8. Mohun (2014) shows this stagnation in terms of an essentially flat rate of exploitation through the 1970s, in marked contrast to what came later.
9. Current cost and historic cost distinctions are irrelevant to the profit share.
10. Some is also held by the public sector: central banks smooth exchange rates and make domestic monetary system interventions; and municipalities manage cash receipts prior to their expenditure.
11. Partly because so many of them are held overseas, a consequence both generally of US balance-of-payments deficits, and specifically the determination of South and East Asian countries to insure against a repetition of the currency crises of the late 1990s.
12. Commercial paper too is securitized, as asset-backed commercial paper (ABCP). ABCP conduits have portfolio managers who make active (although rule-bound) decisions, and must mark portfolios (daily or weekly) to prevailing market prices, which then determines their borrowing ability. In contrast, special purpose vehicles are passive robots that follow predetermined rules; they have no physical location and no employees.
13. Plus the cash necessary for the public sector management of foreign exchange reserves and local government.
14. See Duffie (2010). Commercial banks were also involved although they tended to use other sources of funding than repo.
15. *Qua* dealers rather than proprietary traders.
16. Turner (Financial Services Authority 2009) describes the falls in yield over a 20-year period.
17. See Brunnermeier (2009) for descriptions of how initial shocks are amplified if funding becomes problematic. Leveraged investors are forced to retrench, but this leads to more losses and higher haircuts, which makes the funding problem worse. See also Krishnamurthy (2010).

18. This is oversimplified, because it ignores the run on asset-backed commercial paper in 2007 and 2008. See Kacperczyk and Schnabl (2010) for details.

REFERENCES

Bagehot, W. ([1873] 1999), *Lombard Street: A Description of the Money Market*, New York, USA and London, UK: Wiley.
Brunnermeier, M.K. (2009), 'Deciphering the Liquidity and Credit Crunch 2007–2008', *Journal of Economic Perspectives*, 23(1), 77–100.
Duffie, D. (2010), 'The Failure Mechanics of Dealer Banks', *Journal of Economic Perspectives*, 24(1), 51–72.
FCIC (2011), 'The Financial Crisis Inquiry Report', Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States, Washington, DC: Government Printing Office.
Financial Services Authority (2009), 'The Turner Review: A Regulatory Response to the Global Banking Crisis', London: Financial Services Authority.
Gorton, G. (1994), 'Bank Regulation When "Banks" and "Banking" Are Not the Same', *Oxford Review of Economic Policy*, 10(4), 106–119.
Gorton, G. and A. Metrick (2012a), 'Securitized Banking and the Run on Repo', *Journal of Financial Economics*, 104(3), 425–451.
Gorton, G. and A. Metrick (2012b), 'Securitization', in G. Constantinides, M. Harris and R. Stulz (eds), *Handbook of the Economics of Finance*, Amsterdam: North-Holland.
Grad, D., P. Mehrling and D.H. Nelson (2011), 'The Evolution of Last-Resort Operations in the Global Credit Crisis', available at http://ssrn.com/abstract=2232347 (accessed 23 April 2014).
Kacperczyk, M. and P. Schnabl (2010), 'When Safe Proved Risky: Commercial Paper during the Financial Crisis of 2007–9', *Journal of Economic Perspectives*, 24(1), 29–50.
Krishnamurthy, A. (2010), 'How Debt Markets have Malfunctioned in the Crisis', *Journal of Economic Perspectives*, 24(1), 3–28.
Mehrling, P. (2011), *The New Lombard Street, How the Fed Became the Dealer of Last Resort*, Princeton, NJ: Princeton University Press.
Mehrling, P., Z. Pozsar, J. Sweeney and D.H. Neilson (2013), 'Bagehot was a Shadow Banker: Shadow Banking, Central Banking, and the Future of Global Finance', accessed 23 February 2015 at http://ssrn.com/abstract=2232016.
Mohun, S. (2014), 'Unproductive Labor in the US Economy 1964–2010', *Review of Radical Political Economics*, 46(3), 355–379.
Mohun, S. (forthcoming), 'Class Structure and the US Personal Income Distribution, 1918−2012', *Metroeconomica*.
Piketty, T. and E. Saez (2003), 'Income Inequality in the United States, 1913–1998', *Quarterly Journal of Economics*, 118(1), 1–39; tables and figures updated to 2013 in Excel format, January 2015, available at http://eml.berkeley.edu/~saez/.
Pozsar, Z. (2011), 'Institutional Cash Pools and the Triffin Dilemma of the US Banking System'. Working Paper WP 11/190, International Monetary Fund.
Pozsar, Z. (2014a), 'Shadow Banking: The Money View', Working Paper 14-04, Office for Financial Research, US Treasury.
Pozsar, Z. (2014b), 'How the Financial System Works', Appendix to 'Shadow

Banking: The Money View', Working Paper 14-04, Office of Financial Research, US Treasury.
Pozsar, Z. et al. ([2010] 2012), 'Shadow Banking', Staff Report No. 458, Federal Reserve Bank of New York, revised 2012.
Stulz, R.M. (2010), 'Credit Default Swaps and the Credit Crisis', *Journal of Economic Perspectives*, 24(1), 73–92.
Walter, J.R. (2006), 'The 3-6-3 Rule: An Urban Myth?', *Federal Reserve Bank of Richmond Economic Quarterly*, 92(1), 51–78.