

Hyman Minsky Meets Secular Stagnation

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In the aftermath of the 2007-2009 Great Recession and global financial crisis, the U.S. recovery has been weak. Indeed, more than a decade after the trough of the recession one might question the extent to which there has been any “recovery” at all. While real GDP has grown and the labor market has certainly improved, output in 2019 has not returned to anything close to its pre-crisis trend and there is no indication whatsoever that this gap will be closed in the years to come.¹ This outcome has been labeled “secular stagnation,” most prominently by Lawrence Summers (2014). Although Hyman Minsky’s contributions to macroeconomics are wide-ranging, he is best known for his theory of financial instability, explaining the cyclical nature of capitalism. This chapter argues that Minsky’s insights also help explain recent U.S. secular stagnation when coupled with the dramatic rise of income inequality.

In brief summary form, the argument is as follows. A major reason for stagnation is that high-income households recycle a substantially smaller share of their pre-tax income back into spending. Therefore, as inequality rises and most of the growth of income goes to the top slivers of the income distribution demand growth stagnates, other things equal. While this basic story might suggest rising inequality is sufficient on its own to explain stagnation, the distribution channel alone must face what seems on the surface to be a major empirical inconsistency. Income inequality began its persistent march upward sometime between the mid 1970s and early 1980s, decades *before* secular stagnation was evident. This is where Minsky enters the explanation. A massive boom in household borrowing created a classic expansion phase of a long Minsky cycle from the mid 1980s (at the latest) to the eve of the Great Recession. This dynamic kept household demand growth reasonably strong for more than 20 years, masking any potential demand drag from rising inequality. But the collapse of the recession, a classic Minsky crisis, wiped out unsustainably financed household demand. Household demand has not recovered its pre-crisis trend—the stagnation of higher inequality has come home to roost.

This chapter begins with a summary exposition of Minsky’s theoretical perspective. Section 1 summarizes Minsky’s financial theory of investment at the firm level, explaining the concepts of borrowers’ and lenders’ risk. In section 2, I integrate this investment theory into a macroeconomic framework and sketch the basic structure of a Minsky financial cycle emphasizing the interplay of two key concepts in Minsky’s financial instability theory: “validation” and “financial fragility.” Section 3 shifts the locus of financial instability from business investment to borrowers’ and lenders’ risk in the household sector. In this section, I interpret household demand and debt data since the early 1980s to argue that Minsky’s financial instability theory explains the source of the financial crisis that triggered the Great Recession. Section 4 combines Minsky’s financial instability theory with the multi-decade trend of rising income inequality to explain recent secular stagnation in the US economy, the exceptionally stagnant recovery of the US economy in the aftermath of the Great Recession.

¹ Per capita real GDP in the third quarter of 2019 is 9.4 percent below the growth trend established between the previous business cycle peaks (that is, the trend from the second quarter of 2000 to the first quarter of 2006). Going back to 1960, real per capita GDP at a cycle peak was never more than 3.5 percent below its previous peak-to-peak growth trend. While the economy in late 2019 has yet to hit its peak, there is no indication that per capita real GDP will come anywhere close to its previous peak-to-peak growth trend before the next recession begins.

I conclude that while translating Minsky's financial instability theory from the business to the household sector leads to somewhat different outcomes than what he presented in his major published work, the basic Minsky framework provides an insightful tool for understanding the dramatic macroeconomic dynamics of the U.S. economy over the past several decades.

1. The Microfoundations of Minsky's Theory of Investment

Macroeconomic theory connects aggregate dynamics with underlying behavior of the agents that comprise the economic system. In recent decades, these behaviors have been labeled the "microfoundations" of macroeconomics. The term has a rather charged meaning in the context of debates between different macroeconomic schools of thought. New classical economists, led by Robert Lucas, equate microfoundations with the goal of building models derived directly from the solution to microeconomic optimization problems grounded in the so-called "deep structural parameters" of preference and technology. They claim models of this kind provide the basis for counterfactual policy analysis because the model specification and model parameters should be invariant to policy changes, that is, this approach is promoted by those who use it as a solution to the famous Lucas Critique. But many economists find this modeling strategy excessively narrow; it puts the behavioral foundation for macroeconomics in an incredibly constraining box. And given the unrealistic connection of these models to the world in which we live, this approach hardly seems to address the Lucas Critique. (What is the use of having an unrealistic and likely incorrect model, even if its parameters are invariant to policy?)

But heterodox macroeconomics should not, and does not, abandon the goal of linking macroeconomic results with agent behavior just because the new classical approach to microfoundations is narrow and unrealistic. Indeed, such behavioral links are prominent in many heterodox models.² Minsky (1975, 1986) presents extensive behavioral analysis of firms' investment decisions and how they link to finance, as we summarize here.

A Simple Model of Investment

To motivate ideas, consider the simple model of investment presented in Minsky (1975, chapter 5, also see the exposition in Tymoigne and Wray, 2014, pages 40-44). The profit-seeking firm will invest in projects if the "demand price" of the project, effectively the present value of expected cash flows from the investment (P_K), exceeds the "supply price," what the firm must pay for the project (P_I). Minsky followed Keynes in defining P_K as the present value of "quasi rents" generated by new investment projects. The demand price will likely decline as investment increases.³ This could be motivated by the conventional neoclassical assumption of declining marginal productivity of capital. More heterodox microfoundations might arise from Keynes's

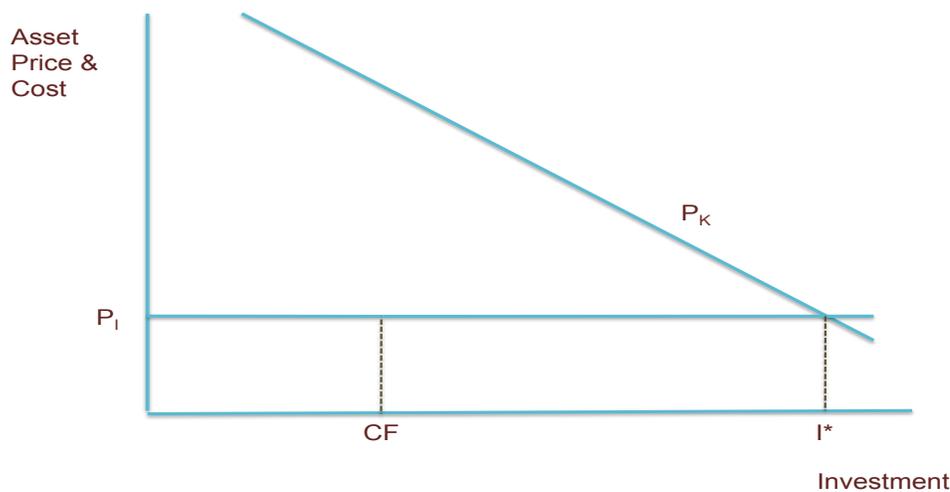
² For example, consider Keynes's treatment of uncertainty in chapter 12 of the *General Theory*. Other prominent examples include Paul Davidson's analysis of the importance of liquidity for firm and household behavior and Alfred Eichner's treatment of oligopolistic competition by "megacorps."

³ Minsky (1975, chapter 5) presents P_K as a constant independent of the level of investment, holding other things equal, such as the state of the business cycle, productivity of capital, etc. The exposition here, however, is enhanced by conceptualizing P_K as a schedule that ranks multiple investment projects according to their expected profitability. This distinction is discussed further below after introducing Minsky's concept of "borrower's risk."

arguments about the declining marginal efficiency of capital or concerns that the expected utilization rate of capital falls as capacity expands. Uncertainty and Kalecki's "principle of increasing risk" (Mott, 2010) also generate a declining P_K schedule, as shown in figure 1. Market interest rates affect the P_K schedule because the interest rate determines, in Minsky's words, the "capitalization factors" that transform expected future cash flows into a present value demand price.

What determines the supply price? If we assume the firm is a price taker in the market for capital goods, P_I is just a horizontal line determined by the cost of production of capital, and ultimately wages of workers in the industries that produce capital goods. Firm investment, I^* , is set at the intersection of the P_K and P_I schedules in figure 1. The figure shows the firm's internal funds, or cash flow (CF), available to finance investment. But the level of CF is irrelevant to the investment decision. If CF fluctuates, the firm simply substitutes internal and external financing as necessary to maintain investment at I^* . The assumption in the analysis so far is that the opportunity cost of internal cash is the same as the market interest rate.⁴

Figure 1 – A Nonfinancial Model of Firm Investment



One can cast the usual neoclassical model of investment and capital accumulation with the simple relationships depicted in figure 1. The demand price becomes the marginal product of capital net of depreciation. This approach replaces uncertainty, "animal spirits," and entrepreneurial judgment with just "technology." Rather than an active, behaviorally motivated agent, the neoclassical firm is largely reduced to a passive repository of a production function, a

⁴ It would be reasonable to introduce a small transaction cost that raises the supply price once internal cash flows are exhausted and the firm must obtain external funds. But if this wedge is just a transaction cost, it is likely small and largely irrelevant to the results of the simple model. Larger discrepancies between the cost of internal and external finance are discussed later in this chapter.

point discussed in some detail in Minsky (1975, chapter 5) and also in Fazzari (2009). The horizontal difference between the P_K and P_I schedules is the net present value of the marginal investment project. Investment proceeds up to the point where the net present value is zero, that is, I^* in figure 1.

In the neoclassical model, the only financial variable that affects investment is the market interest rate used to discount expected future cash flows. Of great importance to understanding how Minsky's investment theory differs from orthodoxy, the source of finance is largely irrelevant in this model because the market interest rate is independent of the firm's financial conditions. This is the "perfect capital market" model of investment that dominated mainstream macroeconomic analysis through much of the postwar period.

Integrating Finance: Borrowers' and Lenders' Risk

Minsky strongly criticized the model of investment depicted in figure 1. He wrote "a decision to invest—to acquire capital assets—is always a decision about a liability structure" and "[i]nvestment is therefore a financial phenomenon" (Minsky, 1986, pages 192 and 209, respectively). The conditions that determine I^* in figure 1 could be correct only if all investment were financed with internal cash flow with a constant opportunity cost given by the market interest rate. As soon as investment requires external funds, Minsky argues, following Keynes, that borrowers' risk and lenders' risk affect the investment decision in crucial ways.

Borrowers' risk is subjective; it arises from the threat to the control of a firm its managers and owners perceive from taking on external finance. As investment rises beyond what can be financed internally and external finance increases, the probability that the firm will not be able to meet future cash commitments rises and the probability the firm will lose control of its assets grows. As Minsky (1986, page 214) writes the rise in "future cash-flow commitments" to creditors "diminishes the margin of safety of management and equity owners."⁵ Borrowers' risk represents active behavior by entrepreneurs and managers, that is, business decisions made by *people* who have behaviors that extend beyond maximization of profits with given technologies. (Crotty, 1990).

Minsky models borrowers' risk as a discount on the demand price for capital assets that occurs *when investment rises above the level that can be financed by internal cash flow*. Marginal borrowers' risk rises as external financing increases as shown in figure 2 by the growing gap between the P_K^* schedule (which is independent of the source of finance) and the effective demand schedule for investment P_K^M .

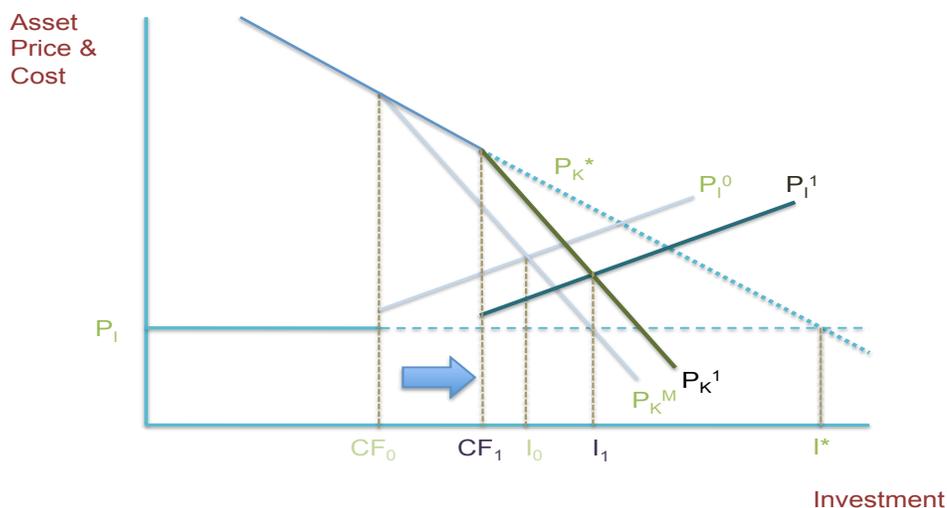
⁵ This explanation of borrowers' risk applies most obviously to external debt finance. Minsky (1986, page 214) also recognizes that a related problem arises from new equity finance: "If new issues of common shares are undertaken, the issue price will have to be attractive, which may mean that present stock owners feel their equity interest is being diluted." This argument is similar to the "excessive dilution" phenomenon identified by Myers and Majluf (1984).

What Determines Investment?

In Minsky's model, the drivers of firm investment fall into two broad categories. First, consistent with many other theories of investment, demand for new capital assets depends on expectations of the profits, returns, or "quasi-rents" generated by the new project. In mainstream models, these expectations are tied to technological characteristics of the project (such as the marginal productivity of capital) as well as market competitive structures. Models in the Keynesian tradition add expectations about capacity utilization or other measures of the state of the output market, recognizing the importance of macroeconomic conditions for the profitability of new investment projects. Considerations of confidence, perhaps labeled "animal spirits," also affect the demand for investment, even for projects firms finance with internal funds. Second, and what distinguishes Minsky's investment model from virtually all other treatments of the subject, are the evolving conditions of finance.

Most obviously, fluctuations in firms' internal cash flow will affect the amount of investment that requires external funds, changing marginal borrowers' and lenders' risk. Figure 3 shows the effect of an increase in cash flow. Higher cash flow reduces both borrowers' and lenders' risk at the initial level of investment (I_0) because firms do not need as much external finance. These lower finance premia encourage more investment which rises to I_1 . In addition, changes in borrowers' or lenders' risk independent of cash flow will affect investment. For example, in the boom phase of a Minsky cycle when borrowing and lending lead to higher profits, the perception of financial risks will decline. This change will rotate the P_I schedule in figure 3 clockwise (lower lenders' risk for external finance) and P_K counterclockwise (lower borrowers' risk so the gap between P_K and the demand price for capital assets without the need for external funds shrinks). Other things equal, these changes, by themselves, lead to higher equilibrium investment. These features of the model illustrate Minsky's view that an investment decision also must be a financing decision.

Figure 3 – Effect of Higher Cash Flow in the Minsky Investment Model



Minsky understood his financial theory of investment as much different from mainstream investment models. He writes (1986, page 193) “[a]s the standard interpretation of Keynes was assimilated to traditional economics, the emphasis upon finance and debt structures that was evident in the 1920s and 1930s was lost. In today’s standard economic theory, an abstract nonfinancial economy is analyzed.” This perspective was largely correct for much of Minsky’s career. Modigliani and Miller (1958) published a famous paper that presented conditions under which corporate leverage (potentially a key determinant of both borrowers’ and lenders’ risk) had no effect on a value-maximizing firm’s real investment decisions. Jorgenson (1963) developed the influential “neoclassical” model of investment explicitly assuming that the rather strict requirement for finance neutrality from Modigliani and Miller actually held in the real world, relegating finance to a kind of “side show” in firm behavior. This thinking dominated mainstream analysis of investment in macroeconomics well into the 1980s justifying Minsky’s skepticism by the middle of the decade that his focus on finance was missing from almost all of mainstream macroeconomics.

But at approximately the same time Minsky was writing his *magnum opus* to be published in 1986, things were changing in mainstream investment theory. Prominent mainstream authors began to apply Akerlof’s (1970) model of asymmetric information and the market for “lemons” (that is, the market for poorly performing used cars) to firm investment finance. In a seminal paper, Stiglitz and Weiss (1981) show how asymmetric information between borrowers and lenders could lead to credit rationing so that investment projects that would be undertaken if firms had adequate internal funds might not be financed if they required external borrowing. Myers and Majluf (1984) built a model to explore equity finance for investment projects. They demonstrate that asymmetric information between firm managers,

acting in the interest of existing shareholders, and the purchasers of new shares creates a “lemons premium” for external finance. The result is that firms might forego projects that would have a positive net present value when financed internally if the project required new share issues. These models moved part way toward what Minsky had been writing about for decades: finance matters, fundamentally, in the determination of investment. These mainstream models certainly reproduce a positive link between cash flow and investment, a central result in Minsky’s analysis.

This new research on the “microfoundations” of asymmetric information and financing constraints led rather quickly to new mainstream models of how finance and monetary policy affect macroeconomic outcomes. Financial intermediation, often viewed as a kind of “technology,” could affect macroeconomic outcomes, especially if intermediation improved the quality of information. Financial “shocks” could initiate real fluctuations and the financial system was identified as an institutional structure that could propagate shocks throughout the economic system, a mechanism labeled the “financial accelerator” by Bernanke, et al. (1996). Mainstream authors described a “credit channel” for the way monetary policy affects macroeconomic outcomes, a channel separate from the traditional transmission mechanisms through the quantity of money or market interest rates.

This new research marked a significant change in mainstream thinking; recognizing the relevance of credit and finance for macroeconomics moved the mainstream somewhat closer to Minsky’s ideas. Some have argued that the asymmetric information concept could help illuminate parts of Minsky’s financial theory of investment.⁷ But this newer mainstream research still misses important features of Minsky’s theory. The asymmetric information microfoundation casts the relevance of finance as an “imperfection” in the market process. If only information were “perfect” (that is, shared symmetrically between all agents) only “real” considerations would determine investment, relegating finance again to a “side show.” In contrast, for Minsky finance is fundamental to capitalism; finance must be incorporated into any useful economic model from the very beginning. Minsky, like Keynes, also emphasizes the importance of fundamental uncertainty, a qualitatively different concept than the “risk” in mainstream models represented by fully known and stationary probability distributions. Nor do mainstream models explain the systematic tendency of financially driven economies toward instability that is the hallmark of Minsky’s financial instability (discussed in detail below). Minsky might concur with modern mainstream models that consider financial institutions as positive technological innovations to overcome information problems. But he also recognizes the tendency for banks and other lenders to magnify instability, especially as they innovate to circumvent prudential financial regulation. Modern mainstream models of asymmetric information and financial constraints constitute a step toward Minsky’s perspective, but just one step on a long journey.

Perhaps the most important outcome of the resurrection of finance in the mainstream is that it has spawned extensive empirical research to test the relevance of “financial constraints.” These studies are often motivated by rather narrow asymmetric information models, but their

⁷ Fazzari and Variato (1994) develop some of these ideas, but not without controversy; see, in addition Crotty (1996) and the response in Fazzari and Variato (1996).

results can be more broadly interpreted to explore the overall importance of finance for investment that is central to Minsky's theory. A huge empirical research literature has emerged to test the importance of cash flow for investment. This empirical work must face a basic identification problem. The key implication of the Minsky model (see the discussion of figure 3 above) is that the financial channels affecting investment imply a positive effect of internal cash flow on investment *holding other factors that determine investment constant*. If one simply regresses investment on cash flow, which is largely driven by a firm's profits, the cash flow effect from the purely financial aspects of the model will be contaminated by the obvious correlation between a firm's current profits and its expected quasi rents from new projects. One approach to address this problem is to include variables to control for investment demand, such as accelerator effects (Fazzari and Mott, 1987) or Tobin's q (Fazzari, et al., 1988). This approach is a step in the right direction, but one suspects variation in investment demand not captured by typical control variables will still be correlated with current profits. In Fazzari, et al. (1988), we used firm heterogeneity to identify the effect of cash flow from investment due to financial constraints. We divided a large sample of firms into groups that were *a priori* more and less likely to face financial constraints. We found significantly larger cash flow effects for the more constrained firms; a result obtained in many further studies throughout the years.⁸ Studies of the effect of debt leverage on firm-level investment are much less common. Ndikumana (1999) finds results consistent with Minsky's emphasis on the importance of debt for investment. Empirical macroeconomic research also confirms the credit channel / financial accelerator effects proposed by mainstream research but also supporting the empirical implications of Minsky's theory. By the turn of the 21st century the consensus of thinking, even in the mainstream, seemed to be that Minsky was right: finance matters (even if mainstream authors largely ignored Minsky's contributions that predated the 1980s asymmetric information models of financial constraints by decades).

II. From Microeconomic Investment to Macroeconomic Instability

Minsky's theory of firm investment is interesting in its own right at the microeconomic level. But its greatest significance comes from its macroeconomic implications to which we now turn.

Distinguishing Firm-Level Financial Constraints from "Loanable Funds" Theory

In transition from the firm level to the economy as a whole, it is important to distinguish between highly relevant microeconomic finance constraints on firm-level investment and almost entirely spurious views of macroeconomic constraints on the financing of investment attributed to the supply of saving. Confusion could arise from the misleading "loanable funds" theory of aggregate investment which posits that investment depends on the supply of saving coming from

⁸ In Fazzari, et al. (1988) firms were divided into groups based on dividend payouts because if firms faced a premium on external funds (due to borrowers' and lenders' risk) they would at least retain their internal cash flow. We found cash flow effects about double in size for near-zero-dividend firms compared with firms that paid significant dividend. Other research generated similar findings dividing firms by size, age, the presence of a bond rating, among other characteristics.

the rest of the economy (most obviously, the household sector but also including government and foreign sources of saving that may be positive or negative). This theory seems intuitive, and it is widely accepted in mainstream textbook macroeconomics (especially in the “long run”). But Keynes effectively revealed a fundamental logical flaw in loanable funds theory: it assumes the aggregate supply of saving is independent of the demand for investment. This assumption can be correct only if aggregate income is independent of investment, that is, only if total output and income do not depend on aggregate demand.

Therefore, loanable funds theory and the idea that the supply of saving constraints investment would make sense in an unrealistic world in which output is entirely supply determined, roughly the “classical” macroeconomics that Keynes, and Minsky following Keynes, considered irrelevant in most realistic circumstances. The “neoclassical synthesis” that captured mainstream macroeconomics in the postwar decades asserts the classical supply-driven model applies to some kind of “long run” when wages and prices fully adjust to demand shocks. But decades of heterodox research, going back to Keynes himself, criticizes this view.⁹ Even some mainstream economists now recognize the importance of aggregate demand “beyond the short run.”¹⁰

Keynesian macroeconomics demonstrates how aggregate saving necessarily accommodates changes in realized investment demand. The channel of causation begins with investment demand raising income and then higher incomes raising saving until the full multiplier process works its way through the economy. Investment creates aggregate saving, so the “supply of saving” cannot constrain aggregate investment.

Confusion could arise because Minsky tells us investment depends on the availability of finance while Keynes demonstrates that “loanable funds” will not constrain aggregate investment. Resolution of the confusion comes from recognizing the distinction between Minsky’s *microeconomic* analysis of finance constraints and Keynes’s *macroeconomic* explanation for how investment creates saving. Financial constraints for Minsky come from decisions by both individual firms and decentralized providers of finance about what financial risks are worth taking. In particular, banks or purchasers of new corporate bonds or equity shares may refuse to finance investment projects (or charge significant premia for funds relative to the opportunity cost of internal cash flow). These microeconomic decisions impose finance constraints on investment. But once an investment project is funded and investment spending takes place, Keynesian mechanisms assure aggregate saving will be created equal to all investment financed at the microeconomic level.¹¹ Financial constraints on investment arise from microeconomic considerations about what projects to finance, not limitations on the aggregate supply of saving.

⁹ See Fazzari, et al. (1998) and Fazzari (2020) for further discussion.

¹⁰ Stansbury and Summers (2019) show how what for decades have been strictly heterodox views about the relevance of demand dynamics for macroeconomic outcomes beyond the short run have begun to enter mainstream discussion.

¹¹ A question might arise about where the funds come from to finance new projects without “prior saving.” The answer is “endogenous money.”

Dynamics of Financial Instability: Validation and Fragility

I have labeled the basic result that the dynamic path of aggregate demand is the engine of macroeconomic activity at indefinite horizons beyond the short run as “intrinsic Keynesian economics.”¹² From this perspective, a fundamental question for macroeconomics is to explain the process that generates demand dynamics. Demand is not “automatic” over any horizon; in particular, demand need not converge to some supply-side concept of “potential output” determined independently from the dynamics of demand. Minsky’s macroeconomics theory of financial instability provides a salient example of a demand generating process. It puts the static microeconomic investment model into a dynamic macro model by exploring the way borrowers’ and lenders’ risk evolve systematically through time. Minsky describes an endogenous transition from a relatively safe financial structure that supports economic growth to financial excesses that will eventually lead to demand collapse and recession or depression. This exposition of Minsky’s macro theory grounds the ideas in two basic concepts: validation and fragility.

Minsky’s financial instability is inherently cyclical. Descriptions usually begin in a period of conservative finance in the sense of behavioral and institutional conditions in which agents are reluctant to take on financial risk, that is, perceptions of both borrowers’ and lenders’ risk is high. These conditions could arise after a fairly recent financial crisis that wiped out risky financial positions and the businesses associated with them. Firms and financiers may appear somewhat shell-shocked, reluctant to engage in risk financial practices. The economy may have substantial excess capacity and unemployment, leaving plenty of room for expansion if someone is willing to take on a little risk.

And it is the logic of profit-driven capitalism that some firm, some place, is always probing possible new strategies to see if new profits can be made. When someone takes a more aggressive financial position, lending to a new business with uncertain returns for example, this activity raises aggregate demand and creates new cash flows. In this sense Minsky is both a Keynesian (greater demand raises incomes) and a Kaleckian (higher investment raises profits). The higher cash flows *validate* the somewhat more aggressive financial positions creating success and profits for the new risk takers. In addition, stronger economic activity raises asset prices and collateral values. Validation lowers the perception of borrowers’ and lenders’ risk and encourages even greater risk taking, leading to more more investment, more income generation, higher profits, and further validation. As Tymoigne and Wray (2014, page 27) write “a central point of Minsky’s approach is that lending norms loosen over time and that what was previously considered excessively risky funding methods may become commonly accepted.”

Sequential, systematic validation takes place in the context of an intrinsic Keynesian environment in which demand is the proximate constraint on production and employment almost always. Supply constraints, perhaps aside from an occasional microeconomic bottleneck, are

¹² Dictionary.com defines “intrinsic” as “belonging to a thing by its very nature.” In our context, the connection between demand and production is the “very nature” of production for market sale in a profit-driven, capitalist economy.

rare.¹³ So further expansion of spending continues to raise production and to boost profits, not just for the several quarters of the mainstream “short run,” but possibly for many years. Although Minsky’s macro theory usually returns to the limelight during financial crises, in many ways his ideas best explain the growth process, predicated on validation, that encourages more aggressive finance and growth. The fundamental direction of instability is upward (Tymoigne and Wray, 2014, page 2).

As validation encourage more aggressive, higher risk financial positions, its “evil twin,” financial *fragility*, also increases. Minsky identified multiple dimensions of fragility. More lending raises debt ratios.¹⁴ Short-term financing rises as a share of total lending. If short-term loans finance long positions, borrowers will need to roll over financing creating additional risks if financing conditions change (what Minsky called “speculative finance). Furthermore, more aggressive lending may rely to a greater degree on collateral rather than established cash flows, creating financial exposure to potentially volatile asset prices,. Institutional changes, perhaps designed to circumvent financial regulation designed to contain risk, can lead to creation of more risky financial instruments and practices.

The upward phase of the cycle ends when fragility eventually reaches a breaking point, ending the validation process. Paul McCulley has labeled the point at which fragility overcomes validation as the “Minsky Moment.” It is the beginning of a financial crisis when lending collapses, demand falls, and the economy faces recession.

The integrated dance of validation and fragility can be described by what I have described in my classes as the “stress test metaphor.” Think about how a researcher might measure the strength of a metal rod in the laboratory. The researcher puts some stress on both sides of the rod. If the rod doesn’t break, that is, if the strength of the rod is “validated,” the researcher adds more stress to each side, increasing the “fragility” of the system. Further validation will induce further fragility until its “Minsky Moment” arrives and the rod breaks. Note how the logic of the test eventually *requires* the rod to break. If it doesn’t break, its strength is validated, more stress will be applied, and fragility rises. The financial analogy is that success of more aggressive financial positions will encourage profit-seeking agents to push the risk envelope even harder, until the Minsky Moment. According to the classic Minsky description “stability” (in the sense of validation of increasingly risky financial practices) is “destabilizing” (in the sense of systematically rising financial fragility).

Brief Digression on Uncertainty

This dynamic process that creates the Minsky cycle relies on what post-Keynesians (among others) have labeled fundamental uncertainty, that is, uncertainty about the future that cannot be captured in “ergodic” probability distributions (see Davidson, 1991). This uncertainty answers the criticism sometimes posed to Minsky: “if the dynamic generation of financial crisis

¹³ In addition, strong demand raises labor productivity and labor force growth causing demand to pull the supply side along with it along the upward path. See Fazzari, et al. (2020, forthcoming) for a model in which demand leads supply.

¹⁴ Although increasing debt-income ratios during expansions are empirically pervasive, Lavoie and Seccareccia (2001) raise theoretical qualifications about generality of this outcome.

is systematic, why don't rational, forward-looking agents learn to recognize the risk and behave more conservatively?" Minsky (1986, page 237) writes "success breeds a disregard of the possibility of failure" implying that perceptions of risk and acceptable financial structure evolve over time in a world in which institutions change and outcomes are driven by different specific historical circumstances. Minsky dynamics arise in different specific forms, for example: inflation dynamics and radical monetary policy of the late 1970s and early 1980s, savings and loan instability of the late 1980s, the technology bubble of the late 1990s, and, of course, the massive debt-driven housing bubble leading up to the Great Recession. Agents do not know how and when each expansionary phase will end, but they certainly recognize the profits made by those that ride the rising tide upward, and validation keeps the expansion going.

As Crotty (1994) argues, following Keynes, agents embedded in a world of uncertainty use the recent past as the guide to expectations about future, especially if the recent past reveals big profits from aggressive financial positions. Along the expansion path of the Minsky cycle, validation signals, quite sensibly, that new fragility-creating financial positions and practices can be successful. Agents on both sides of financial contracts update their expectations about "what works." And these expectations are formed in a *social environment* in which aggressive behaviors of others validate one's own increase in risk taking. Tymoigne and Wray (2014, page 12) write "[p]sychological factors are complemented by sociological factors because, under uncertainty, individuals tend to look for the approval of others." Indeed, if peers are making profits with more aggressive financial positions, one ignores others' validation at the risk of being left behind, possibly driven out of business. It can be costly, perhaps even viewed as foolhardy, not to participate in the boom. As Tymoigne and Wray (2014, page 3) write, capitalism "pushes individuals to anticipate an uncertain future in order to get an edge on competitors." And (page 32), "given the way decisions are made in an uncertain world, a period of good times will lead economic units to change their views about the future and to become more optimistic; not because they are irrational but because current and past results seem to justify an improvement in the state of mind."

This process stands in strong contrast to mainstream so-called "rational" expectations specification that eliminates the psychological nuances of human behavior from expectation formation. Instead, the Keynes-Minsky sense of adaptive behavior under uncertainty recognizes expectation formation as a central microfoundation of economic reality. Expectation formation in the Minsky cycle is not "irrational," rather it is human.

III. Seeds of a Minsky Crisis in the Household Sector

Minsky developed, described, and applied the theory of financial instability summarized in the previous two sections almost exclusively in the context of business finance and the associated capital investment by firms. This focus is understandable considering the structure of finance in Minsky's formative years of the postwar decades. At that time, financial action was in the business sector. Household finance was highly collateralized (home mortgages and auto loans) with large margins of safety. Consumption spending mattered for macroeconomic

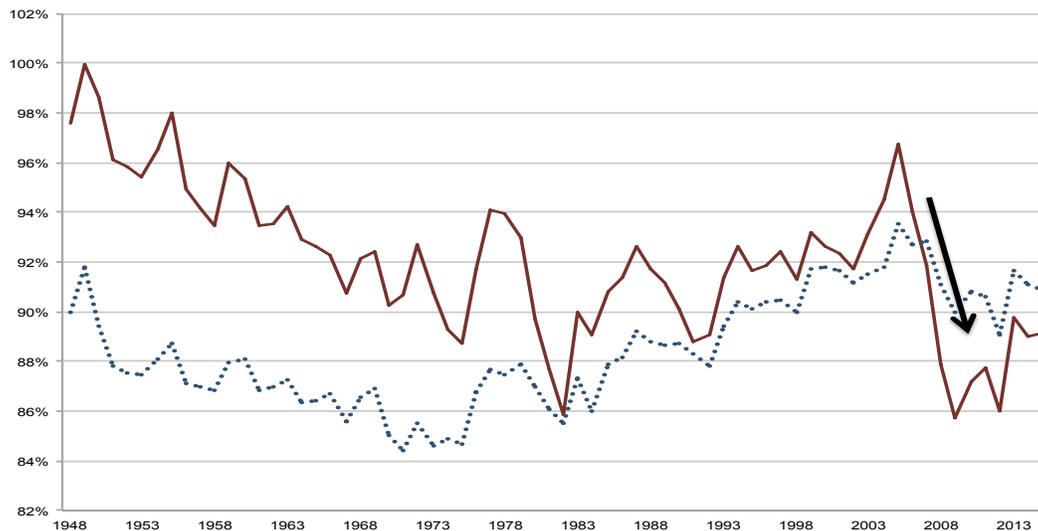
outcomes, but more through the traditional multiplier channel magnifying fluctuations induced by business investment or government spending.¹⁵ Minsky followed Keynes in identifying investment as the engine of the business cycle.

Things changed, however. It is widely accepted that the dynamics of household spending and finance created the conditions that culminated in the Great Recession crisis of 2007 to 2009. The premise here is that even though Minsky himself said little about household finance, his provide a powerful framework for understanding how household finance in the quarter century prior to the Great Recession sowed the seeds of crisis dynamics (also see Dymski, 2010). To support this claim, we shift microfoundations from firms to households and explore how the concepts of validation and financial fragility apply to this fascinating era.

Household Finance and Spending: 1980 through the Great Recession

In earlier work, my co-author Barry Cynamon and I labeled the decades leading up to the Great Recession as the “Consumer Age” (Cynamon and Fazzari, 2008, 2013). Personal consumption expenditures in the national accounts rose from about 60 percent of GDP in the first half of the 1970s to just under 68 percent on the eve of the Great Recession in 2007. Figure 4 presents two measures of household spending relative to disposable income.

Figure 4 – Household Spending to Disposable Income



Dotted line: NIPA personal consumption expenditure / NIPA disposable income. Solid line: adjusted household demand / adjusted disposable income from Cynamon and Fazzari (2017).

¹⁵ Minsky (1986, pages 34-35) presents an interesting analysis of household financial changes during the 1974-75 recession, particularly in the auto financing market. Minsky clearly realized household finance had become more important in the US economy in the postwar era and household finance could play a nontrivial role in macro fluctuations. Nonetheless, he still identifies the “causal factors in what happens” as business investment and government spending.

The dotted line is the standard measure from the national income and product accounts (NIPA). It shows a clear upward trend during the Consumer Age years and a significant drop in the Great Recession. But NIPA measures of personal consumption and income include significant components that are neither cash spending by households nor cash income to households. For example, NIPA personal consumption includes imputed rent on owner-occupied housing. It also includes government-paid health care costs through the Medicare and Medicaid programs. In Cynamon and Fazzari (2017) we develop cash flow measures both household demand and household disposable income. These adjusted measures eliminate non-cash imputations as well as spending and income items attributed to households but not actually under the control of households (such as Medicare and Medicaid). Furthermore, adjusted household demand includes spending on new owner-occupied housing. We argue in Cynamon and Fazzari (2017) that the adjusted variables provide a better measure of the demand impact of the household sector on output and employment.

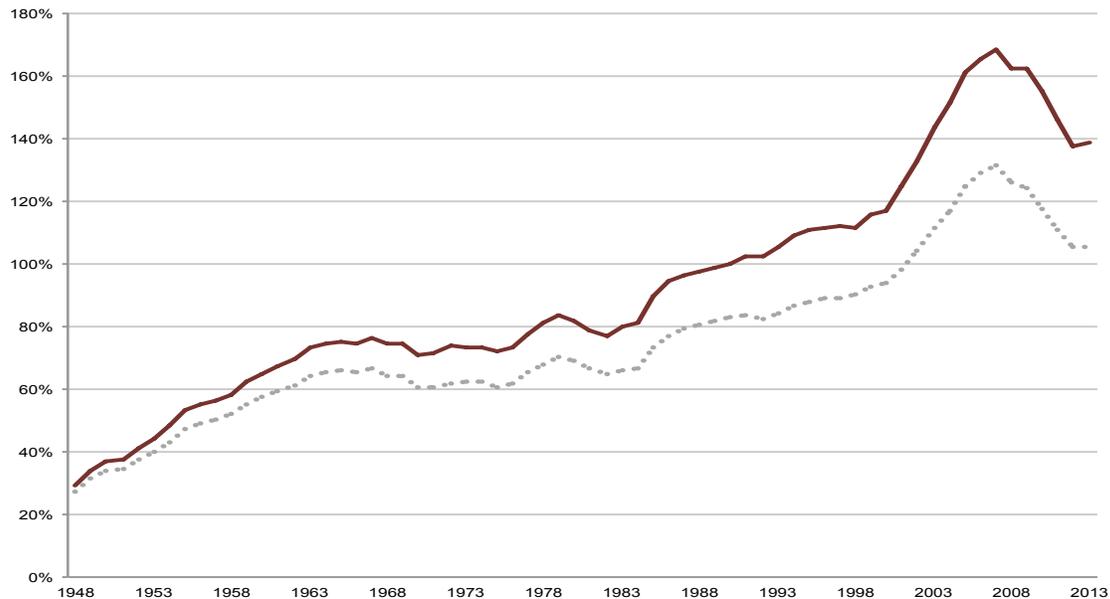
The solid line in figure 4 is more volatile than standard measures of consumption to disposable income, due largely to the way it includes owner-occupied residential construction. The trend in the Consumer Age before the recession is somewhat less evident due to the additional volatility.¹⁶ But clearly the postwar decline in household demand relative to income stopped by the 1980s and the spending rate rose significantly by the early 2000s. As discussed below, strong household demand for the quarter century starting in the early 1980s provides Minsky validation by growing incomes and cash flows. What is most evident in the adjusted data is the dramatic and persistent *collapse* of household demand in the Great Recession years. Following basic Keynesian logic, this collapse is the proximate cause of the worst economic crisis since the 1930s.

There is clear evidence of rising household financial fragility in the Consumer Age years. Figure 5 shows the ratio of household sector debt to disposable income. Again, the dotted line is the standard measures from the NIPA accounts. This data series is well known, peaking at just over 130 percent on the eve of the crisis. The dynamics of the adjusted data are similar, but more dramatic.¹⁷

¹⁶ Mason and Jayadev (2014) argue that household spending relative to income really did not rise during much of our Consumer Age period. Part of their argument rests on the volatility of the household demand / income ratio in figure 4.

¹⁷ The primary reason for the addition 36 percentage points in the peak of the adjusted data is that adjusted disposable income excludes government-paid health costs of Medicare and Medicaid. Obviously, government health benefits are not available to service debt!

Figure 5 – Two Measures of Household Debt to Disposable Income



Dotted line: NIPA credit market debt of the household and non-profit sector / NIPA disposable income. Solid line: Household sector debt / Adjusted disposable income from Cynamon and Fazzari (2017).

Rising household financial fragility as measured in figure 5 again begins in the Consumer Age starting, at the latest, by the early 1980s. The end of the borrowing boom corresponds to the collapse in household demand shown in figure 4 that caused the Great Recession. These dynamics are broadly consistent with a Minsky cycle arising from the household sector, as we now discuss in more detail.

Dynamics of Validation and Fragility in the Household Sector

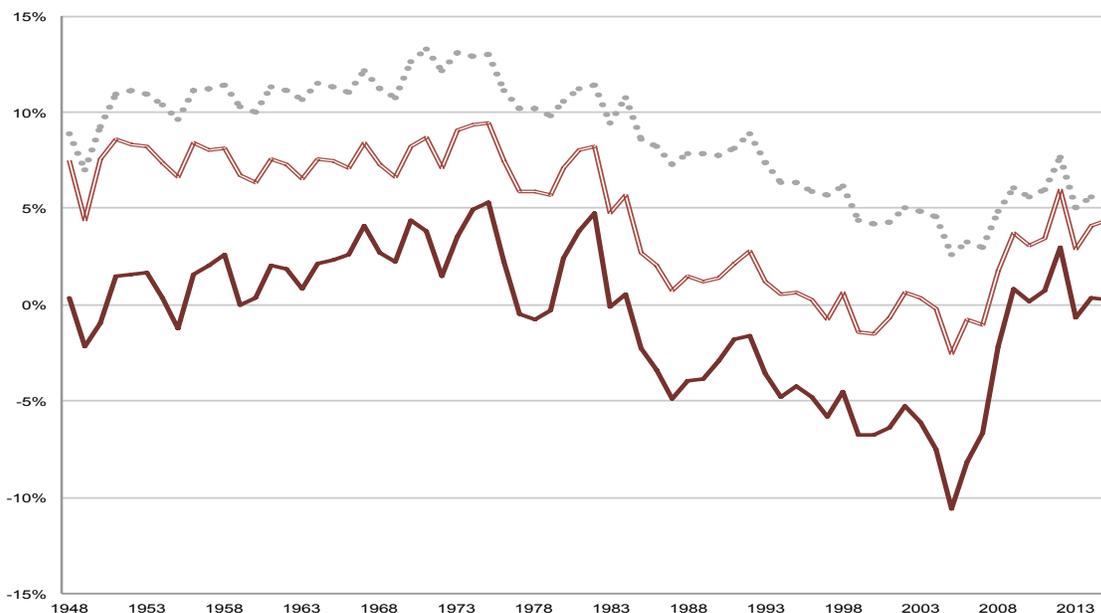
The dynamic pattern of household spending is critical to understanding U.S. macroeconomic conditions of the past several decades. The period of reasonably strong household demand growth and the shift in the composition of aggregate demand toward consumption likely was a primary cause of the so-called “Great Moderation.” During this period, dated from the middle 1980s up to the Great Recession, the volatility of U.S. real GDP declined and recessions in the early 1990s and early 2000s were comparatively mild as measured by the growth of real GDP. From a Keynesian demand-led perspective, these outcomes depended on strong household demand. For example, in 2000 and 2001, business fixed investment collapsed after the technology stock price bubble burst. But the associated recession was surprisingly mild as consumer spending and residential construction powered through the downturn.¹⁸ Household finance likely played a major role in strong household demand, given the historic rise in household indebtedness during the Great Moderation period as well as the obvious link between

¹⁸ Our adjusted measure of annual real household demand never declined from the economy’s peak in 2000, in contrast with every other U.S. recession going back, at least, to the mid 1970s.

the collapse in household borrowing and catastrophic decline in household demand during the Great Recession crisis.

Mainstream consumption theory has little to offer in explaining these dynamics. Again, as Minsky (1986, page 193) writes “in today’s economic standard economic theory, an abstract nonfinancial economy is analyzed.” The workhorse life-cycle model of consumption, and the intertemporal “Euler equation” it implies, ignored finance altogether. This model’s primary result, smoothing of consumption spending across a household’s life course, also could not account for the rising share of consumption during the Consumer Age decades. The period from the mid 1970s to the mid 2000s corresponds almost exactly with the demographic shift of the large baby-boom generation into their highest earning years. Consumption smoothing, therefore, predicts a *rise* in the aggregate saving rate, which, as figure 6 obviously shows, is exactly the opposite of what happened. The top dotted line in the figure shows the well-known decline in the standard (NIPA) measure of the personal saving rate. The bottom solid line, the “financial saving rate,” removes various imputations and measures saving as the accumulation of new financial assets and disposable income as actual household cash flows. The middle “gross saving rate” also eliminates imputations but it includes residential construction of new homes for owner occupancy, in addition to financial assets, as household saving. (This measure is “gross” because there is no subtraction for depreciation of the owner-occupied housing stock.)

Figure 6 –Household Saving Rates



Dotted line: NIPA personal saving rate. Double line: Adjusted gross household saving rate from Cynamon and Fazzari (2017). Solid line: Adjusted financial saving rate from Cynamon and Fazzari (2017). Adjusted gross household saving is adjusted financial saving plus total single-family residential construction, with no deduction for depreciation of owner-occupied housing.

The different definitions of household saving have significantly different levels. Furthermore, while the severity of the decline during the Consumer Age is somewhat larger with the adjusted

measures, all three series strongly contradict the life-cycle consumption smoothing story considering the demographics of the baby boom generation during these years.

As in the case for investment theory, even though most mainstream consumption studies ignored financial considerations, things have changed to some extent in recent years. A number of prominent mainstream contributions invoke “liquidity constraints” to explore how financial conditions might affect household consumption. The basic story is that asymmetric information between households and lenders prevent households from borrowing against intangible (and therefore illiquid) wealth, most obviously future labor income. Thus, households may not be able to attain the optimal consumption path they would choose in the absence of financial constraints. Institutional and regulatory changes that enhance household credit access might raise consumption, suggesting a possible way to connect rising household indebtedness with declining saving. These developments move some mainstream thinking in the direction of Minsky by introducing a role for finance into the dynamics of consumption and demand.

This approach, however, fails to adequately explain the full household spending/borrowing dynamics of both the strong demand growth through the middle 2000s *and* the collapse of both borrowing and spending that caused the Great Recession. If the “problem” with household spending came from from liquidity constraints and such a problem was “fixed” by better financial intermediation, the resulting increase in borrowing and spending would have allowed households to move closer to their optimal *and sustainable* life-cycle consumption trajectories. There would be no reason to expect any kind of excessive financial fragility or collapse in lending and spending. I argue here that applying Minsky microfoundations, described in the context of investment earlier, to the household sector leads to much better insights about the dynamics that led to the crisis of 2007-2009.

Consider how borrowers’ risk evolved during this era. Institutional changes in the personal tax system had an important effect. The goal of the Reagan-era tax reform act of 1986 was to lower personal tax rates but avoid losing tax revenue by expanding the tax base. Prior to this reform, households were able to deduct all interest expenses for tax purposes. The 1986 reform eliminated the interest deduction, *except* for interest paid on a loan secured by the borrower’s home. This exception encouraged households who owned their homes to shift borrowing for any purpose to debt secured by the house. Of course, the financial industry responded immediately by creating the home equity line of credit (HELOC). Interest on any draw down of this credit line was tax deductible. These instruments were heavily marketed on very favorable terms (usually there were no “closing costs,” unlike conventional first mortgages). It made perfect sense for homeowners to use HELOC borrowing in place of other kinds of debt, such as car loans and credit cards. In addition to the tax benefits, the loans carried lower interest rates because they were secured by reasonably good collateral.

The HELOC, however, led to a more nuanced change in household financial behavior, a change consistent with reduced borrowers’ risk. It became much easier to tap home equity for any purpose. Prior to this institutional change, refinancing a mortgage to borrow against home equity required extensive credit checks and expensive transaction costs. But once the HELOC was in place, borrowing against home equity was as simple as writing a check (or, later, making

a few clicks in one's online accounts). This change facilitated using home equity as a “piggy bank.”

Another important factor affecting borrowers during this the Consumer Age decades was the long downward trend in mortgage interest rates. The 30-year fixed rate mortgage carried a nominal interest rate above 17 percent for much of 1981 and 1982. Aside from a few small upward bumps in this rate, it mostly followed a downward trend to about 6 percent on the eve of the Great Recession. Of course, it made perfect sense for households to exploit this trend by refinancing their mortgages, perhaps multiple times, over this period, even with the high transaction costs required to obtain a new first mortgage. But these circumstances also opened a new door for further borrowing. Once the fixed costs of a new mortgage are incurred, it was almost costless to raise the principal amount on the new mortgage, and walk away from refinancing with a big check. This activity, along with HELOC borrowing, became common in the run-up to the crisis, with mortgage equity withdrawal adding substantially to aggregate household spending growth.

As we discuss in Cynamon and Fazzari (2008, 2013) these developments changed norms of how households approached borrowing. Refinancing and home equity extraction were rare, if not impossible, in the decades prior to the Consumer Age, if for no other reason than *rising* nominal interest rates made any kind of refinancing very costly. The new conditions of the decades after 1980, however, made borrowing against home equity a “normal” financial activity that spread among households as friends, neighbors, and family exploited these new activities. It is a good example of how the microfoundations of borrowing choices have a social context.

While changing attitudes toward credit, that is, falling borrowers' risk, encouraged households to take on more debt and spend more in the Consumer Age period, perhaps the bigger change was on the supply side of the household credit market. Deregulation of the financial system, going back to the 1970s, paved the way for more creative, and ultimately unsustainable, lending to the household sector. The emergence of securitization enhanced the ability and profitability of mortgage, credit card, and auto lending (see Kregel, 2013). New information technology also played an important role as credit scoring made household lending more of a “commodity” with generic characteristics replacing the idiosyncratic personal assessment of household creditworthiness by lending officers.

As strong household spending and the associated rise in household debt led to rather stable growth, mild recessions, and rising home prices, increasingly risky lending practices were *validated*, which then encouraged even greater risk taking (rising financial *fragility*). Again, as Minsky (1986, page 237) writes “[s]uccess breed a disregard for the possibility of failure.” For example, Boykin Curry, a managing director of the asset management firm Eagle Capital said:

For 20 years, the DNA of nearly every financial institution had morphed dangerously. *Each time someone at the table pressed for more leverage and more risk, the next few years proved them 'right.'* These people were emboldened, they were promoted and they gained control of ever more capital. Meanwhile, anyone in power who hesitated, who argued for caution, was proved 'wrong.' The cautious

types were increasingly intimidated, passed over for promotion. They lost their hold on capital. This happened every day in almost every financial institution over and over, until we ended up with a very specific kind of person running things.¹⁹

This statement perfectly describes the dance between validation (“the next few years proved them ‘right’”) and rising financial fragility (“more leverage and more risk.”) More aggressive finance stimulates demand and, through typical Keynesian channels, more demand raises incomes. Home prices also rise, increasing collateral values, generating wealth effects that raise spending further, and creating expectations of even better conditions ahead. Refinancing occurs in markets with looser credit underwriting. The result is validation coming from what is, by far, the dominant sector of the economy. But rising financial fragility ticks along. Debt ratios rise; financing becomes more short term; lending is based on rising collateral values rather than sufficient cash flows to meet debt service obligations. The stress test metaphor discussed in the context of Minsky’s theory of financial instability earlier applies directly: if the system doesn’t break (validation), more stress is put on the system (rising fragility), until it finally breaks.

And break it did. I will not repeat a detailed analysis of what triggered the Great Recession and the historic economic collapse that followed.²⁰ Figures 4 through 6 above show how the upward path of borrowing ended and demand collapsed. Housing prices also plummeted. Financial conditions became desperate. Aggressive monetary, lender-of-last-resort, and fiscal policies managed to put a floor under the collapse, but only after the worst macroeconomic crisis in three generations. The final stage of the Minsky theory of financial instability played out in these dramatic events.

IV. Weak Recovery, Rising Inequality, and Secular Stagnation

Minsky’s financial instability theory provides a deep explanation for the household-demand-led growth of the Consumer Age and how the ticking time bomb of rising financial fragility in the household sector exploded to trigger the Great Recession crisis. Some followers of Minsky “saw it coming” in the years before the crisis; many others recognize the importance of Minsky’s insights for understanding these dramatic macroeconomic events after the fact. But there is another major feature of recent US macroeconomic history that is not fully addressed by the Minsky cycle analysis. The recovery from the Great Recession, more than a decade old at this writing, has been historically weak. I argue in this section that this fact is best explained by linking Minsky financial dynamics of the household sector with rising income inequality.

The extent to which today’s economy operates below its trend prior to the Great Recession is historically unprecedented. Per capita real GDP in the third quarter of 2019 is 9.4 percent below the growth trend established between the previous business cycle peaks (from the second quarter of 2000 to the first quarter of 2006). Going back to 1960, real per capita GDP at a cycle peak was never more than 3.5 percent below the previous peak-to-peak growth trend.

¹⁹ Quoted in "There is a Silver Lining" by Farid Sakaria, *Newsweek*, October 12, 2008, emphasis added

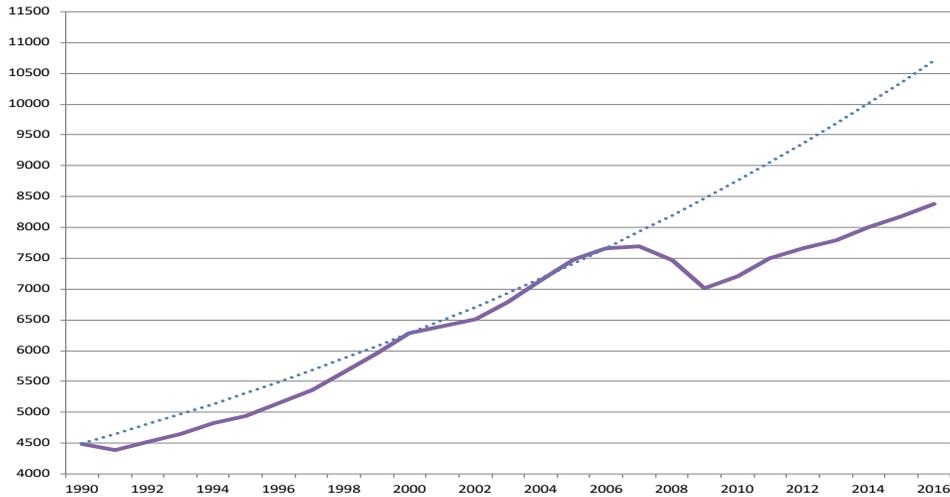
²⁰ My perspective on these events is best summarized in Cynamon, et al. (2013).

While in early 2020 the current cycle has yet to hit its peak, there is no indication that per capita real GDP will come anywhere close to its previous peak-to-peak growth trend before the next recession begins. Perhaps more striking, 2017 real GDP was about 12 percent below the 10-year-ahead Congressional Budget Office forecast of the economy's potential output made in 2007.²¹ In 2019, a 12 percent gap between what the US actually produced and the past trend amounts to \$2.6 trillion, or about \$20,000 per year *for every American household*. Something happened to the growth trend of the U.S. economy after the Great Recession and it was very big.

The household sector mirrors this remarkably weak aggregate recovery. Consider the data in figure 7. The dotted line shows the trend of real household demand established between a peak in 2000 and a peak in 2006. Economic performance in those years was not especially strong, even with this growth in real demand from the household sector. The figure also shows household demand back to 1990 does not deviate substantially from this trend, especially at cycle peaks. Of course, the collapse of the Great Recession is quite evident in figure 7. No one now denies this was a true crisis. The key point here, however, is that household demand never really recovers. Indeed, it doesn't even keep up with the earlier trend and the gap between trend and actual grows over time to over 20 percent by the final observation of our household demand data in 2016. One can argue sensibly that the trend from the early 2000s is not really relevant to assessing economic performance more than a decade later. But the economy needed that demand growth to sustain something like adequate performance in the early years of the 21st century, demand growth that was lost in the crisis and has yet to be found. Figure 8 tells a similar story over a longer sweep of history. The figure plots the profile of per capita real household demand starting with the peak of each business cycle going back to 1973. The profiles continue until the next recession (or 2016 for the most recent cycle). The data show in historical perspective both how deep the Great Recession collapse was and how anemic the recovery has been.

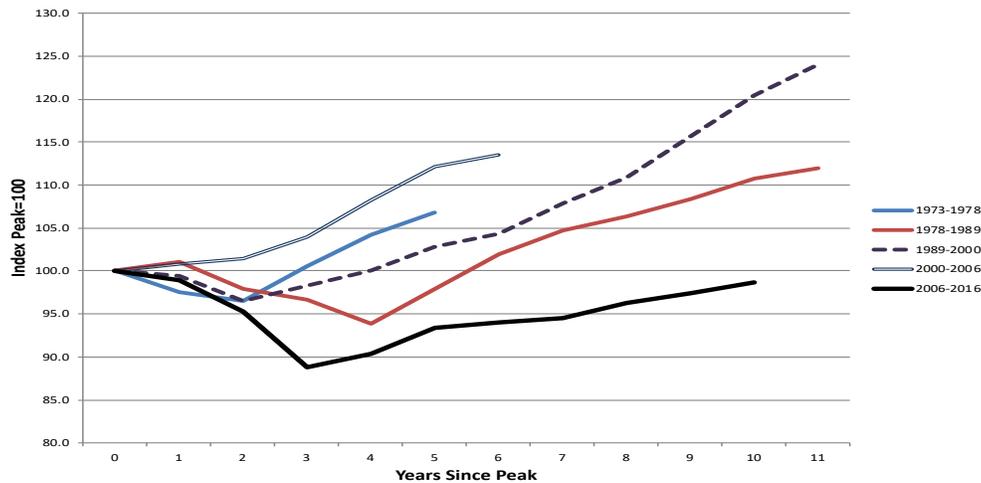
²¹ The 2007 Congressional Budget Office forecast accounts for the demographics of the baby-boom generation. Extending the forecast beyond its 10-year horizon ending in 2017 implies this gap has not closed through 2019. For more analysis of the recent stagnation of the US economy and further references, see Cynamon and Fazzari (2017b).

Figure 7 – Trend vs. Actual Real Household Demand



Solid line: real household demand (billions of 2009 dollars). Dotted line: trend of real household demand established between peaks in 2000 and 2006. The trend is extend both back to 1990 and forward to 2016.

Figure 8 – Business Cycle Profiles of Real Household Demand



Real household demand indexed to 100 at the peak of each cycle. Profiles extend until the next recession, or through 2016 for the most recent cycle.

The remarkable extent to which US income inequality has risen since about 1980 is widely discussed. And the drag on aggregate demand growth from rising inequality has been a consistent theme in post-Keynesian research for decades.²² The basic idea is that high income households recycle less of their income back into spending, that is, the rich have a lower propensity to consume. Therefore, a persistent rise of inequality can explain demand stagnation. But this simple explanation must confront a fundamental historical inconsistency. Inequality

²² For a recent extensive survey, see Hein (2014).

began to increase around 1980 along a steady, but rather slow trend. The cumulative effects over nearly four decades is dramatic, but this is not an event that happened quickly. In contrast, as figure 7 shows, the collapse in household demand was a crisis event, concentrated mostly in just two years. Furthermore, for most of the Consumer Age period prior to the Great Recession household demand was reasonably *strong*, despite rising inequality. But even as the excesses of household finance have cleared somewhat in the aftermath of the crisis, household demand growth remains weak. Here is where inequality potentially takes center stage: now that unsustainable household borrowing no longer props up household demand, the chickens of inequality-induced demand drag have come home to roost. High and rising economic inequality explains secular stagnation of household demand, stagnation that was hidden during a nearly three-decade Minsky cycle.

What further evidence can be used to explore this hypothesis? In Cynamon and Fazzari (2016) we decompose household financial and spending activity into two broad groups, the bottom 95 percent and top 5 percent of the income distribution. Figure 8 shows the ratio of debt to disposable income for these two groups. The increase in household debt is almost entirely concentrated in the bottom 95 percent. This fact supports the idea that households with mostly stagnant income, constituting the vast majority of the population, were also the ones who were borrowing in a way that offset the demand drag from slow income growth.

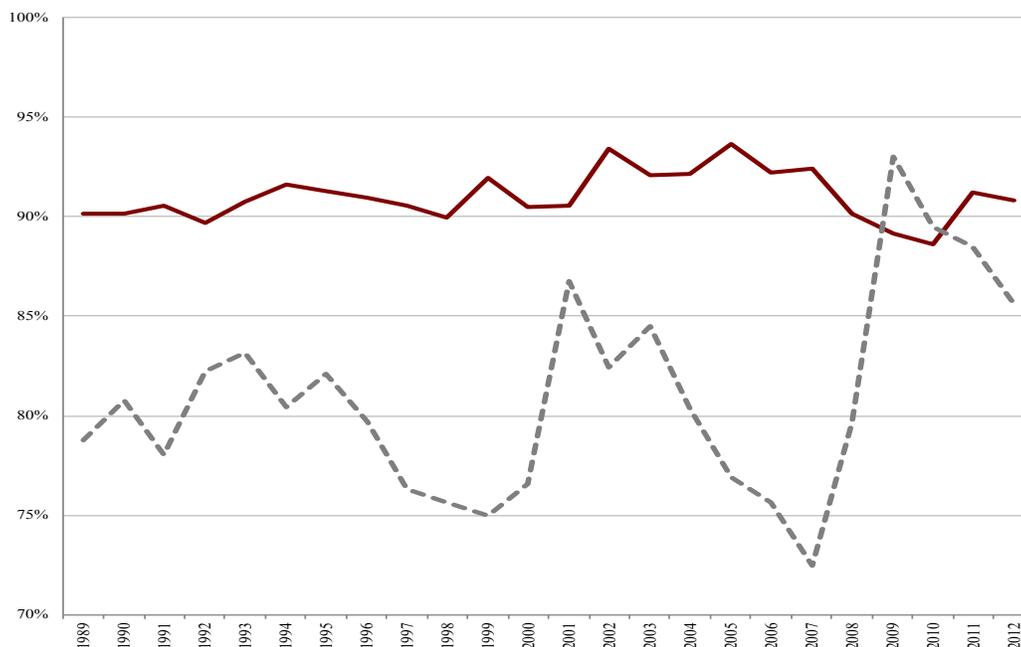
Figure 8 – Inequality and Household Debt-Income Ratios



Solid line: household debt to disposable income for the bottom 95% of the income distribution. Dotted line: debt to disposable income for the top 5%.

Figure 9 shows the ratio of consumption to disposable income for the bottom 95 percent and top 5 percent.²³ The volatility of the consumption ratio for the affluent group may look surprising, but it has a clear explanation in standard economic theory. The top 5 percent group smooths consumption when incomes fall. This smoothing leads to peaks in the consumption ratio during recessions, most obviously in the Great Recession when the spending rate of the top 5 percent temporarily exceeds the ratio for the bottom 95 percent. The dynamics of the consumption ratio for the bottom 95 percent are very different. For this group, the ratio seems to rise modestly through 2005 with no evidence of consumption smoothing. Then, in the crisis years the consumption rate *falls* for the bottom 95 percent. The decline may not look all that dramatic, but note that this decline is in the *opposite* direction of what conventional household consumption theory would predict.

Figure 9 – Inequality and Consumer Spending Rates



Solid line: personal consumption to disposable income for the bottom 95% of the income distribution. Dotted line: personal consumption to disposable income for the top 5%

The bottom 95 percent follows Minsky dynamics rather than consumption smoothing. They borrowed heavily in the Consumer Age. When financial fragility finally brings the system to its knees and cuts off lending, consumption spending relative to income declines for the bottom 95 percent. This behavior is the opposite of what conventional consumer theory predicts.

It was the bottom 95 percent whose income stagnated in the Consumer Age, who borrowed unsustainably up until the eve of the Great Recession, and who cut back their spending rate (rather than increasing it as predicted by consumption smoothing) in the crisis. This

²³ Because of data availability, this decomposition is based on NIPA personal consumption expenditures rather than the adjusted household demand variable presented in earlier figures.

evidence links rising inequality to the Minsky explanation for the period from about 1980 to 2010. The secular stagnation in the aftermath of the crisis, as shown in figures in 7 and 8, comes in large part from weak household demand, presumably from the bottom 95 percent again as the top 5 percent has continued to do quite well in the aftermath of the crisis.

We provide additional support for the argument that the demand-drag effect of inequality was revealed after the Minsky crisis in Cynamon and Fazzari (2015). We calibrate a simple demand-led growth model with different propensities to consume and different tax rates across income groups. Results show that the rise of inequality since 1980 can explain a decline in the growth path of aggregate demand of about 10 percent, in the neighborhood of the output gap relative to the previous trend that has persisted over the past decade. Again, the argument is *not* that inequality caused all of the decline in household demand since the Great Recession. Instead, Minsky dynamics masked demand drag from rising inequality until the crisis. The recession pushed household demand down to a lower growth path reflecting the long-term rise of inequality, and there it remains. With the addition of the inequality effect to the implications of the financial instability hypothesis, Hyman Minsky meets secular stagnation

V. Conclusion

This chapter argues that Minsky's theory of cyclical financial instability, when its locus is shifted from business investment to household spending, provides a compelling explanation of the path of the US economy from the early 1980s through the Great Recession years. In addition, the combination of Minsky's theory with rising income inequality reveals how the shrinking share of income earned by the high spending parts of economy, that is, almost everyone except the affluent, can explain the weak "secular stagnation" path of the economy from the Great Recession through 2019.

The shift in focus from firms to households may change some details of the basic Minsky analysis. For example, a Minsky crisis is usually associated with a kind of "cleansing" of financial excess. If the financially fragile units are firms, they cease to exist due to bankruptcy or merger into other units. The process is brutal, but effective, in eliminating financial fragility and setting the stage for a new expansion. Of course, households also go bankrupt, face foreclosure and repossession of durable assets, etc. But the households do not go away. They remain in the economy and carry their damaged credit records with them. This change could be partly responsible for the slow recovery, magnifying the effect of rising inequality. Another factor to keep in mind is household demand constitutes a much larger share of the economy than investment. While investment remains more volatile than consumption, a given percentage shock to consumption has a much bigger effect on aggregate economic activity. When consumption is the driving force of economic cycles, the effects are likely to be dramatic, as the Great Recession demonstrated.

Changing the locus of Minsky dynamics from business investment to household demand is not trivial. And adding inequality dynamics to the analysis is a further significant addition to the basic Minsky cycle analysis. But despite these changes, the broad Minsky perspective

provides the right framework to interpret the details of financially driven macroeconomic events. The discussion here also shows how effective application of Minsky's theory requires attention to historical specificity. Each cycle has unique characteristics that cannot be fully captured in any single generic model. As Tymoigne and Wray (2014, page 7) write "[Minsky] rejected the idea that an economic theory can apply to all economic systems past and present, and argue that a careful analysis of the existing socio-political-economic institutions is necessary to formulate a meaningful analysis." But despite historical specificity, cycles have a family resemblance. The core concepts of borrowers' risk, lenders' risk, financial validation, and financial fragility play a role in guiding macroeconomic dynamics as described in the first two sections of this chapter. This kind of analysis of historical cases informed by a few core concepts was Minsky's own primary method of study. This approach proves itself relevant again to help us understand the dramatic macroeconomics of the US economy over the past several decades that, according to mainstream analysis, were not supposed to happen.

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