

Minsky and dynamic macroprudential regulation

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“If regulation is to remain effective, it must be reassessed frequently and made consistent with evolving market and financial structures”
(Minsky and Campbell, 1987).

1. Financial regulation, theory, and institutions

Many financial market professionals and some academics have noted the importance of Hyman Minsky’s financial instability hypothesis (FIH) for understanding the recent financial crisis as a “Minsky moment”. However, the regulatory reforms introduced after the 2008 financial crisis have not given the same attention to his work on regulatory reform in the 1960s as a consultant to various government agencies. This is unfortunate, for the early work on regulatory reform laid the groundwork for the FIH and served as an equally cogent basis for regulation aimed at enhancing the stability of an unstable financial system. There are two important features of Minsky’s approach to financial regulation that distinguish it from the current approach. The first is the necessity of an underlying theory to provide the background for regulatory proposals. The second is the need to assess the impact of regulation in light of current economic conditions, ongoing changes in financial institutions and likely monetary policy measures. Minsky’s FIH provided the basis for what were the first proposals of what is now called “macroprudential regulation”. In addition, he proposed a new examination structure to capture the elements of this dynamic new approach.

2. Regulation without theory

As should be well known by now, the FIH was Minsky’s attempt to fill a void in traditional Keynesian or neoclassical general equilibrium

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theory: namely, the lack of any formal theoretical background in which to couch the discussion of prudential regulation. As Minsky was fond of pointing out, the bedrock of mainstream theory is a system of self-adjusting equilibrium that provides little scope for the discussion of a systemic crisis, since, in this theory, one could not occur. It was thus extremely difficult to formulate prudential regulations to respond to a financial crisis if one could only occur as the result of random, external shocks, or what Alan Greenspan would consider idiosyncratic, nonrational (fraudulent) behaviour. The only basis for regulation would be to concentrate on the eradication of the disruptive behaviour of bad actors or mismanaged financial institutions. From this initial presumption, the formulation of regulations and supervisory procedures¹ required the assessment of the activities of individual banks – without any reference to their relations with other institutions or the overall environment in which they functioned. It was this sort of supervision that, in the early 1980s, led to the failure to identify the building risks at Penn Square Bank, Continental Illinois and Seattle First, among others, and drew attention to the problem of banks that are ‘too big to fail’.² It is exemplary of this

¹ It is usual to distinguish between banking regulation, defined as the governmental framework of laws and rules under which banks are given license to operate, and supervision, defined as the monitoring of financial conditions at banks under the jurisdiction of governmental agencies and the ongoing enforcement of banking regulation and policies. However, since they are clearly related, they are often analysed as being equivalent.

² In its review of the collapse of Continental Illinois bank, the FDIC notes: “It is not surprising that few observers recognized the problems inherent in Continental’s rapid growth; most indicators of the bank’s financial condition were good, and some were outstanding [...]. There were, however, two aspects of Continental’s financial profile that, with the benefit of hindsight, were indicators of the increased risk the bank took on during its growth period. First, Continental’s loans-to-assets ratio increased dramatically [...] by taking more than the average risks in selected areas. One of the most significant of those areas was the energy sector, where Continental had a long history and the bank could claim a great deal of expertise [...]. Continental’s lending involvement with three of the largest corporate bankruptcies of 1982 helped turn perceptions of the bank increasingly negative. Such perceptions were reinforced by the advent of the less-developed-country (LDC) debt crisis brought on by Mexico’s default in August 1982; Continental had significant LDC exposure” (FDIC, 1997, pp. 238-241). Thus the rapid growth in the bank’s assets and its loans-to-assets ratio were aggravated by the impact on its borrowers of two macroeconomic factors: a change in monetary policy after the appointment of Paul Volcker as chairman of the Federal Reserve and a change in oil prices – factors that

approach that the problems of these institutions had been caused by an out-of-control Oklahoma banker and a Continental Illinois loan officer on the take. This idiosyncratic approach to bank regulation is now given credibility with the name “microprudential regulation”, because it only deals with the actions and conditions of a single institution, ignoring any impact that the institution’s activities may have on the rest of the financial system, or vice versa.

From this perspective, the major objective of bank examination has been to identify the deficient or fraudulent operations of an individual bank:

“[e]xaminations are used to collect on-the-spot information that will indicate the current financial condition of a bank and its compliance with applicable laws and regulations [...]. All phases of a bank’s operations are covered in an examination,³ and special reviews are made of trust activities, electronic data processing operations, and compliance with consumer protection laws. An examination thus provides a comprehensive picture of a bank’s operations and financial performance. Bank exams, though, do not serve as audits. Examiners confine themselves to evaluating only the activities and bank records that are necessary to judge a bank’s condition and regulatory compliance. Generally, the scope of an examination is limited to the bank’s records and does not include verifying all of the bank’s asset and liability account balances” (Sprong, 2000, pp. 116-117).

As Minsky noted in a conference paper co-authored with Claudia Campbell,

“[t]he instability of banks and other financial institutions is usually described in terms of runs and defaults at particular institutions without a clear explanation of why such strong asset substitution quite suddenly becomes the rule of the day. When conceived in terms of bank runs and defaults, a particular bank fails because of its own, idiosyncratic attributes. Its management has been incompetent or committed fraud. Such a failure may have repercussions on other banking institutions, in that for a time financial markets fail to work normally. This creates transitory refinancing problems for otherwise solvent banks. [...] Idiosyncratic failures can trigger

Minsky insists should be a major part of the macroprudential supervisory process.

³ These areas of bank examination are usually summarised under the acronym CAMELs, signifying capital adequacy, asset quality, management, earnings, liquidity and sensitivity to market risk. The final ‘s’ was added in the 1990s in response to the savings and loan crisis. Banks are rated in a scale of 1 to 5, best to worst.

an epidemic of bank failures, imparting an adverse ‘depression-creating’ shock to the economy” (Minsky and Campbell, 1987, pp. 254-255).

As usual after cases of severe disruption, regulations are adapted to prevent the occurrence of crises that have already occurred. Although the importance of such interactions in creating systemic shocks was recognised in the collapse of Continental Illinois, and again after the savings and loan crisis of the late 1980s – and became impossible to ignore after the “Lehman moment” – these events produced only modest changes in examination procedures. For example, the savings and loan crisis of the 1980s produced a shift in approach toward a more ‘risk’-based bank examination system:

“[t]he banking agencies began developing a new supervisory framework in the mid-1990s. The key element in the new framework is bank examinations that focus more closely on the areas of greatest risk to a particular bank. This risk-focused examination process requires examiners to first perform a risk assessment of a bank before beginning any on-site supervisory activities. Risk assessments involve identifying the significant activities of a bank, determining the risks inherent in these activities, and undertaking a preliminary assessment of the processes a bank has in place to identify, measure, monitor, and control these risks. Examiners then use a bank’s risk assessment to direct their examination efforts toward the areas of greatest risk to the institution. For banks with sound risk-management processes, examiners can rely more heavily on a bank’s own internal risk assessments rather than having to perform extensive supervisory tests” (Sprong, 2000, p. 117).

And although the chairman of the Federal Deposit Insurance Corporation (FDIC) at the time claimed that the changes “do not reflect a fundamental change in the FDIC’s traditional approach to risk assessment”, she nonetheless noted that they were

“[...] working to ‘bridge the gap’ that currently separates the ‘macro’ perspective of economics and market trends from the ‘micro’ perspective of bank examinations in ways that will translate data into guidance that examiners can use in assessing and monitoring risks in institutions with differing levels and types of risk exposure. [...] The result will be a more effective and accurate assessment of an institution’s ability to manage its risks within a structured framework, which will enhance safety and soundness” (Helfer, 1996).

But it is clear that this approach to combining micro- and macroprudential regulation still placed the emphasis on the examination of the individual institution, rather than on systemic impacts on the entire financial system. The current approach to regulation in the aftermath of the subprime crisis has been a similar call for a more systemic approach to financial regulation, now baptised “macroprudential” regulation, to provide a supplement to “microprudential” regulation. However, the same criticism that Minsky levelled against the formulation of the “micro” regulation of the 1960s applies today to the “macro” prudential approach, since it is lacking any underlying theoretical framework pertaining to the causes of systemic crises that would support the formulation of regulations to prevent them. It pretends to provide regulation to deal with systemic issues without any clearly articulated theory of the causes of systemic crises or of the cyclical behaviour of the financial system. In particular, while most macro policy regulation proposals recognise the existence of cyclical behaviour in the economy and recommend measures to deal with it, they provide little explanation of why it occurs.⁴ If a comprehensive theory of how endogenous fragility develops is absent, the simple recognition that macro conditions will impact financial performance cannot prevent concentration on the idiosyncratic aspects of recent crises.

3. Regulation with theory

In Minsky’s view, any macroprudential regulation would require “a more complete description of the instability of an ‘economy with banking’”. Such an approach

“[...] needs to look behind the runs and analyse the structure of balance sheets, payment commitments and position-making activities. Position-making for a bank consists of the transactions undertaken to bring the cash position to the

⁴ Avinash Persaud notes the “growing consensus around three ideas: capital requirements need to have a countercyclical element in order to ‘[...] dampen rather than amplify the financial and economic cycle’ by ‘requiring buffers of resources to be built up in good times’. There should be greater emphasis on rules rather than supervisory discretion to counterbalance the political pressures on supervisors. And these rules should include leverage limits and liquidity buffers” (Persaud, 2009, p. 4).

level required by regulation or bank management. In the position-making view, bank failures do not arise simply because of incompetent or corrupt management. They occur mainly because of the interdependence of payment commitments and position-making transactions across institutions and units” (Minsky and Campbell, 1987, p. 255).

Since Minsky’s FIH approach was built on developing Keynes’s “foundations of an investment theory of business cycles and a financial theory of investment in a capitalist economy” (Minsky, 1994a, p. 2), it started by providing an explanation of the cyclical behaviour and the systemic interactions that provide the basis for the formulation of macroprudential regulation.

Minsky’s early work on regulation dealt not only with regulatory issues, but also with the appropriate type of bank examination from the standpoint of the FIH. Already in 1966,⁵ on the basis of his contribution to the Federal Reserve study on the discount mechanism (Minsky, 1972a), he had started to outline his ideas for what he called a ‘cash-flow’ based bank examination procedure:

“[t]he suggested examination and analysis of a commercial bank or other depository institution is based upon the view that liquidity is not an innate attribute of an asset but rather that liquidity is a time related characteristic of an ongoing, continuing economic institution” (Minsky, 1967, p. 1).

The background from the Federal Reserve study is that

“[b]asic to the idea of liquidity as an attribute of an institution is the ability of the unit to fulfil its payment commitments. Any statement about a unit’s liquidity, therefore depends upon estimating how its normal activities will

⁵ Indeed, an August 1966 letter from Minsky to the Director of the FDIC Division of Research and Statistics Raymond Hengren suggests that he had been contacted by the FDIC to develop “new examination procedures”, based on “the time series of cash flows to the institution that is generated by the institution’s portfolio [...] costs of money and costs of operation [...] from today’s cash flow from portfolio and today’s operating costs and costs of money, today’s profits can be derived. This is not enough. What is needed, in order to evaluate the prospects of the institution, is a time series of cash flows to the organization, costs and profits” (Minsky, 1966). A subsequent letter dated 20 October mentions an attached memo presenting Minsky’s suggestions on how the procedure might be designed and implemented. Apparently, nothing came of this contact (the letters and the memo are available at the Minsky Archive: see Minsky, 1966). However, his 1975 notes (Minsky, 1975a) on the 1967 proposal suggest that it had been produced at the request of the Federal Reserve, again with no evidence of a follow-up.

generate both cash and payments, as well as the conditions under which its assets (including its ability to borrow as an ‘honorary’ asset) can be transformed into cash [...]. Any statement about the liquidity of an institution depends upon assumptions about the behavior of the economy and financial markets. As the assumptions are changed, the estimate of the liquidity of the institutions will vary” (Minsky, 1967, p. 2).

This is later described as ‘position liquidity’ and ‘market liquidity’, representing the “dual vulnerability [that] emerges wherever cash flows from operations are insufficient to meet financial commitments” (Minsky, 1975a, p. 4). He thus spells out the objective of macroprudential regulation and the inability of traditional regulation to identify systemic risks. The revised proposal is described as follows:

“[t]he aim [...] was to use the examination process to generate information on both the liquidity and solvency of particular institutions but also on threats, if any, to the stability of financial markets; this information was to be forward-looking and to be such that the implications of alternative economic and policy scenarios could be investigated. In particular, the examination procedure was designed to focus upon the actual (past) and potential (near-term future) position-making operations of a bank, so that the Federal Reserve authorities would be aware of actual or threatened financial fragility” (Minsky, 1975b, p. 150).⁶

In support of this approach, Minsky also made recommendations on revising the flow of funds accounts to make macro assessment of financial fragility more transparent (Minsky, 1962).

In a series of notes on updating his initial 1967 proposal, he points out how institutional changes, in the form of the emergence of “giant multi-billion dollar banks” and “fringe banking institutions and markets,” should be a focal point in updating the initial 1967 proposal and should “enable the authorities to get a better handle on the operations” of these large banks and their linkages to “non-bank financial institutions and various short term financial markets” (Minsky, 1975a, pp. 1-2).

However, despite regulators’ interest in and recognition of the importance of this ‘systemic’ macro approach, it has yet to produce substantial changes in how supervision and examination are carried out in

⁶ Phillips (1997) provides an analysis of “the differences in the typical bank examination form and the Minsky form”.

practice. Indeed, the FDIC has recently recognised its relevance, as well as its scarce implementation:

“[e]xaminer observations indicate that many banks have established only rudimentary liquidity policies and contingency funding plans as part of the overall asset/liability management function. Monitoring ratios are often limited to a static analysis that depicts a point-in-time snapshot of the liquidity position. Comprehensive cash flow analyses that identify sources and uses of funds are rare. For example, a recent review of a multibillion-dollar institution revealed that the sources-and-uses report tracked wholesale funding sources but did not incorporate retail cash flows. In many cases, contingency planning policies lack procedures based on bank-specific stress events, are not regularly updated to reflect current market conditions, and are not tested to ensure the accuracy of the assumptions” (FDIC, 2008).

4. Dynamic macroprudential regulation

But Minsky’s ‘new’ approach to examination was not only to recognise the cyclical nature of the interactions generated by financing relations within the economic system, but also to take a much broader approach to regulation that might be called ‘dynamic’ macroprudential regulation. This is the basis for the second innovative aspect of Minsky’s approach to regulation:

“[t]he supervisory and regulating structure for banking and finance that is in place not only reflects institutional features of the economy stretching back over at least 150 years, it also reflects the understanding, i.e. the economic theory, of how our type of economy works that ruled at the time when the bits and pieces of this structure was first put in place” (Minsky, 1994b, p. 6).

Indeed, this was one of the advantages of Minsky’s proposed cash-flow approach:

“[t]he perspective underlying the suggestions was of a dynamic, evolving set of financial institutions and relations. All too often, it seems as if the Federal Reserve authorities have been surprised by changes in financial practices. One aim in the design of the examination system was to establish a regular reporting procedure which would force the authorities to be aware of institutional changes that were ongoing, and which furthermore forced the authorities to inquire into how the ongoing developments can be expected to affect the stability of the financial system” (Minsky, 1975b, p. 150).

In a subsequent note, Minsky gave the following as an example:

“[o]ne byproduct of the cash flow examination procedure will be more precise knowledge of the relations between the examined institutions and fringe banks. Such a clarification will enable the Federal Reserve to better know what is emerging in financial relations and to be better prepared for contingencies that might dominate as the determinants of its behaviour” (Minsky, 1975a, p. 2).

That is, macroprudential regulation and examination, for Minsky, must not only reflect current and expected economic conditions but also be institution- and theory-specific, which is why Minsky has always insisted that it must be frequently reassessed in relation to the changes taking place in the financial system. In addition, such examination was intended to force central bank policymakers to become aware of the impact of their policy actions on the stability of financial institutions in the context of the ongoing institutional and operational changes in the financial system – something that was clearly lacking in the Fed’s analysis of the recent crisis, which has now been revealed to have ignored the mechanics of subprime mortgage securitisation and the role of credit default swaps in the interrelationships between banks and other (fringe or shadow) institutions operating in these markets.

Thus, one of the advantages of the use of Minsky’s approach to regulation, in which the FIH serves as the basis for macroprudential regulations, is that it

“[...] explains why regulatory structures eventually become obsolete or perverse. The normal, profit-seeking activities of agents lead to innovation in order to create new sources of profits; innovations can be in products, processes or finance. The search for profits also drives agents to avoid, evade and adapt to the structure of regulation and intervention put in place to constrain incoherence. In time this undermines the effectiveness of a regime of intervention that ‘stabilizes the unstable system’. Therefore if regulation is to remain effective, it must be reassessed frequently and made consistent with evolving market and financial structures” (Minsky and Campbell, 1988, p. 6).

Minsky stressed the point that “as the monetary system, the financial system and the economy are always in the process of adapting to changing circumstances, the quest to get money and finance right may be a never ending struggle” (Minsky, 1994b, p. 4), because what is an

appropriate structure at one time is not appropriate at another.

“Throughout our history the reaction to some ‘unpleasant events’ in banking or finance has been to reform the structure of banking and finance, as well as the structure of government chartering, regulation and supervision of financial institutions. Our predecessors were not fools: [t]hey knew the institutions of their time well enough so that when legislation changed institutions, the new structure succeeded in correcting the malfunctioning, for at least the time being. Such a new structure of payments and financing was apt enough, so that a ‘better’ performance of the economy followed. However, the perennial quest for the profits that successful innovators earn energizes entrepreneurs. New financial and banking institutions and new financing patterns for business, households and government units emerge and their users prosper. Over time the initially apt pattern of regulation and supervision becomes increasingly inept: the inherited structure of regulation and the supervision first becomes not quite right and later becomes perverse. A cumulative effect of the institutional and usage changes that occur is that the institutions which are supposed to contain the endogenous disequilibrating forces of our economy lose much of their power to do so” (Minsky, 1994b, pp. 4-5).

From this point of view, the greatest error committed in the run-up to the recent crisis was to allow a major change in the institutional structure of the financial system in the 1999 Financial Services Modernisation Act without any accompanying changes in the regulatory or supervisory structure. If Dodd- Frank is an attempt to remedy this error, it will by definition be inadequate to the conditions that prevail when it is finally fully implemented.

5. Regulatory instability

Minsky provided an example of his approach in comments made on the 1980s proposals for reform after the collapse of the savings and loan banks and the insolvency of the Federal Savings and Loan Insurance Corporation (FSLIC). He noted that a basic difficulty in any insurance is the risk of moral hazard, but that it was difficult to understand how the problems of moral hazard and increased risk transference only appeared to threaten the survival of the FSLIC system after some 40 years of successful operation. The answer, he countered, was to be found in the

institutional and policy changes in which the system operated. In particular, he and Campbell noted “the shift in position-making from trading in liquid assets in the 1960s to transactions in liabilities in the 1970s”, as well as “the decrease in the margins of safety used to cushion fluctuations in cash flows” (Minsky and Campbell, 1987, p. 255). As a result of these changes, they observed,

“[...] payment commitments have become more closely coordinated with payment receipts so that small changes in conditions can cause a large increase for units (households and businesses who are indebted to banks and banks that are indebted to depositors) to acquire cash by selling assets that may have thin markets” (Minsky and Campbell, 1987, p. 255).

This leads to a need to sell assets to acquire liquidity, which causes a decline in asset prices and a “process that leads to a deep depression” (Minsky and Campbell, 1987, p. 255). But the change in institutional operations was accompanied by a change in central bank operating procedures from interest rate management to money supply management, which made the issue of 30-year, fixed-rate assets, which had been safe assets, inherently risky. Minsky and Campbell thus argued that “the problems today are the result of competition for profits that has transformed an initially robust financial structure into a fragile system and in so doing made obsolete the structure of deposit insurance established 50 years ago” (Minsky and Campbell, 1988, p. 7). It was the changed institutions, changed theory and changed monetary policy that produced increased financial fragility and made deposit insurance untenable in the presence of systemic crises. “Whenever bank failures are due to idiosyncratic behaviour”, Minsky and Campbell wrote, “actuarial estimates of the probability of payoffs are possible. In such cases the insurance model is applicable and the proposed reforms of the structure of deposit insurance could be beneficial” (Minsky and Campbell, 1987, p. 255). But “a system-wide decline in asset values cannot be contained by a guarantee or bailout of some restricted class of deposits or institutions. If instabilities that can generate large, system-wide losses of output, employment, and asset values are to be contained, more than deposit insurance is needed” (Minsky and Campbell, 1987, p. 256). The conclusion, which is just as relevant today, was that

“[t]he introduction, in today’s environment [...] of risk-adjusted premiums

or capital requirements and greater public disclosure of problem institutions, [which] are among the proposals to reform deposit insurance, would make it more, not less, likely that insurance payoffs will be required. In addition, these reforms would increase system instability. A stability-enhancing response would be for Congress to accept that it has an open-ended, contingent liability and to set in place a well-funded, institutional structure to fulfil its obligations” (Minsky and Campbell, 1987, p. 253).

Finally, Minsky and Campbell noted that

“[...] the Federal insurance agencies do not administer deposit insurance as insurance for depositors but as a mechanism to insure the safety and soundness of the U.S. banking system. One of their goals is to prevent bank failures. [...] Recent innovations in the securitization of assets and the globalization of finance have introduced risks of financial dislocations that are only peripherally related to those the authorities are set up to handle” (Minsky and Campbell, 1987, pp. 258-259).

The solution Minsky proposed to the problems faced by deposit insurance and the stability of the system in general was for the government to accept full responsibility, not only for insured deposits but also for the stability of the financial system. Deposit insurance, as insurance, was an outmoded and inefficient means of systemic macroprudential regulation in the presence of systemic instability and of banks being too big to fail. Indeed, this inadequacy has been one of the major elements of the growth of big banks, as the FDIC is only able to resolve smaller banks without depleting the insurance fund by having them assumed by larger banks.

6. Regulatory responses

As a possible alternative to the government assuming the contingent liability for the deposit liabilities of all banks, Minsky suggested the creation of a permanent government investment bank along the lines of the Reconstruction Finance Corporation (Minsky, 1994a, p. 11). This would be desirable in an economy facing solvency crises and in which the question of “whether the structure of the Federal Reserve System that created district Reserve Banks to process eligible paper and to create thereby the reserve base for commercial banks is an apt structure for a

Central Bank that operates by way of open market operations has never been faced” (1994a, p. 8) – by which Minsky meant a Federal Reserve that “was not able to take an equity position in an otherwise bankrupt bank” and thus “unable to contain [an] insolvency crisis” (1994a, p. 6). Which is precisely what the Federal Reserve and the U.S. Treasury were forced to do through their exceptional policies supporting financial institutions that were too big to fail and that the federal deposit insurance system could not resolve.

Minsky made a number of proposals besides the government investment bank and government acceptance of the contingent liabilities on insured deposits. One alternative would be for the government to assume direct responsibility for the payments system. The government maintains a constitutional monopoly over the issue of notes and coins, and at one time supported the transfer function through postal money orders. Many other countries, particularly in Europe, maintained postal savings banks until the wave of deregulation and demutualisation encouraged their sale to private equity institutions. Indeed, after the creation of the Federal Reserve System, District Federal Reserve Bank notes were the liability of the federal government. It would have been straightforward to allow the District Federal Reserve Banks to issue deposit liabilities to private individuals.

Another alternative would be a return to the approach of the National Banking System, in which the national banknote liabilities of the national associations were backed by government securities, and require private bank deposit liabilities be reserved by full collateralisation with government securities. Although this is the system that failed to allow a sufficiently elastic currency in the 1907 crisis and produced the decision to found a central bank to serve as a central reserve pool, it was given a new form after the Federal Reserve was, in its turn, unable to stem the 1930s crisis.

The response took the form of the 1930s proposals of Henry Simons ([1934] 1948), Irving Fisher (1935), and *A Program for Monetary Reform* (by a group of experts including Fisher and Paul Douglas, see Douglas *et al.*, 1939) – and, more recently, proposals by James Tobin (1987), Robert Litan (1987) and Ronnie Phillips (1995) – for a 100 percent reserve banking system. Minsky considered that such a structure could provide,

in place of deposit insurance, a substitute for government assumption of the contingent liability on all bank deposit liabilities:

“[o]ne aspect of the 100 percent money schemes was that debt financing of businesses and households was to be divorced from the payments and default free assets systems. This can be accomplished by making contingent value assets the standard for the indirect holding by households of paper that finances business and household debts. [...] Banks, through their loan officer function, are specialists in making loans on the basis of their ‘hard reading’ of private information, which they obtain in the process of deciding whether and on what terms to accommodate a potential borrowing client. As a substitute for bank lending such loans can be the province of special mutual funds which break down the flow of funds from business and household financing into tranches, such that there is a fixed income portion with a relative fixed market value and a variable income and market value portion. These funds would be so structured that the variable income portion would have a high expected return but would also absorb the first say 10 percent of losses due to nonperforming assets: interest rate risk could be finessed by making all credits floating rate credits. [...] We are now in a position to realize the dual setup of 100 percent money: financing the capital development by contingent valued liabilities and a money supply based upon a portfolio of government bonds held by an authority responsible for the payments scheme” (Minsky, 1994a, pp. 12-13).

Thus Minsky envisaged securitisation of the loans to households and businesses to provide both fixed and equity-type investment opportunities.

In recommendations for the reform of the Glass-Steagall Act, Minsky built on this approach in a proposal for a bank holding company structure that preserved the benefits of simplicity and transparency inherent in the New Deal legislation. The proposal would restrict the permissible assets and liabilities of the various independently capitalised subsidiaries:

“[o]ne such subsidiary can be a narrow bank which has transaction balances as liabilities and government debt as its assets. This narrow bank does not need deposit insurance [...]. Because of the nature of its portfolio and the government’s commitment to reprice bonds so that they never fall to a sharp discount, deposit insurance is redundant. There is no need for a limit to the amount of the transaction balance that is guaranteed not to fall to a discount from its nominal value” (Minsky, 1995, pp. 18-19).

Thus the narrow bank would eliminate the negative influence of

moral hazard and make the full government guarantee of all deposits unnecessary.

“[a]nother subsidiary could be [a] business loan fund which uses only short term Certificates of Deposit to fund its activities. These certificates of deposits will be protected by assigned equity. A government insurance fund for 80 percent of the face value of the liabilities will be part of the package. [...] The narrow bank and the short term business financing subsidiary will carry on the transaction and short term business financing banking functions” (Minsky, 1995, p. 19).

The government guarantee would be transferred from the transactions business of the bank to its short-term financing of business, with the deposit certificates carrying a guarantee. The insurance takes the place of reserves against these liabilities to encourage households to hold them rather than the 100 percent deposits. Indeed, it is now common to encourage governments to engage in public-private partnerships to support specific investment projects, with the government carrying contingent liability for returns. Minsky’s proposal provides a similar mechanism that could be used to direct funding toward productive business investments rather than financial speculation. In addition, the holding company would have another subsidiary that would

“[...] carry on the investment banking function. Insurance subsidiaries can carry out the underwriting and sales of insurance products. The merchant banking operation will be financed by own capital as well as commercial paper and certificates of deposit. Because of the high risk these activities will be financed to a larger extent than the other functions by capital: special liabilities of this subsidiary may well carry some equity kicker. The creation of large denomination ‘participation deposits’ to finance merchant banking activities which carries some of the pains even as it shares in the gains from merchant banking activities” (Minsky, 1995, pp. 19-20).

The most important implication of this proposal, as Minsky seems to have admitted, would be that in such a segregated, dual system there would be neither a deposit-credit multiplier, nor leverage, nor private creation of liquidity. As Fisher had noted in his original proposal, “new loan funds would come out of savings, but no longer out of thin air” (Fisher, 1935, p. 91). A similar observation was made by Neil Wallace, who interpreted “the narrow banking proposal as one requiring the

banking system to be liquid without any reliance on liabilities subordinate to deposits” and concluded that “the narrow banking proposal eliminates the banking system” (Wallace, 1996, pp. 7-8).

These proposals would thus require a ‘substitute for bank lending’ in a capitalist system, since they eliminate the creation of liquidity normally associated with the role of the banking system in accepting the illiquid liabilities of the business sector used for financing day-to-day operations. The question is whether the capitalist system could function on this basis (see Kregel, 2012).

As Fisher pointed out in his 100 percent proposal, this would not mean that financing would cease, only that it would be limited to the rollover or repayment of existing credits. In essence, the approach would institutionalise the ‘loanable funds’ theory in which saving determines investment.

In this system, the only way additional liquidity could be created to provide increased financing for business investment is if the government ran a fiscal deficit. Bonds issued to cover the deficit would be deposited in the narrow bank subsidiary against credits that could be transferred to private individuals in payment for goods and services or to purchase certificates of deposit or securitised assets, providing for an increase in available investment financing. Instead of being governed by the decisions of banks to extend credit, or the private sector to increase saving, investment finance would then be determined by the position of the government budget and the direction of investment as determined by the extent of the insurance of the liabilities of different types of investment funds.

Indeed, a government deficit would be necessary, for in its absence the system would be deflationary and create an additional problem for ‘macroprudential’ regulation. Alternatively, the central bank could engage in the direct financing of public or private sector investment expenditures. The ‘macroprudential’ stability of the financial system would then require the application of what Abba Lerner called ‘functional finance’. The size of the deficit creating the additional government means of payment required for macroprudential stability would be determined by the private sector holdings of narrow bank deposits and currency,

adjusted for the current account position.

In the absence of a government sector deficit to support incomes, liabilities used to finance investment could not be validated in a narrow bank holding company structure. But, even more importantly, it would be impossible in such a system for banks to act as the Schumpeterian handmaiden to innovation and creative destruction by providing entrepreneurs the purchasing power necessary for them to appropriate the assets required for their innovative investments. In the absence of private sector 'liquidity' creation, the central bank would have to provide financing for private sector investment trust liabilities, or a national development bank could finance innovation through the issue of debt monetised by the central bank. Were Minsky alive today, he would probably agree that the current institutional and political structures are not equipped to recognise the role of fiscal deficits in the successful operation of a narrow banking system intended to obviate the need for macroprudential regulation.

If it is not politically or economically feasible to produce a change in the structure of the financial system that separates the means of payment function from the need to finance the production of output and creation of employment, then Minsky's FIH provides another alternative approach to macroprudential regulation. If the cause of a crisis is systemic, and if it occurs endogenously via a process of tendential declines in the cushions of safety composed of liquid assets available to meet the non-validation of debts, then macroprudential regulation must be designed to counter these tendencies. In particular, these tendencies will produce rising ratios of assets to bank equity. The current approach relies on setting specific ratios of liquidity in the form of gross leverage ratios and gross as well as risk-weighted capital requirements. But from Minsky's point of view, it is pointless to place limits on these variables; rather, one must seek regulations capable of dampening the forces that determine them. In particular, it is important in this context to recall his view that liquidity is a property of an institution determined by its 'position' assets, the markets in which they are traded and the current changes in economic policy and institutions.

In an early paper on 'money', Minsky identified the market

incentives that will drive banks to the creation of assets and new methods of increasing assets in order to compete for market capital with nonfinancial institutions. He starts from the fact that, in comparison to other nonfinancial institutions,

“[...] banks are highly levered organizations: banks borrow \$12 for every \$1 of capital. [...] If for example a bank makes 1 percent net income after taxes on its total assets, and if it is levered to the extent the average indicates, then it would make 13.2 percent on its book value. Banks usually have a conservative dividend policy, so that a representative bank might pay about 1/3 of their earnings as dividends. This means that the book value of a representative bank would grow at 8.8 percent per year by way of retained earnings. If the banks that retain earnings are to do as well on their new capital as they have done on their old capital, they will need to lever their retained earnings by the same factor of 13 through borrowings. Thus banks, in their profit seeking activities, will endeavour to have their deposits and other debts grow at the same rate as their book value: only in this way can their total assets grow at the same rate as their owners' investment. The observed 13 to 1 asset/book value ratio is the result of offsetting pressures upon the banks. The regulatory authorities, mainly by way of their examination procedures, press banks to have 'adequate capital': i.e. to hold the ratio of assets to book value down. The drive for profits makes banks work at evading this constraint: i.e. banks want to increase this leverage ratio” (Minsky, 1972b, pp. 5-6).

Thus the kind of macroprudential limits that are to be placed on gross leverage and the size of bank capital may, on the one hand, give banks a larger margin to absorb loss without facing insolvency; but they will also act as a sharp incentive to find ways to increase leverage and reduce capital requirements through innovation.

Minsky returned to this theme in a 1977 article, again emphasising that

“[...] banks are profit maximizing organizations. Their return on the book value of owners' equity equals the return per dollar of assets times their assets per dollar of book value; i.e. $P/B = (P/A) (A/B)$, where P is profits, B is the book value of owners' equity, and A is assets. Given this profit identity, bank management endeavours to increase profits per dollar of assets and assets per dollar of equity. [...] Our banks are corporations. The market price of their publicly traded shares, like the shares of other companies, is positively related to the expected rate of growth of earnings. If the level, rate of growth, and assuredness of bank earnings are high

enough, then the market valuation of the bank's shares will exceed the book value of owners' equity. To first raise the ratio of market price to book and then sustain a favourable growth in the market price of shares require a high rate of growth in expected earnings per share. Because of stock ownership and stock options, management of a bank that is organized as a corporation has a private interest in ever higher share prices – in having the market value of the owner's interest rise relative to the book value of owner's interest. [...] As will become evident in what follows, banking as a generic phenomenon is destabilizing, but corporate banking, especially corporate banking in which management is largely divorced from ownership, is particularly destabilizing.

Earnings minus dividends divided by book value is the rate of growth of book value through retained earnings. If assets grow as fast as book value and if the profit rate on assets remains unchanged, then earnings, dividends, and the book value of equity can grow at the same rate [...]. If management can sustain earnings per dollar of assets even as the assets per dollar of book value increases, they can raise the price of their shares [...]. The incentive for bank management to raise the asset/book value ratio, if it can be transformed into an increase in the rate of growth of assets and earnings, is strong. In fact, it will pay for a bank to increase the asset/book value ratio even if it results in some attenuation of the earnings/assets ratio. [...] Over the post-war era, bank management has been ingenious in developing reserve-economizing liabilities, so that the growth of bank assets has exceeded not only the growth objectives of the Federal Reserve but also the growth of bank equity [...]. In a world with corporate, growth oriented banking and a fragile financial structure, the Federal Reserve is forced into accommodating the banking system's demand for reserves. The banking process determines the volume of bank liabilities outstanding, and the Federal Reserve is forced to supply sufficient reserves to sustain these liabilities.

Banks have also been ingenious in developing techniques for financing business and financial institutions. These include the developing of covert bank liabilities, such as lines of credit and bank guarantees of financing" (Minsky, 1977, pp. 17-19).

While this was written in 1976, it takes little to adapt it to the recent crisis, in which innovations produced substantial increases in profitability along with rising leverage and declining liquidity ratios. But it also suggests that setting particular macroprudential minima for the two ratios Minsky identified in the bank profit equation may nonetheless produce global asset growth that exceeds the rate of growth of national income and may lead to increasing pressure to innovate, increased layering and

financial fragility.

Some additional implications of this analysis have been outlined in a series of papers by Mario Tonveronachi that builds on existing macroprudential proposals and minimum capital requirements to show that,

“[...] looking at national banking systems, there should be some close relation between the growth of bank assets and the growth of nominal GDP. This means that fixing the leverage ratio on stability grounds could equally result in allowing bank assets to outgrow GDP or to constrain its growth” (Tonveronachi, 2013, p. 381).

Tonveronachi’s conclusion is that it would be more appropriate to invert the process and use target ratios for total-asset-growth-to-GDP to determine the appropriate national ratios of liquidity and capital. Thus, rather than placing limits on individual banks and applying uniform ratios across very diverse financial systems with divergent results, the ratio of total asset growth should be tailored to the institutional and policy characteristics of each country. The same procedure could be applied to individual banks on the basis of a cash-flow examination procedure recommended by Minsky. Setting values for A in the above formula for bank earnings would thus lead to concentration on the return to assets and creditworthiness, which was characteristic of traditional originate-and-hold banking.

While the imposition of minimum liquidity and capital ratios is an improvement over the prior risk-based approach, such target ratios are not macroprudential regulations in Minsky’s sense. Similarly, stress tests of banks’ capital positions are applied to banks individually, rather than in a systemic interaction. Neither approach to macroprudential regulation takes into account the dynamic macro factors that impact the bank’s position-making assets and liabilities and the secondary markets in which they trade, or the ongoing institutional and policy changes that are a natural part of the economic system.

Minsky was fond of quoting, in relation to bank regulation, the remark of the great University of Chicago economist Henry Calvert Simons that “banking is a pervasive phenomenon, not something to be dealt with merely by legislation directed at what we call banks” (Simons, [1936] 1948, p. 172). This suggests that, as Minsky put it,

“[...] a fundamental flaw exists in an economy with capitalist financial institutions, for no matter how ingenious and perceptive Central Bankers may be, the speculative and innovative elements of capitalism will eventually lead to financial usages and relations that are conducive to instability” (Minsky, 1977, p. 22).

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