

Why the subprime crisis is different: a Minskyian approach

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Minsky's financial-instability model suggests that financial crises can be resolved efficiently with lender-of-last-resort and big-government interventions. The crisis that began in 2007 (hereafter, the "2007 crisis") has been different: it has been more profound and resistant to policy interventions. This paper examines why. Our approach is to expand Minsky's balance-sheet approach in several ways. First, we incorporate two factors Minsky missed because he built his model in the 1970s: the impact of racial exclusion and U.S. cross-border imbalances on U.S. financial dynamics. In addition, we draw out the analytical implications of the systematic differences between banks' and non-banks' balance-sheets. Minsky didn't do this; but because of the transformation of banking after 1980, these differences have become deeply significant. One key effect of so doing is to see that asset-liability balances as well as cash-flows are crucial in financial dynamics. This paper concludes that the 2007 crisis has been so profound and unresponsive to policy intervention for several reasons: banks no longer bear as well as originate credit risk; banks made exploitative loans to minority borrowers and then generalized these loans as housing prices rose; and subprime homeowners and structured investment vehicles became more leveraged than banks.

Key words: Financial instability, Subprime crisis, Minsky model, Central-bank intervention, Credit and liquidity risk

JEL classifications: E12, E21, E32, G18, G21

1. Introduction: a paradox?

This paper uses Minsky's balance-sheet approach to explore why the still-unfolding 2007 crisis has been so profound and has so resisted governmental efforts to contain it. This means confronting a paradox: this crisis has both been profoundly Minskyian in general terms and distinctly un-Minskyian in some of its specific contours.

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Hyman Minsky's core insight into capitalist dynamics, at the broadest level, is that financial instability can emerge endogenously and undercut economic growth due to perverse interactions between uncertainty, competition and fear. This idea resonates so forcefully for the current crisis that Martin Wolf spoke for a multitude when he wrote: 'What went wrong? The short answer: Minsky was right' (Wolf, 2008).

But to grasp the implications of what happened for theory and policy, we must delve into the details of Minsky's problematic. Minsky explored in great depth why downturns in financial-asset prices, investment and income chronically occur. And, at this more granular level, some of the pieces of the 2007-crisis puzzle do not fit Minsky's elaborations of his hypothesis. For one thing, Minsky viewed downturns as caused by investment cycles, not by housing-price collapses. As such, he focused attention on non-financial and financial firms, not on households. For another thing, Minsky argued that downturns can be contained through systematic governmental action: lender-of-last-resort interventions and big-government expenditures can limit damage to the real economy by, respectively, reestablishing stability and buttressing aggregate demand. Yet if 'the sky did not fall' in earlier post-War financial crises, as Minsky liked to put it, it has now done so, a quarter of a century later.

Our method is to identify implicit assumptions in Minsky's model that might require modification, and to make visible certain relationships that are largely invisible or only hinted at in his writing. Three modifications are needed to map out the subprime crisis. The first is to incorporate the evolving effects of racial exclusion and social inequality on recent financial-market dynamics. This means bringing the household sector into the analysis of financial instability in a way that recognises income/wealth divisions within this sector. The second is to recognise the implications of the USA being a global liquidity sink due to its capital- and current-account imbalances. Minsky's model, elaborated in the 1970s, did not pay explicit attention to either of these factors. The second fully impinged on US financial dynamics only after 1980; the first, only after 1990. A third modification involves drawing out the analytical implications of the systematic differences between banks' and non-banks' balance-sheets. This will allow us to grasp more fully the meaning of the shift in the locus of lending from banks to non-banks.

Minsky's later writings recognised these shifts. He posited the emergence of a new 'stage' of capitalism, in which money-market and other financial funds are displacing banks from the central role in the financial system.¹ He also acknowledged the importance of households' as well as firms' financial behaviour;² he worried both that the financial system was becoming dysfunctional and that mechanisms to contain crises were being compromised. However, he never revised his financial-instability model *per se* in light of these changes.

What remains invisible in Minsky's rendition of his model is his assumption that loan commitments become unsustainable because they generate negative cash-flows (they represent Ponzi finance, in his terminology), not because of the insolvency of the units involved. In addition, in his model, loans become unsustainable only when—in the latter stages of an expansion—asset prices climb to unsustainable peaks. Until then, loans are implicitly taken as productive. Another invisible element in Minsky's model is that at the moment of crisis, banks are in a position to alleviate the rising pressures from mounting

¹ See Minsky (1992-93, 1995A, 1995B, 1996). Minsky's compelling notion of 'money market capitalism', while it does not anticipate the subprime crisis *per se*, raises concerns about corporate finance that bear close attention. Whalen (2008) synthesises Minsky's later writings.

² This acknowledgement is perfunctory, perhaps because these writings focus on aggregate relationships among profits, investment and government debt, not on consumption or housing.

liquidity risk on all non-bank economic units. These invisible assumptions underlie Minsky's conclusions about how the unstable economy can be stabilised.

The subprime crisis has created new circumstances at variance with these important, if unacknowledged, assumptions. Banks' strategic changes in the early 1980s, combined with structural changes in mortgage markets, permitted banks to make loans but not hold them to maturity; this meant that banks were generating risk but not absorbing it. By the early 1990s, banks had begun to make 'predatory' loans in socially-excluded communities, often through subsidiaries. These loans were not productive—that is, they jeopardised (instead of facilitating) the asset-ownership positions of the units acquiring them. The real extent of these loans' riskiness was obscured by a surging housing market, whose rise was underwritten by the plentiful liquidity linked to the systematic inflow of asset-seeking funds to US markets. So when housing prices hit critical limits in some markets, banks had instruments available for making loans that once would have been found too risky.

This led to the price explosion in US housing markets, and to the unsustainable stretching of the limits of liquidity in financial markets. Ever-more permissive boundaries for securitising credit risk widened the percentage of loans contracted by banks but backed in the markets. Consequently, the liquidity-risk pressure that would previously have shut down lending at the peak of the cycle was absent. When that peak came, it was no longer banks that had the most-leveraged balance sheets, as in Minsky's cyclical model; instead, subprime borrowers and structured investment vehicles were in this position. So it was these units—not banks, as in Minsky's model—that took the full brunt of the turndown, dragging banks down with them. And since the locus of highest risk had been transferred outside the banking system, lender-of-last-resort interventions could not forestall the meltdown. It spread, an uncontrolled fire whipped by the winds of uncertainty.

2. The role of banks in Minsky's vision of financial instability

Minsky's writings on financial instability elaborate a theory of how financing decisions in the economy, financial-market dynamics and macroeconomic growth are interlinked.¹ Minsky argues that economic units move systematically from 'robust' financial positions, with minimal credit outstanding and little leverage, toward 'fragile' and then 'Ponzi' financial positions, which leave them increasingly unable to meet debt obligations taken on due to overoptimistic expectations. Eventually, cash-flow constraints bind and slow the expansion. Then expectations break down and asset values fall; if unchecked, a debt-deflation process may be unleashed.

Minsky liked to say that all firms are banks. As Wray and Tymoigne (2008, p. 13) put it, '[in Minsky's theory] all entities were treated like banks, acquiring assets by issuing liabilities'. Minsky emphasised this point in terming his framework the 'financial theory of investment'. But his theory actually assigns distinct, interlocking roles to non-bank units and banks.

By definition, banks are financial firms that perform two economic functions: they emit liquid deposits and create credit. In so doing, they take on two types of risk: default risk, the possibility that borrowers may not meet their contractual debt-servicing and principal-repayment obligations in a timely manner; and liquidity risk, the possibility of loss that arises for an economic unit that finances a longer-term asset position with liabilities of shorter duration. Banks experience tension between their liquidity-provision

¹ See especially Minsky (1975, 1986).

and credit-creation functions, because these functions—and the risks to which they give rise—are interdependent.

Figure 1 depicts the characteristic balance sheets of banks, non-financial firms (firms) and households as Minsky implicitly envisioned them. Firms obtain working capital from several sources, including banks; they finance their plant and equipment with bonds and equity. Households have both demand and time deposits with banks. They maintain some bank-issued debt (especially from credit-card use); they finance non-real estate assets with non-bank debt and finance homes with mortgage loans. So banks' balance sheets are intertwined with those of both firms and households. Note that firms' leverage ratio (assets-to-equity) is shown as lowest (approximately 3-to-1), and banks' leverage ratio as highest (approximately 10-to-1). These ratios conform broadly with historical experience in the USA.

Banks play a key role in Minsky's vision of business-cycle dynamics. In the upturn, optimistic and even euphoric assessments of earnings potential and asset prices lead firms and households to take on more debt and hence financial fragility. Here banks have no unique role, but they do accelerate the expansion process by lending to units whose spending depends on access to intermediated credit. Banks' unique structural role emerges as financial fragility mounts. In the downturn, liquidity commands a premium. Non-bank economic units are more likely to survive such periods if banks provide them with fresh infusions of credit at reasonable rates. But so doing forces banks to reduce their own liquidity (Dymski, 1988). Thus, banks' reaction to this heightened demand for credit and liquidity by non-banks constitutes the first of two bank-specific pressure points in the

Non-financial firms		Households		Banks	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Working capital	Trade credit, short-term loans, commercial paper	Cash and demand deposits	Short-term bank and non-bank debt (credit cards)	Required reserves	Demand deposits
		Time Deposits			
Plant and equipment	Corporate bonds	Real assets (automobile, furniture, recreation)	Mortgage loan(s)	Securities, Fed Funds lent	Time deposits
				House(s) or condo(s)	
	Equity		Equity	Short-term loans and mortgage loans	Borrowed funds, incl. Fed Funds
		Financial assets (stocks & funds)			Equity

Fig. 1. Firms, households, and banks: pre-deregulation balance sheets. Dark grey shading indicates locii of default risk; light grey shading indicates locii of liquidity risk

Minsky cycle. As uncertainty grows and prospects of ‘good times’ lessen, banks grow reluctant to take on more default risk; simultaneously, borrowing markets tighten and liquidity risk rises. Finally, pessimism or an adverse event undermines expectations and the economy plunges.

If the banking system is to break the economy’s downward momentum in such periods, it must absorb—not shed—risk. Whether it can do so depends on central-bank interventions to make liquidity plentiful and cheap. This is the second bank-specific pressure-point, and the fulcrum point for Minsky’s (1986) ideas about ‘stabilizing the unstable economy’. If the central bank does not take action to ease liquidity conditions, banks will be forced to cut loan growth and even to call in loans. Bank runs and a debt-deflation process may be triggered.

Avoiding this path requires forceful lender-of-last-resort interventions by the central bank, which reduce liquidity risk enough to permit banks to continue providing credit (and hence liquidity) to non-banks. Of course, banks’ continued lending means their absorption of more default risk. If banks’ borrowers have solid longer-term prospects this lending poses only temporary risks while providing non-banks with the breathing room they need to recover momentum.

This leads to the second prong of Minsky’s prescription for stabilisation. Timely lender-of-last-resort (‘big bank’) action has to be augmented by ‘big government’ counter-cyclical spending (Minsky, 1986). Propping up aggregate demand restores growth and the viability of investment. It also pulls banks’ default-risk exposure back into a manageable range. The key for Minsky is not to prevent financial crises, since these are inevitable in advanced capitalist economies, but to react strongly through lender-of-last-resort and fiscal-policy interventions once crises occur.

Minsky’s characterisation of crisis and recovery rests on several stylised facts. First, banks are the most highly leveraged units in the stylised scenario of Figure 1. This means that banks have the slimmest sectoral margin for absorbing losses from realised default and liquidity risk. The fact that non-banks demand more liquidity from banks just when banks’ own default risks are growing only heightens banks’ special vulnerability. So interventions to stabilise the economy focus on banks both because of their crucial role in liquidity provision and of their high level of sectoral leverage. While all units suffer in the downturn, non-banks generally have larger equity cushions. Indeed, recognising the leverage rank-ordering in Figure 1—wherein non-bank firms’ leverage < households’ leverage < banks’ leverage—explains an overlooked anomaly in Minsky’s theory: if Minsky’s framework offers us a ‘balance-sheet view’ of the economy, why is his principal analytical device based on cash-flows and not balance-sheet positions? The slide from robust to fragile to Ponzi finance describes cash-flow trajectories; Minsky does not offer us parallel descriptions of economic units’ slide from solvency to zero-net-worth status to insolvency. The answer is that banks, as a sector, approach insolvency in the downturn long before other units do.

A second key stylised fact in Minsky’s model is that banks undertake most of the intermediated loan-making in the economy. If banks dominate intermediated credit creation, then as an economy becomes increasingly financially fragile, they are directly exposed to accelerating default and liquidity risk. So banks themselves will collectively slow lending just as non-bank sectors have reached disastrous leverage-fuelled extremes requiring financing support. This means that central-bank injections in response to economy-wide illiquidity can efficiently target banks. Third, Minsky’s schema implicitly assumes that when an economic cycle is threatened by a speculative asset-price bubble, banks’ behaviour is not—at least not collectively—the source of that asset-price bubble.

Fourth, a renewal of lending can restore investment. These last two points are crucial in envisioning the path to renewed economic growth. Banks are assumed to be one-degree removed from any speculative fervor; this positions them to renew economic growth by systematically injecting liquidity through lending that can renew investment.

These parameters underlie Minsky’s model of economic stabilisation through ‘big government’ intervention. As long as banks’ leverage ratio exceeds that of all non-bank units, and as long as banks dominate loan-making, then credit-creation will remain bounded, even in a severe downturn. Further, central bank interventions targeted at the banking sector will suffice to restore liquidity to the economy as a whole; and these interventions can occur before systemic insolvencies also systematically force non-bank units into insolvency. Figure 2 shows how this works in Minsky’s framework. The solid arrows depict the cyclical trajectories of the non-bank firm, household and banking sectors in the late stages of a Minsky cycle. These units’ starting points reflect their initial relative positions vis-a-vis cash-flow; these units’ trajectories reflect their susceptibility to reduced cash-flow and to balance-sheet stress.

Figure 2 extends Minsky’s model in that cyclical dynamics affect units’ financial posture in two dimensions, not just one.¹ Once the economy hits a critical point (represented in Figure 2 by a line that bisects all three sectoral arrows), the Federal Reserve intervenes. This intervention (as shown by the heavy pointed arrow) works by stabilising banks’ cash-flow and thus permitting banks to continue lending. Bank asset-liability balances recover subsequently. The direction of non-bank firms’ cyclical recovery is indicated with a grey dotted arrow.

Minsky was not, in positing these stylised facts, replacing the world as it was with the world as he wished it to be. Rather, when Minsky developed his model of financial instability, these stylised facts were unremarkable institutional features that did not warrant analytical emphasis.

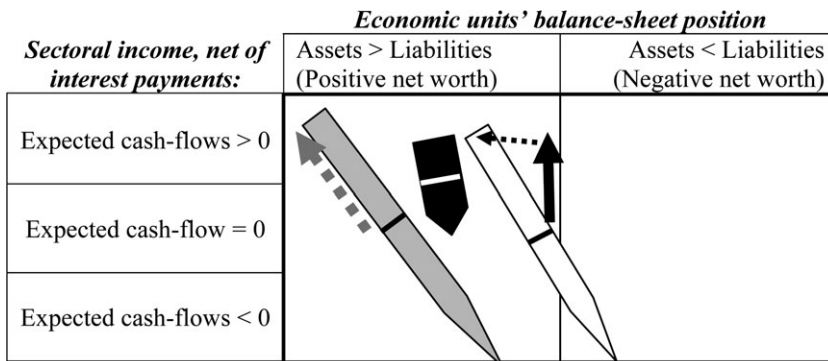


Fig. 2. Cash-flow and balance-sheet dynamics in pre-subprime Minsky cycle. Grey arrow, non-financial firms; black arrow, households with ‘plain vanilla’ mortgages; white arrow, banks. See text for further explanation.

¹ Davidson (2008) has made a very similar point about Minsky’s framework in an analysis that also focuses attention on the structure of the subprime crisis.

3. Retooling the mortgage markets in the 1980s¹

How did the stylised facts of banking in the USA change in ways that have made the 2007 financial crisis so deep and so resistant to efforts at governmental intervention? These changes were inaugurated when new financial instruments in the early 1990s linked racially-excluded residents of lower-income neighbourhoods with financial-market dynamics. Accounting for these new instruments, in turn, requires that we acknowledge strategic changes in banking that began a decade earlier.

Prior to the 1980s, US banks operated with long-standing geographic and product-line prohibitions. Housing credit was provided primarily by savings and loan companies and savings banks ('thrifts'), which attracted longer-term consumer savings and which held the mortgage loans they made to maturity. This was the banking structure that Minsky implicitly inscribed in his financial fragility hypothesis. Loan crises and deregulation in the 1980s brought about change: an end to geographic and product-line restrictions; bank failures and bank mergers across state lines; the decimation of the thrift industry.

Surviving banks, especially megabanks, reshaped their activities. They developed standardised financial products for upscale (high-balance) customers, while making lower-balance customers pay full costs for the banking services they received. Banks also began to offload loans onto secondary markets. Consequently, banks' net income was increasingly derived from fees and less so from interest margin.

The US system of mortgage finance was radically reshaped: lenders made loans to sell them, thereby also offloading financial risk. The process of originating, servicing and holding mortgages was split into its constituent parts, with each part priced and performed separately. In the wake of these shifts, banks were transformed: instead of earning profits by making relatively homogeneous loans to an undifferentiated set of customers, banks began focusing on how to make fee-based income from different segments of a customer base with different financial-product needs and profiles.

A successful securities-based system of housing finance necessitated the commodification of risky mortgage assets. This required two steps. The first was the standardisation of the instruments being bundled and sold, which meant standardised mortgage-eligibility criteria. This change permitted new originators and holders of mortgage debt to emerge. The second was the separation of loan-making from risk-bearing. The ready availability of quasi-public and private mortgage underwriting assured a robust secondary market for qualifying mortgages.

These agencies increased the share of mortgage credit they underwrote; this moved mortgages into mortgage-backed securities (MBSs) as thrifts' capacity to fund housing loans declined. As Figure 3 shows, the use of securitisation in a system of intermediary-originated mortgages drastically alters the distribution and extent of financial risk. In particular, lenders bear less liquidity and default risk here than in Figure 1, since they are constantly offloading mortgages. And mortgage funds can reduce liquidity risk substantially by attracting maturity-matched liabilities from insurance companies and pension funds. Since mortgages are made with standardised 'plain-vanilla' criteria that assure low, relatively predictable default rates—which willing counter-parties were willing to insure—financial risk could be virtually banished from housing finance.

From the mid-1980s to the mid-1990s, most mortgages were conforming conventional loans underwritten by these agencies and sold off into the secondary market. The speed

¹ Dymski (2009) provides more detail regarding the events summarised in Sections 3–5.

Mortgage originator (bank, thrift, etc.)		Mortgage-investor	
Assets	Liabilities	Assets	Liabilities
Reserves	Demand deposits	Bundled “plain vanilla” mortgage loans	Investments from pension, trust funds (maturity-matched)
Securities			
Non-mortgage loans	Time deposits		
Mortgage loans (held prior to sale)	Borrowed funds	Loan loss allowance	Equity tranche
	Equity		

Fig. 3. Securitisation with ‘plain vanilla’ mortgages: a balance-sheet view. Light-grey shading indicates default risk and dark-grey shading indicates liquidity risk.

with which this new system was installed was due in part to the steady capital-account inflow associated with the chronic US current-account deficit. The US dollar was unchallenged as a reserve currency and the USA offered a safe haven from global crises. So, quasi-guaranteed and denominated in dollars, mortgage-backed securities provided an attractive option for offshore investors.

4. The evolution of financial exclusion

Historically, banks have left many households and businesses in minority and lower-income areas underserved or unserved. This has led to ongoing debates about what sort of discrimination might be at work.¹ Meanwhile, check-cashers, finance companies and pawn-brokers filled the vacuum. But since the early 1990s, the increasing number of minority and lower-income households, together with the explosive growth of cross-border remittances, has attracted the competitive attention of banks and new financial firms alike. Survey of Consumer Finances data show that, in the last 20 years, debt levels for households in the two lowest-income quintiles have grown at least as fast as those for higher-income quintiles.

Banks and their subsidiaries marketing special instruments aimed at the lower-income and minority customers they had previously overlooked. Among these new products are ‘predatory’ loan instruments. Since the early 1990s, predatory loans have grown at a frenetic pace in neighbourhoods historically subject to financial exclusion, leading many households into personal financial distress. Here we focus on one category of predatory loan: the subprime mortgage.

Subprime lending originated when mortgage brokers and lenders combined the aggressive marketing of mortgages with demographic targeting. Mortgages with excessive fees, high penalties and high interest rates were sold to households that had had access only to informal-market credit (California Reinvestment Committee, 2001). Initially, most subprime loans were second mortgages, sold to owners of modest homes in socially-excluded areas ravaged by deindustrialisation.

Soon, loans with these characteristics were being marketed to home-buyers—especially minorities and home-seekers in minority areas. Bank holding companies often acquired

¹ For references to this literature, see Dymski (2006).

non-bank lenders for the purpose of entering this market. This gave them an arms-length outlet for making subprime loans, and permitted the differentiation of loan types for different holding-company subunits. So a new market opened up: rather than denying loans, lenders and mortgage brokers now offered loans at exploitative terms—that is, loans carrying fees, penalties and loan rates higher than were offered to other customers in other areas. This market grew ferociously. In 1998, subprime and manufactured housing lenders constituted a fifth of all mortgages extended to lower-income and Latino borrowers, and a third of all those made to African-American borrowers (Canner, Passmore and Laderman, 1999). Subprime lending grew 900% in inner-city areas between 1993 and 1999, even while other mortgage lending activity actually declined (Bradford, 2002). A nationwide study of 2000 HMDA data found that African-Americans were more than twice as likely as whites to receive subprime loans, and Latinos at least 40% more likely (Henriques and Bergman, 2000).

Underlying the take-off of this market was a business model for profiting from lending to ‘excessively risky’ borrowers. In the mortgage market, this model combined the front-loading of fees, high penalty rates and insistence on customer collateral; this last feature would keep lenders whole if default occurred. This explains why existing homeowners, who could be sold a second or a refinanced mortgage, were initially targeted; and it explains why mortgage loans made to minority home-buyers often had shorter maturities, higher rates and higher fees than those made to other home-buyers.

A means of moving these loans off lenders’ balance sheets was also required. Advances in computability allowed the creation of market-ready, risk-differentiated instruments. New investment vehicles such as hedge and private equity funds, which were competing for above-market returns, provided the demand for these high-yield securities. Wall Street investment banks, in turn, competed to offer these new vehicles to wealth-owners, channelling an ever-increasing amount of funds to subprime lenders. Securitisation of this paper already averaged US\$80 billion annually by 1998. Further, Wall Street insurers were willing to back these securities (Henriques and Bergman, 2000). Indeed, the surging housing market was fed in part by a loan-production machine encompassing an entire industrial complex—builders, mortgage brokers, real estate agents, appraisers, title companies, securities markets, underwriters.

This was a key step toward the broader subprime crisis. Mortgage securitisation had, in the 1980s, required risk homogenisation—it involved bundling (quasi-)government-backed credits from borrowers with low default risk levels. Now heterogeneous risks with substantial default risk, often difficult to evaluate, were being bundled into privately-backed securities. The system for originating and then distributing risk broadened considerably. These new credit markets inverted the previous lending situation in minority areas. Before, banks would be reluctant to make any loans in these areas and residents were credit-starved. Now, banks rushed in, directly or through intermediaries, to make and securitise subprime (and payday) loans. Lenders sometimes made exploitative loans in some locales and prime loans in others. Both prime-heavy and subprime-heavy areas were awash with credit. Debt in subprime-heavy areas was contracted at terms and conditions that threatened borrowers’ financial sustainability. Indeed, banks and markets learned to regard aggressive, unsustainable terms and conditions on borrowers as normal business practices. These practices were soon to migrate to the broader home-purchase market.

5. Subprime mortgages and the housing-price bubble

A housing boom gathered momentum in the late 1990s. Real housing price growth was zero in 1996. From 1997 to mid-2002, real housing-price appreciation averaged 5.5% on an annualised basis, and 9.6% from mid-2002 to the first quarter of 2006. The peak real growth rate of 12.1% occurred in the second quarter of 2005.¹ In 2001, while housing prices were surging, the US economy went into recession. Many potential home-buyers had neither the income nor savings to support ‘plain vanilla’ mortgages—they lacked a 20% down-payment, and had to use more than 30% of income on mortgage payments.

The yawning housing-price/income gap led to a surge in adjustable-rate mortgage (ARM) loans, which impose lower payments on borrowers than do fixed-rate mortgages, and to an explosion in subprime mortgages. Buyers could be given loans exceeding 80% of home price; or they could be given two loans, one for 80% of purchase price—making the loan potentially sellable to FNMA—and another (the ‘down payment’) for the other 20%. Lenders obtained fees, rates and performance guarantees to compensate for these borrowers’ excessive riskiness. Securitisation markets had already learned to accept asset heterogeneity not backed by iron-clad underwriting. These mortgages became so dominant that from 2003 onward, the term ‘subprime loan’ was used specifically to refer to home purchase loans made to borrowers unable to support ‘plain vanilla’ mortgage packages: the rhetorical connection to racial exploitation in lending was lost.

For several years, the steady rise of housing prices permitted contracts that arbitrated the passage of time to compensate for imbalances between asset prices, borrowers’ current cash-flows and the value of pledged collateral. For example, a homebuyer could be sold a loan with a below-market two-year ‘teaser’ rate; any gap between ‘teaser’ and market rate could be amortized, and then a new mortgage made at a risk-adjusted market rate after two years. The premise was that housing-price appreciation would permit the sustainable refinancing of such ‘2/28’ (or ‘3/27’) loans, negating the excessive riskiness of a 100%-financed housing purchase.²

Housing-price appreciation so dominated the consciousness of homebuyers that no fees or carrying costs seemed too high a price for access to home-ownership. But the rising housing-price/income ratio does not explain all the growth in the demand for subprime mortgage loans. Mortgage brokers manufactured some of it themselves. Brooks and Simon (2007) found that 55% and 61%, respectively, of those acquiring subprime mortgages in 2005 and 2006 had credit scores high enough to obtain conventional loans. The fees earned on subprime loans were substantially higher than they would have been on prime-rate loans.³

Matching the robust demand for mortgage finance was a plentiful supply. On the macro-level, the US current account remained negative and funds continued to pour into US financial markets. With help from foreign wealth-owners, the MBS market had been the world’s largest securities market for a decade. Now overseas (and especially European) banks, competing for global dominance with US megabanks, rushed into subprime paper.⁴

The ‘originate-and-distribute’ lending model (Bhatia, 2007) surpassed the traditional role of commercial banks in the loan process. As of 2003, mortgage brokers accounted for

¹ These statistics were computed using Case–Shiller Housing Index data and the US gross domestic product (GDP) implicit price deflator. Between mid-2005 and the end of 2008 annual real housing-price growth averaged –9.1%.

² Wray (2007, 2008) provides further institutional detail about subprime mortgage practices.

³ Another study of customer channelling in home-loan markets is Ernst, Bocjan and Li (2008).

⁴ See, for example, Mollenkamp, Taylor and McDonald (2007).

over 50% of all mortgage originations (Barth *et al.*, 2008). ‘Originate-and-distribute’ lending was replacing the traditional role of thrift and commercial-bank lending officers. Investment banks competed for fee-rich subprime business. Anderson and Bajaj (2007) describe the ‘once-lucrative partnership’ between Wall Street and subprime lenders. These ‘partnerships’, which firms locked in by paying more than their competitors, were highly lucrative; managing directors in investment banks averaged US\$2.5 million in total compensation in 2006.¹ While some banks slowed their involvement in subprime lending as the market peaked, others forged ahead; for example, Credit Suisse reduced its subprime lending by 22% between 2004 and 2006, but Morgan Stanley increased its underwriting by 25%.

Subprime loan volumes exploded in the 2004–06 period: while they constituted 8% of mortgage originations in the 2001–03 period, they accounted for 20% of originations in the 2004–06 period (Wray, 2007, p. 30). To see how rapidly these markets evolved, in 2006 ARMs constituted 45% of all mortgage originations, subprime loans 32% and conventional fixed-rate loans only 23%.²

Increasingly, the mortgage loans originated by banks and mortgage brokers were absorbed not by mortgage (MBS) funds, as depicted in Figure 3, but by structured investment vehicles (SIVs).³ SIVs combined many different forms of collateralised debt, not just ‘plain vanilla’ mortgages with relatively homogeneous risks. The rapid growth of SIVs permitted banks to implement ‘originate-and-distribute’ lending across numerous lines of credit-market business, and hence to compete more successfully with mortgage brokers for origination fees. The growth of SIVs was facilitated by steadily declining nominal short-term interest rates between 2001 and 2005; these reduced default rates and precluded interest-rate-induced losses in market value.

The liabilities used to support SIVs’ assets also became more complex than in the simple MBS case. Funds might be obtained from private-equity funds, from hedge funds or from money markets (especially the commercial paper markets). The relative transparency associated with pass-through mortgage securities was eviscerated in SIVs. Indeed, the inherently flexible and non-transparent nature of SIVs soon opened the way to the inclusion of more types of assets: private-equity funds’ bridge loans, commercial loans, education loans and so on. These diverse credits (including subprime loans) had much shallower credit histories, and thus far more uncertain risk characteristics, than ‘plain vanilla’ mortgages. So not only did it remain unclear whether investors in SIVs were taking on the default risks of the securities they were combining; the extent of this default risk was even foggier than with MBSs.⁴ Credit risk derivatives were used in many cases to shift downside risks onto third parties (*The Economist*, 2007). Despite (or maybe because of) these challenges of opacity and of the locus of responsibility for risk, SIVs soon became a US\$400 billion industry. As the *Wall Street Journal* put it, SIVs ‘boomed because they

¹ Morgan paid above-market fees to guarantee US\$2 billion in mortgages every month from New Century Financial, a large subprime lender. New Century, whose delinquency rate is twice that of other lenders, filed for bankruptcy in March 2007 (Anderson and Bajaj, 2007).

² Martin Gruenberg, Vice Chair of the Federal Deposit Insurance Corporation, cited this statistic in a speech on 27 November 2007. See http://www.fdic.gov/news/news/speeches/archives/2007/chairman/spnov2707.html#_ftnref1 [date last accessed 12 September 2009].

³ Mollenkamp and colleagues (2007) report that the first SIVs were created for Citigroup in 1988 and 1989.

⁴ Many participants in these markets imagined that these institutional innovations might change banking fundamentals. One example of this is captured in a phrase of Pilcer and Dierdorff (1997): ‘Structured liquidity is credit enhancement’.

allowed banks to reap profits from investments in newfangled securities, but without setting aside capital to mitigate the risk' (Mollenkamp *et al.*, 2007).

6. Why this episode of financial instability differs from previous episodes

This history of subprime lending, SIV growth and regulatory *laissez-faire* is not pursued beyond this point.¹ What has been most remarkable about this crisis has been its resistance to policy cures. Several distinct episodes of near-meltdown in markets have occurred—August 2007, March 2008, September–October 2008. A wide range of policy actions have been proposed and found wanting, while the attention of governmental authorities has shifted among several targets—commercial banks, non-bank Wall Street firms, large investment banks, subprime borrowers.

The central question addressed here is why this extended episode of financial instability has so resolutely evaded resolution. There is, of course, its complexity: vast numbers of financial institutions and millions of households were pulled into the path of this crisis, even before the extent of its implications for macroeconomic growth were clear. But this very complexity is itself a symptom of the disjuncture between the received theory of financial-instability control and the US financial economy's present circumstance.

We can start with the fact that the Federal Reserve's roster of 'lender-of-last-resort' policy alternatives largely work by altering the liquidity risk and lending behaviour of commercial banks. The most closely-watched policy instruments are the Federal Funds rate and discount-window policy, which target bank balance sheets and lending behaviour. Since the outbreak of the crisis more extreme policy measures have been tried, many drawn from Federal Reserve Chair Bernanke's own paper on monetary policy 'at the zero bound' (Bernanke, Reinhart and Sack, 2004). This has created a glass half-full or half-empty phenomenon: an utter global balance-sheet meltdown has been avoided, but banks have not resumed lending (Enrich and Fitzpatrick, 2009), and the economy continues to drift.

Further, Bush and Obama Administration 'big government' stimuli—various tax rebates and spending initiatives—have had limited impact. The challenge posed by the foreclosure problem to which the subprime lending led has not been addressed. There were 750,000 households already in foreclosure by mid-2008 (Ivry, 2008). Federal programme initiatives to reduce foreclosures have not been effective (Simon, 2009). One problem in creating policy measures to stop foreclosures is the overlapping legal claims and interests underlying market-based securitisations; another is cost; a third is the difficulty in identifying a clear victim class, given the diverse types of mortgage loans and circumstances in which current and former homeowners find themselves. By one estimate, 2.4 million more foreclosures are anticipated in 2009, and a total of 8.1 million by 2012.²

The root problem from Minsky's stabilisation perspective is that in the expansion after the 2001 recession, banks were no longer in a position to moderate the pace of credit creation and thus to calm an economy headed for a speculative bubble. In Section 2, we argued that four stylised facts about banks justified Minsky's treatment of them as pivotal pressure points in cyclical downturns. None of these stylised facts hold with certainty any longer. First, in the subprime era, banks have not been the most leveraged units in the economy. Second, banks have not undertaken most of the intermediated credit-creation in

¹ Wray (2008) and Whalen (2008) describe the 2007 outbreak of the subprime crisis in depth.

² State by state foreclosure fact sheets, posted by the Center for Responsible Lending at <http://www.responsiblelending.org/mortgage-lending/tools-resources/state-by-state-foreclosure-factsheets.html> [date last accessed 12 September 2009].

recent years; nor are they any more as central a locus of liquidity risk within the overall economy. Third, banks have participated fully in the speculative loan-making that led to the current crisis, leaving them without the capacity—even after extraordinary governmental interventions—to assist in the renewal of economic growth. Fourth, renewed bank lending, even if it were possible, would most likely not revive investment spending; the damage already done to the economy is too deep.¹ All these shifts have helped to launch, fuel and prolong the subprime crisis.

We can illustrate how the financial situation has changed via two figures. Figure 4 parallels Figure 1. It demonstrates that banks' balance sheets have remained relatively unaffected by developments over the last ten years, but also shows that banks are no longer the most leveraged economic units. The rise of subprime lending has created two classes of unit whose risk levels (and leverage) surpass those of banks. As Figure 4 shows, SIVs exceed all previous boundaries. They incorporate different categories of financial asset, without transparency, and are financed by asset-backed commercial paper. This lack of transparency about what risks were being taken on the asset side, given financial markets' panic, eventually brought this market to a stop. Next to SIVs are subprime households.

Banks		SIV funds				Subprime Households	
Assets	Liabilities	Assets		Liabilities		Assets	Liabilities
Required reserves	Demand deposits	Credit card debt, Merger bridge loans, Educational loans	Subprime mortgage loans	Prime mortgage loans	Asset-backed commercial paper	Cash and demand deposits	Short-term bank and non-bank debt (credit cards)
Securities, Fed Funds lent						Real assets (automobile, furniture, jewelry)	
Short-term loans	Time deposits					House(s) or condo(s)	Teaser-rate (2-year), Variable-rate (28-year) Mortgage loan ("2/28")
Mortgage loans	Borrowed funds, incl. Fed Funds		Fixed-rate mortgage loan (15-year)				
	Equity						

Fig. 4. Banks, structured investment vehicles and households: subprime balance sheets. Dark grey shading indicates locii of default risk; light gray shading indicates locii of liquidity risk. No equity tranche is shown for structured investment vehicle (SIV) funds.

¹ The fourth point falls outside the scope of our discussion and is not addressed further herein.

These are households that purchased homes without pledging any collateral. These households survive by managing debt; they are hopeful that asset-price appreciation will give them an ownership stake on which to build. Figure 4 indicates that both default and liquidity risk have risen—outside the banking system *per se*.

Figure 5, in turn, demonstrates the analytical consequences of the shift toward zero-down-payment loans on housing. Banks are no longer the most leveraged units; instead, households with subprime mortgages are; and SIVs fall between banks and subprime households. Figure 5 shows the dramatic changes since Minsky framed his theory. Banks no longer take the brunt of exogenous shifts in the market or of regulatory shifts designed to increase spending. These banks are not lenders in any traditional sense. They make loans that are sold off onto the markets: they originate financial risks but do not bear them.

Banks are no longer the most leveraged units—households with nothing-down subprime loans and SIVs are, since both start with zero equity. These units' financial positions make sense only if the assets they have so aggressively financed return a positive cash-flow. SIVs are passive intermediaries, constructed solely to boost the cash-flows of the units with which they are affiliated. If their cash-flows turn negative, they will no longer attract financing, since they have (by design) zero collateral value; they will have to be taken back (and their losses absorbed) by their originators. In Figure 5, households with zero down-payment loans hoped that housing-price appreciation would permit them to 'jump' leftward. Once their cash-flows and net worth turn negative, these households are stuck; they can neither sell assets to relieve cash-flow pressures nor use income flows to dump dead-weight assets.

Interventions that have worked in the past to restore banks' lending capacity (as per Figure 2) have been ineffective in the 2007 crisis. There are several reasons for this: banks are not the units with the worst cash-flow/net-worth positions; banks cannot lend with such weakened balance sheets; banks cannot, in any event, lend to units to their right in Figure 5; and continued losses by SIVs and households will only pull banks further to the right. Adding fuel to this fire is the deterioration of conditions in the overall housing market. In Figure-5 terms, declining housing values shift households to the right, increasing the number of those caught in the net-worth/cash-flow vice. Originally, only units with excessively risky loans (zero-down, high rates) are exposed to the ratchet of negative net-worth/negative cash-flow; but unchecked adverse housing-price movements pull others into the same morass.

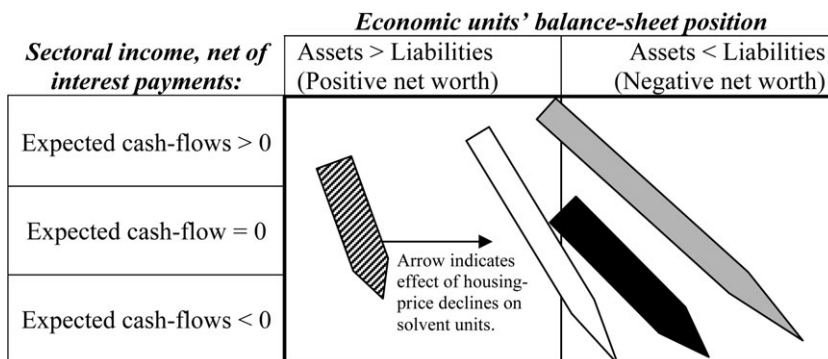


Fig. 5. Cash-flow and balance-sheet dynamics in subprime meltdown. Grey arrow, structured investment vehicles (SIVs); diagonal-filled arrow, households with conventional mortgages; black arrow, households with subprime mortgages; white arrow, banks. See text for further explanation.

7. Conclusion

Why did the 2007 financial crisis occur? And why, compared with other post-War crises, has it been so profound and hard to control? This paper has addressed the causes and profundity of the contemporary crisis by tracing it to three roots. One is the rethinking of banking practices and strategies at the onset of the neoliberal age, which resulted in ever-more securitisation of intermediated credit and a shift of banks' net-revenue generation from interest income to fees. When banks held loans to maturity, their loan-making capacity had functioned as a credit-flow control point in upswings. In the 'originate-and-distribute' system, control points for the growth of credit volume exist only in the limits of the markets that absorb banks' credit commitments.

For a window of time, there appeared to be no limit to the capacity of US markets to absorb even clearly excessive credit risk. In this context, banks altered the patterns and forms of racial discrimination and social exclusion in US credit markets. Whereas minorities had historically been denied equal access to home-purchase credit, the onset of securitisation opened the door to the targeting of socially-excluded or vulnerable populations for financial exploitation. Those previously denied mortgage credit were now provided with high-cost, high-risk loans. The third factor encouraging excessive credit-risk creation and pointing the way to the crisis was the US economy's current-account deficit/capital-account surplus. This circumstance made the USA a global liquidity sink.

Banks, having shed their traditional risk-absorption role, sought out ever more ways to generate net income, including various high-risk, high-cost loan products sold primarily to minorities. So when surging housing prices drew ever more Americans (the greedy and the desperate) into home-ownership or housing-investment, the subprime mortgage loan was already a familiar tool in lenders' portfolios. The takeoff of subprime loan volume encouraged the growth of SIVs, which in turn provided a locus for banks' offloading of other types of debt. It seemed, for a brief moment, that a new era of banking and finance was at hand: that scientific assessments of borrower risk could properly price and absorb whatever financial liabilities were created. But this new era has crashed to earth.

This leaves us with the question, why has the 2007 crisis so resisted the interventions of government? Answering it has involved a critical encounter with Hyman Minsky's theory of financial instability. On one hand, the profundity and relevance of Minsky's broad insights into capitalist dynamics have never been more apparent. On the other hand, the 2007 crisis has deviated in significant ways from Minsky's financial-cycle model. The financial system has, as Minsky anticipated, exceeded its limits and required governmental intervention. But the locus of this crisis—household borrowing linked first to racial exclusion and then an out-of-control housing market—has been very different from the investment cycle that Minsky's model privileges. Also, Minsky's ideas about stabilisation assume that in any crisis the Federal Reserve would have leverage over a banking system that represented the fulcrum of the economy's financing process. This has not been the case. Banks' outsourcing of much of their lending/borrowing has rendered an extensive roster of central-bank interventions ineffectual. Indeed, both 'big bank' methods and 'big government' policies have only limited damage and not triggered recovery.

Thus, the ability to control instability, which Minsky so prized, depends on institutional arrangements that are, in the end, themselves fragile and unstable. The failure to appreciate the fragility of the connection between the financial authorities and the levers of control over real economic interactions has led the US—and now the global—economy into a crisis whose cost to human prosperity and well-being is growing ever more profound.

Bibliography

- Anderson, J. and Bajaj, V. 2007. Wary of risk, bankers sold shaky debt, *New York Times*, December 6, A1
- Barth, J., Li, T., Phumiwasana, T. and Yago, G. 2008. *A Short History of the Subprime Mortgage Market Meltdown*, Los Angeles, Milken Institute
- Bernanke, B., Reinhart, V. and Sack, B. 2004. Monetary policy alternatives at the zero bound: an empirical assessment, *Finance and Economics Discussion Series 2004–48*, Federal Reserve Board, Washington, DC
- Bhatia, A. 2007. ‘New landscape, new challenges: structural change and regulation in the U.S. financial sector’, IMF Working Paper 07/195, Monetary and Capital Markets Department, International Monetary Fund, August
- Bradford, C. 2002. *Risk or Race? Racial Disparities and the Subprime Refinance Market*. Washington, DC, Center for Community Change
- Brooks, R. and Simon, R. 2007. As housing boomed, industry pushed loans to a broader market, *Wall Street Journal*, December 3, A1
- California Reinvestment Committee. 2001. *Stolen Wealth: Disparities in California’s Subprime Lending Market*, San Francisco, California Reinvestment Committee November 29
- Canner, G., Passmore, W. and Laderman, E. 1999. The role of specialized lenders in extending mortgages to lower-income and minority homebuyers, *Federal Reserve Bulletin*, November, 709–723
- Davidson, P. 2008. Is the current financial distress caused by the subprime mortgage crisis a Minsky moment? Or is it the result of attempting to securitize illiquid noncommercial mortgage loans? *Journal of Post Keynesian Economics*, vol. 30, no. 4, 669–76
- Dymski, G. A. 1988. A Keynesian theory of bank behavior, *Journal of Post Keynesian Economics*, vol. 10, no. 4, 499–526
- Dymski, G. A. 2006. Discrimination in the credit and housing markets: findings and challenges, pp. 215–59 in Rodgers, W. (ed.), *Handbook on the Economics of Discrimination*, Cheltenham, UK, Edward Elgar
- Dymski, G. A. 2009. Racial exclusion and the political economy of the subprime crisis, *Historical Materialism*, vol. 17, no. 2, 149–79
- The Economist*. 2007. At the risky end of finance, 21 August 21, 80–2
- Enrich, D. and Fitzpatrick, D. 2009. Loans shrink as fear lingers, *Wall Street Journal*, July 27
- Ernst, K., Bocian, D. and Li, W. 2008. *Steered Wrong: Brokers, Borrowers, and Subprime Loans*, Boston, Center for Responsible Lending
- Henriques, D. B. and Bergman, L. 2000. Profiting from fine print with Wall Street’s help, *Wall Street Journal*, March 15
- Ivry, B. 2008. U.S. foreclosures double as house prices decline, *Bloomberg News*, July 28, available at <http://www.bloomberg.com/apps/news> from 2 November 2008
- Minsky, H. P. 1975. *John Maynard Keynes*, New York, Columbia University Press
- Minsky, H. P. 1982. *Can IT Happen Again?* Armonk, ME Sharpe
- Minsky, H. P. 1986. *Stabilizing an Unstable Economy*, New Haven, Yale University Press
- Minsky, H. P. 1992–93. On the non-neutrality of money, *Quarterly Review of the Federal Reserve of New York*, vol. 18, no. 1, 77–82
- Minsky, H. P. 1995A. Longer waves in financial relations: Financial factors in the more severe depressions II, *Journal of Economic Issues*, vol. 29, no. 1, 83–96
- Minsky, H. P. 1995B. Financial factors in economics of capitalism, *Journal of Financial Services Research*, no. 9, 197–208
- Minsky, H. P. 1996. Uncertainty and the institutional structure of capitalist economies, *Journal of Economic Issues*, vol. 30, no. 2, 357–68
- Mollenkamp, C., Solomon, D., Sidel, R. and Bauerlein, V. 2007. How London created a snarl in global markets, *Wall Street Journal*, October 18, A1
- Mollenkamp, C., Taylor, E. and McDonald, I. 2007. How subprime mess ensnared German bank; IKB gets a bailout, *Wall Street Journal*, August 10, A1
- Pilcer, S. and Dierdorff, M. 1997. Understanding structured liquidity facilities in asset-backed commercial paper programs, *Asset-Backed Commercial Paper Market Review*, First Quarter
- Simon, R. 2009. U.S. effort to modify mortgages falters, *Wall Street Journal*, July 28

- US Department of Housing and Urban Development 2000. *Unequal Burden: Income and Racial Disparities in Subprime Lending in America*, Washington, DC, Department of Housing and Urban Development
- Whalen, C. 2008. Understanding the credit crunch as a Minsky moment, *Challenge* vol. 51, no. 1, 91–109
- Wray, L. R. 2007. ‘Lessons from the subprime meltdown’, Working Paper No. 522, Levy Economics Institute of Bard College
- Wray, L. R. 2008. Financial market meltdown: What can we learn from Minsky? *Public Policy Brief 94A*, Levy Economics Institute of Bard College
- Wray, L. R. and Tymoigne, E. 2008. ‘Macroeconomics meets Hyman P. Minsky: The financial theory of investment’, Working Paper No. 543, Levy Economics Institute of Bard College
- Wolf, M. 2008. The end of lightly regulated finance has come far closer, *Financial Times*, September 16