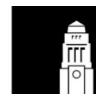

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# Finance and Financial Systems:
Evolving Geographies of Crisis and Instability

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## ABSTRACT

This chapter explores geographic approaches to financial systems, with special attention to their instability. After examining the foundational contributions that launched the geography of finance, the chapter summarizes spatial research on the global spread of innovative practices in finance. It then asks why so little attention was paid to macro aspects of financial crises prior to September 2008. A review of geographers' research of subprime lending and crisis finds that this work, extensive as it is in analyzing the microfoundational aspects of subprime lending and securitization, is any attention to the macro dimension of financial instability. This lacuna is shared with mainstream macroeconomics, which famously failed to see the subprime crisis coming. The chapter then explores economist Hyman Minsky's macro approach to financial instability and crisis. The chapter concludes by arguing that developing a spatial analysis of financial instability should be a high priority for the emerging geography of finance.

**KEYWORDS:** Geography of finance, financial systems, financial globalization, financial instability, financial innovations, subprime lending, financial crisis, Hyman Minsky, Keynesian theory

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**Finance and Financial Systems: Evolving Geographies of Crisis and Instability**

## 1. Introduction

This chapter explores geographic approaches to financial systems, with special attention to their instability. This review focuses on research by geographers, while also taking into account the implications for spatial analysis of economists' approaches to financial instability.

Financial dynamics since the late 1970s have been defined by relentlessly expanding globalization and by instability of two different forms: ever-deepening financialization, as well as increasingly frequent and virulent financial crises. Financialization, that is, "the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies" (Epstein, 2006, p. 3), has gradually transformed microeconomic and social dynamics during this period. And at the macro level, as Laeven and Valencia (2012, p. 10) document, crisis cycles have coincided with (or followed from) credit cycles during this period: financial crises have occurred from the late 1970s onward, finally reaching a crescendo with the double (subprime and Eurozone) of the late 2000s.

These micro and macro phenomena are mutually reinforcing: growing household and firm debt, one of the most visible manifestations of financialization, has fed financial fragility and led to the destabilization of credit flows and economic growth the world over, slowing economic growth and increasing households' and firms' dependence on debt and financial manipulation, leading to further financial instability, and so on.

Despite the centrality of these developments in global economic outcomes, economists have reached no agreement on the sources of financial instability, the relationship between local (national) and global financial dynamics, or whether and how public policy responses can mitigate the social costs of financial losses and crises at either the micro or macro levels. To the contrary, they have proposed very different understandings, which say as much about the differences in their theoretical entry-points as about financial processes and instability. Economists who use market equilibria as their points of departure and of reference – that is, those in the mainstream - tend to trace the financial losses and crises of recent years to factors interfering with markets' microeconomic workings: government policy failures or perverse incentive mechanisms in financial markets. Financial crises, when they arise, reflect in-principle-avoidable coordination failures; financial instability arises as because of disturbances to market logic, not as a consequence of market logic. The notion that financial losses and crises as inevitable components of economic processes is maintained by heterodox economists, whose entry points typically include uncertainty, power, and/or class. Of special interest in this chapter is Minsky's conception of financial instability as a core component of capitalist systems with advanced financial systems.

Geographers' investigations how space matters in financial processes and systems, like those of economists, are shaped by their analytical entry points. And those pioneering the emerging field of the geography of finance have used very different entry points and theoretical frameworks – Marxian crisis theory, critical social geography, and the institutional analysis of global hybridity, in particular – to shed light on many different spatial aspects of financial structures, behaviors, and outcomes. This chapter reflects on some of the principal lines of development and findings of this literature, as well as exploring one area ripe for further examinations of how space matters in finance – that is, the theory of financial instability itself.

Section 2 examines some of the foundational contributions that launched the geography of

finance. Section 3 then describes spatial research on the global spread of innovative practices in finance – an initial focal point of this young field. Section 4 then asks why so little attention was paid to macro aspects of financial crises prior to September 2008. Section 5 reviews geographers' investigations of subprime lending and of the subprime crisis; missing from this work, as from the pre-crisis geography of finance, is attention to the macro dimension of financial instability. Section 6 describes the most prominent macro approach to financial instability and crisis, that of economist Hyman Minsky, and elaborates both on its Keynesian foundations and on how incorporating spatial dimensions into this approach can generate new insights into financial crisis and instability. Section 7 concludes.

## 2. Foundational explorations in the geography of finance

Aalbers' (2014) overview essay on the evolution of financial geography dates its beginnings to several mid-1990s publications, including Andrew Leyshon's three Progress in Human Geography essays (1995, 1997, 1998) on geographies of money and finance. Aalbers points out, that geographers began examining spatial aspects of financial processes in the 1970s. Two such early contributions set the pattern for subsequent geographic work on financial systems and their instability. One direction, cited by Aalbers, is the work of Boddy (1976) and Williams (1978) on the UK mortgage market. Boddy discusses the links between housing finance and inequality, and Williams investigates race- and income-based redlining by UK lenders in inner-city areas of British cities.[1] These two early studies parallel the earliest work on redlining in US mortgage markets (Alhbrandt 1977, Bradford 1977) in recognizing the destabilizing impact of redlining on the economic trajectories of affected urban areas.

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The other notable 1970s geographic contribution on finance, David Harvey's (1973) work on the political economy of the city, focused more on its systemic (macro) role in capitalist reproduction. This and subsequent works by this author inspired much of contemporary social geography, by way of imitation, modification, or critique. As Ira Katznelson points out in his foreword to 1988 edition of Harvey's 1973 volume Social Justice and the City, Harvey's goal, to "embed .. [geography] in a theoretical project," found a locus in Marxism, "and an object of analysis for this theory within geography, the city." The tension between a surplus-generating mode of economic production and the spatial location of production and surplus absorption provides a robust anchor for Marxian work in geography. Marx's characterization of the accumulation process as contradictory and crisis-prone finds ready interpretation in the contradictory demands made on urban space: whilst productive assets and housing are spatially fixed and long-lived, reorganizing surplus-generating activities and renewing accumulation requires the destruction and renewal of places within the urban grid. Finance plays a central role, as Harvey recognized, in putting expensive, long-lived assets in place; and these financial commitments can undermine capitalist growth or recovery when debt obligations remain after the real capital they have financed is devalued.

So finance is seen both as functionalist and as potentially dysfunctional: both a means of resolving one set of contradictions (financing gaps) and the source of another (debt repayment gaps). Harvey (among others) was attracted to Hilferding's notion of "finance capital," wherein the allocation of credit and circulation of monies is driven by the needs of surplus-generating accumulation processes. This notion is embodied in the idea of a city as a growth machine (Molotch 1976). Harvey's subsequent work (especially Harvey 1982) was based on a more comprehensive reading of Marx on capitalist accumulation and crisis. Regarding finance, he emphasized Marx's analysis of how the pre-conditions for crisis are created in cyclical upturns

[1] Aalbers (2005) himself published work on mortgage redlining in Rotterdam.

when promises to pay multiply without adequate attention to ability to pay. In these foundational texts, Harvey poses a question that he leaves open: is urban development explained by capitalism's broader cyclical dynamics – its boom-bust cycle – or is it independent of any 'cycle', with its own momentum?

These early contributions, then, confront the question of whether financial relations are spatially embedded or, instead, are determined primarily by cyclical economic forces. Leyshon's (1995) survey of the emerging political economy of finance identifies three approaches to this question. "Geopolitical economy" examines hegemonic dominance and transitions amongst national currencies. The "geoeconomics of finance" opposes the notion that financial globalization means 'the end of geography' (O'Brien 1991) by investigating the distinctive national, and even regional and local, basis on which financial systems remain organized.[2] The third approach identified by Leyshon, the geography of financial exclusion, encompasses both nations that have suffered debt crises and sub-national spaces subject to "the closure of banking infrastructures, with catastrophic economic consequences for populations abandoned in this way" (Leyshon 1995, p. 538) – a phenomenon that is most acute in the US but is spreading to the UK and elsewhere.

Leyshon's essay links destabilizing dynamics at the macro-level with the deepening of uneven development at the micro-level: he cites exchange-rate pressures due to imbalances among European economies, deregulation of financial services, and competition for privileged customers as factors that are driving processes of micro-level exclusion. The possibility that micro-level mechanisms could undermine macro-level financial stability was not yet in view: subprime lending and private-label securitization were in their infancy, and not until the early 2000s would housing price bubbles bring subprime mortgages to Main Street. The mid-1990s stream of work on financial exclusion saw it as encompassing "processes that prevent poor and disadvantaged social groups from gaining access to the financial system… [with] implications for uneven development." (Leyshon and Thrift 1995, p. 312) Consequently, scholarly work on financial exclusion encompassed bank branch closures (Pollard 1996), the role of finance in uneven spatial development (Dymski and Veitch 1996), and the shifting boundaries of the financial system and the need for policy change instituting a concept of 'financial citizenship' (Leyshon and Thrift 1996). In effect, financial exclusion was viewed as a generalization of the case of redlining.

## 3. The spatial logic of globalizing finance

The years immediately after the 1973 demise of the Bretton Woods system saw some nations succumb to recession and inflationary pressure, whilst others continued to expand. And epochal institutional changes – including financial deregulation, an end to pattern-bargaining, and deindustrialization – were underway in some but not all countries. Some scholars identified patterns in these contrasting trends: it seemed that institutional and regulatory differences might account for these varying macroeconomic growth patterns. Most notably, Zysman (1983) argued that the superior industrial competitiveness of Germany and Japan, as against France, the UK, and the US, could be traced to the organization and governance of their financial systems. His suggestive contrast between Anglo-American and German-Japanese approaches to finance shifted attention from the nature of capitalist crisis per se to the question of how nations' financial structures and regulations affect economic performance.[3]

[2] Leyshon cites Lash and Urry (1987, 1994). Also see Corpataux, Crevoisier, and Theurillat (2009).
[3] Zysman's work renewed the tradition pioneered by Gurley and Shaw (1955) and Gerschenkron (1962).

This reframing of finance as a component of industrial strategy in a competitive global marketplace raised yet a new question: how would the global shift to financial deregulation and freer capital movement affect individual firms and nation-states? Geographers began to undertake mappings that not only responded to O'Brien (1991) but also began to identify a distinctive 'geography of finance' approach. As Clark and Wojcik (2007) termed it:

> "This conceptual approach to understanding institutional change differs from more functionalist approaches … The main premise of the approach is not only to take the convergence forces behind global finance seriously—as more and more political economies engage with global finance—but also to recognize the variety of geographically and historically contingent institutional responses and filters, which result in hybridity rather than homogeneity."

These mappings focused on the role of practices (Jones and Murphy 2010) and institutions in reproducing or challenging the loci of control over financial decisions and allocations. In a study of pension-fund decision-making, Clark (2008) argued that good financial governance would emerge if financial decision-making reflected a balance between expertise, on one hand, and community representation and political legitimacy, on the other. The globalization of share-holding threatened this balance by creating pressures for homogenized decision-making. The quantification of financial expertise (Hall 2006) drove this homogenization, as did the spread of formalized business courses (Hall and Appleyard 2009), which both legitimized expertise and distributed it along the hubs and spokes of financial supply chains.

Given the turn away from functionalism in explanation, whether the financial system would continue to meet different spatial areas' diverse needs then became an open question. Geographers' institutional focus on hybridity was augmented by an analysis of global networks and of the presence or absence of global convergence in standards and practices. The evidence on global convergence was mixed. Mason and Harrison (2002) found that UK venture capital investment had become more equal across space, but investments in younger British companies remains concentrated in the broader London area. Zook (2002) argued that the spatially uneven financing needs of the internet industry were being adequately met precisely because venture capitalists were resisting centralization and homogenization.

Wójcik (2006) found a trend toward global convergence in corporate governance, involving shareholder and board roles. Clark and Wójcik (2007) used German experience to demonstrate the dynamic erosion of static "varieties of capitalism" distinctions among national economies. To explain this meta-trend, Clark, Wójcik, and Bauer (2006) observed: "The continuity of different regimes of governance is subject to inter-market arbitrage." (p. 303). In turn, Dixon and Monk (2009) contrasted the harmonization of accounting standards and spread of globalized corporate governance practices with the uneven spatial distribution of defined-benefits pensions in the UK and Netherlands. Examining Swiss pension funds in this same (pre-crisis) time-period, Corpataux, Crevoisier, and Theurillat (2009) found that both homogenizing and "territorial" forces were at work: "the mobility/liquidity of capital and the changing dimensions of new regions and countries are central to the finance industry's functioning."

This emerging literature not only explored the scope and extent of financial globalization, but also had a critical edge. As Leyshon has written, Clark and Wójcik (2007) "seeks to account for the growing power of money and finance within contemporary economic life" (Leyshon 2008, p. 262). Clark and Knox-Hayes (2007) found that "social status" crucially determined pension holdings. Leyshon, French, and Signoretta (2008) found that building society closures were concentrated in poorer areas.

## 4. Why most geographers and economists overlooked the 1980s-1990s financial crisis wave

Given the critical edge that characterized financial geography from its origins, Aalbers' 2014 observation in his overview of financial geography contributions to the geography journal Transactions comes as a shock: "In the 1970s and early 1980s Transactions published no papers that discuss the economic crises of that decade in primarily monetary or financial terms." Whilst geographers were engaged in critical analysis of subprime lending well before the subprime crisis (see section 5), Aalbers has a point; indeed, his comment on the absence of attention to financial crisis can be extended to other geography journals, and to the 1990s as well as the late 1970s and 1980s. A keyword search of the Web of Science database for 13 leading geography and regional-studies journals found zero appearances of the term "financial crisis" in the 1980s, and only one in the 1990s (in Transactions in 1995).[4]

This observation is surprising because these years were accompanied by successive financial crises: citing only the most severe episodes, the years prior to 2000 included the US savings and loan crisis, the Latin American debt crisis, the 1987 stock-market crash, the junk-bond bubble and crash, the Mexican crisis of 1994-95, the East Asian financial crisis of 1997, and the Russian-Brazilian-Turkish foreign exchange crisis of 1998. Economists too paid little or no inattention to financial crisis se se in these years. A parallel search for a sample of leading mainstream economics journals in the 1980s and 1990s also finds virtually no keyword references to "financial crisis;" a search of heterodox economics journals, only a handful.

In any event, most academics working on finance were subsequently caught unawares by the subprime meltdown. And that event concentrated minds well outside of academia on the disruptive power of finance. Indeed, the enormity of the Fall 2008 crisis led Queen Elizabeth II to ask, in a November 2008 visit to the London School of Economics, why economists did not forsee it. A July 2009 response by representatives of the Royal Academy mentioned economists' belief that "banks knew what they were doing," and the fact that low inflation and modest economic growth had lulled economists into ignoring the growing imbalances; thus, there was a "failure of the collective imagination of many bright people, both in this country and internationally" (Besley and Hennessey 2009). A Financial Times columnist observed, in response, that "economists [had] shuffle[d] the deckchairs" (Brittan 2009). Why then did geographers and most economists largely ignore the global wave of financial crises until the subprime crisis exploded in September 2008?

Geographers' neglect of financial crises can be traced to three factors. First, the geography of finance had not yet cohered as a subfield. Second, when it did, it was initially oriented toward the role of finance in industrial competitiveness. Third, emerging work on the geography of economics and finance relied primarily on two very different entry points that were predisposed to overlooking the possibility of a cataclysmic financial crisis that could bring global capitalism to its knees: Marxian models of accumulation and crisis, and neoclassical equilibrium models. We consider these in order.

Most geographers who implicitly or explicitly reject neoclassical economic theory, and instead view the capitalist economy as prone to booms and busts, tend to follow David Harvey's conception of Marxian crisis theory. In his framework, finance has an assigned role to play in urban (or capitalist) reproduction. Geographic discourses that use Harveyesque lenses to

[4]One important exception is Corbridge (1984). Details on the method used and on the journals included in this investigation are set out in Dymski and Shabani (2016).

elaborate Marxian ideas about capitalist crises arguably view them as crises of capitalism tout entier. To put it boldly, in the Marxian approaches followed within geography, economic crises might be accompanied by financial crises, but they are not caused by financial crisis.

Neoclassical economic models, in turn, typically assign a passive role to finance. Efficient-market theorists such as Fama (1980) regard financial structure as a passive element in economic outcomes, on the basis that in the self-interest of participants in hyper-competitive markets would lead them to ruthlessly eliminate any inefficiencies in resource allocation; the key implication is that market processes leave no potentially profitable holes in the financial services landscape. Neoclassical theorists prefer to use the general competitive equilibrium as their point of analytical reference, complexifying it as needed to explain why deviations from this equilibrium might occur. In the post-war period, this analytical approach characterized microeconomic thinking, not macroeconomics. But since the overthrow of Keynesian structural macromodeling at the end of the 1970s, the terrain of macro-modeling has been left to equilibrium models – most recently, the dynamic stochastic general equilibrium (DSGE) model.

The defining characteristic of the DSGE model is its general equilibrium approach. In any general equilibrium model (including DSGE), analysis focuses on the determinants of the supply of goods and services, that is, on available technology, the prior distribution of wealth, and agents' preferences over consumption and leisure (more consumption can be had if more labor is supplied, hence more supply created, ceteris paribus). Demand is passive; any supply generated will be sold as long as prices are right. The prices may not be right, due to informational rigidities or transactions costs in particular. But what should be emphasized is that this theoretical approach is antithetical to Keynes (1936) and more broadly to Keynesian macroeconomics, which asserts that the level of effective demand determines income flows and, in turn, the level of output: if demand falls, so will employment and income levels. with the orthodox (as opposed to Keynesian) perspective in macroeconomics, wherein demand responds to supply and does not independently affect the level of economic activity.

The DSGE model excludes the possibility that aggregate spending can fall short in the aggregate, because it anticipates that prices should always be able to fall so as to close the gap. The idea that we may live in a world in which prices are "downward sticky" is ruled out. Further, the DSGE model, in its unadulterated form, abstracts from the financial sector altogether; so there is no space for even conceptualizing, much less explaining financial crisis, except by reference to deviations from the conditions required for market equilibrium.

These deviations tend to be explored in microeconomic models of banking, given the absence of analytical oxygen in the DSGE model. And indeed, coincident with the Latin American debt crisis, Diamond and Dybvig (1983) developed an asymmetric-information banking model in generated a bank run as one possibility.[5] This framework gave rise to a sizable literature exploring the implications of asymmetric information and one of its consequences, moral hazard, for financial outcomes. Subsequently, then, problems in financial markets could attributed by mainstream theorists to to mechanism or design failures, moral hazard problems, "sunspots," or "sudden stops".[6] These categories neatly account for the above list of crises: the Latin American crisis can be attributed to debtor nations' moral hazard (Eaton, Gersovitz, and Stiglitz 1986), as can the East Asian crisis (Krugman 1998); the savings and loan crisis can be

[5] Their framework falls into the category of multiple-equilibrium 'sunspot' models discussed above.

[6] A sunspot model can shift among multiple equilibria when market participants' beliefs change. This same mechanism underlies the "sudden stop" model, which has been used to explain sovereign debt crises (such as that in East Asia) that cannot be traced to borrowers' moral hazard.

explained by thrift managers' and regulators' moral hazard (Kane 1990); and the 1997 and 1998 crises to sudden stops (Calvo 1998).[7]

Evidence for the idea that financial crises could be attributed to flaws in market processes became available when, in the wake of the East Asian financial crisis, economists associated with the International Monetary Fund (IMF) and World Bank pioneered a new empirical approach to financial crisis. They created a data-base drawn consisting of aggregate statistics drawn from the years immediately before and after financial-crisis episodes in affected countries; the idea was to identify causal patterns in these episodes. Econometric tests using this database generate cross-national answers that abstract from differences in time and space (Beck, Demirgüç-Kunt, and Levine 2010) This database has been expanded and used as the basis of numerous studies; these almost invariably identify lax financial oversight as a root cause of financial crises.

## 5. Geographers on subprime lending and crisis

While geographers had largely ignored the 1980s Latin American and 1990s East Asian financial crises, they did extensive work on subprime lending prior to the outbreak of the crisis. While, as noted, this work focused on the microfoundational aspects of this lending and not on the buildup of macrostructures of financial imbalances, geographic work on financial exclusion predated the subprime crisis by three decades. Further, some of those researching examining credit-market discrimination and financial exclusion turned their attention to subprime lending soon after it emerged in the 1990s. The first rounds of work on this new form of predatory financial inclusion forced researchers to ask basic institutional questions: who was authorizing subprime loans, and who was funding them? How were bank and non-bank markets connected, locally and nationally? Where was the regulatory oversight of these new loan types? Were race and gender differences targeted? Answers were proposed in a number of studies, including Listokin and Wyly (2000), Bradford (2002), Newman and Wyly (2004), Wyly et al. (2006), and Williams, Nesiba, and Diaz McConnell (2006).

UK-based research on subprime lending posed a further question: would the spread of these instruments to the UK homogenize these markets across national borders? Wainwright (2009) considered this question, based on research undertaken before the 2008 crisis. He showed how the process of feeding locally-generated mortgages into the globally-linked securitization process reflected a mixture of influences: "Big Bang" deregulation of the City of London, the broader financial deregulation process, and the specific legal, political, and social institutions that defined UK housing finance. In other words, UK housing finance did not involve cross-border cloning, but instead retained key differences from US practices (see Ashton 2009). Aalbers, Engelen, and Glasmacher (2009), in turn, showed that mortgage practices in the Netherlands "reflects Dutch corporatist institutional arrangements, implying that both geography and states do matter for the supposedly aspatial process of securitization." (p. 1779)

What are the implications of the subprime crisis for the geography of finance? One was described picturesquely by Lee et al. (2009): "When all that is solid is seen to melt into air, [geographers] are forced into the role of the reporter who sketches the first draft of history." Aalbers (2009a, 2009b) took up this challenge; his essays delineated the dynamics and institutional context of the near-collapse of global finance in September 2008. Engelen and Faulconbridge (2009, p. 591) called for "financial geographies which are historically situated and focused not on the epochal but the conjectural and … relevant to academic and policy

[7] Dymski (2011) reviews economists' writings on international debt crises.

debates." The four contributors to another reactive essay (Lee et al. 2009) broadly agreed; for example, Clark emphasized the need to study "the interplay between financial markets, between market players and institutions and between markets and political institutions" (734).

And indeed, a continuing stream of research in economic geography has pursued this "first draft of history" by unearthing "the long chains associated with the credit crunch." (Wainwright 2011, p. 1301). For example, Marshall, Pike, et al. (2011) showed how the September 2007 run on Northern Rock resulted from the interplay between global financial centres and peripheral financial hubs such as Newcastle, and then deepened development in the urban landscape; Pani and Holman (2013) showed how even localities at a "fictitious distance" from global booms and busts – such as Norwegian municipalities – were entangled in the crisis due to intertwined cross-border financial cash-flows; and Hendrikse and Sidaway (2014) showed how the German city of Pforzheim experienced crisis-linked losses due to derivative contracts it had signed with Duetsche Bank.

Another reaction to the financial crisis was registered in Lee et al. (2009) by Leyshon, who asserted that "we need to know more about the geographies of asset creation and destruction," "the regulatory geographies of the global financial system," the "geopolitical consequences of finance" (pp. 740-1). Following this lead, French, Leyshon, and Thrift (2009) set out a framework describing the compositional architecture of the crisis. These authors identified four geographical spaces that had combined to generate this crisis's extraordinary force: (1) the international financial centres, especially London and New York; (2) the growth of insular financial practices that disregard the risks arising from small-margin bets on highly leveraged asset positions; (3) structural imbalances in the global economy, especially the US-China linkage; and (4) the growing power of financial media in shaping "the behavior and culture of financial agents and institutions" (p. 287). As these authors observed, while this crisis marked one logical end of the globalization of finance, it did not clearly indicate the end of global finance. They worried that "the financial system may already be reinventing itself in the midst of crisis. … it is highly likely that a new financial paradigm is already in the making" (p. 299).

But what paradigm? What if the restless dynamism of the financial system, its temporal instability, is part of what defines it? How could the architecture of an unstable global financial system be described across space? Pollard signalled the need for understanding time/space dynamics when she called (in the same Lee et al. (2009) essay) for analysis that went beyond "the scientism of technical, purportedly objective metrics of liquidity, rate of return, shareholder value and so forth" (p. 738). But doing so would require moving from the description of spatially-differentiated structures to an understanding of how these structures moved and combined in real time (Hall 2013); it would also require moving further away from the efficient-market approach to finance and even further in the direction of ideas about finance which Hyman Minsky had initially advanced in the 1970s, and which were ever more critical in comprehending the evolving shape of financial relations and financial crises.

## 6. Minskyian Financial Instability in a Spatial Context

Shifting from a description of how spatial structures of finance could generate unstable dynamics to a spatial dynamics of unstable finance requires two steps. The first is to build a model that unfolds the motion of unstable financial processes across time. The second is to understand the spatial scope and logic of such a model. We consider these in turn.

The first of these steps requires a conscious break from the view that financial crises arise from regulatory disturbances or informational barriers that prevent financial processes from achieving

socially optimal equilibria. Understanding a financial crisis as a disturbance from an otherwise stable financial equilibrium rules out seeing it as one logical endpoint of core financial processes. UCLA economist Axel Leijonhufvud put it this way:

> "… the economists who in the last 20 or so years have based their macroeconomics on GE [general equilibrium] constructions have shown little interest in investigating their stability properties. Stability has been taken 'on faith' … It is my belief that this stability-with-impediments approach is quite wrong, that it does not explain recent events, and that it fails to suggest the right policies. (Leijonhufvud 2014, pp. 761-2). …
>
> The diagnoses of our current problems that we get from DSGE practitioners tend all to run in terms of stable GE systems beset with " frictions". … Walrasian constructions, even those of recent vintage … are hopelessly inadequate for dealing with financial crises and their aftermaths" (pp. 771-2)

Contributions to the geography of finance do not generally identify their degree of reliance on efficient-market or equilibrium frameworks. Pollard (2003) had recognized some years before that implicit reliance on efficient-market theory made it impossible to understand the credit-starvation of small businesses as disequilibria, the result of imperfect real-time decision-making. This provides a start toward a larger-scale breakdown of supply-demand relations, triggered by malfunctioning financial contracts but spreading to the broader real-sector effects, but it does not go all the way. Establishing that disequilibria in individual markets could generate broader-based financial malfunctioning and macroeconomic disturbances requires an analytical framework in which the level of aggregate demand can differ systematically from aggregate supply – that is, a Keynesian macro framework. At the behavioral base of this process is necessarily the assumption that economic agents are irrational, or that some agents are misinformed and taken advantage of by others, or that agents are operating with incomplete information sets. The latter two assumption sets set up "real-time" decisional contexts, as opposed to the notional-time context required to establish stable market equilibria.

Fortunately, real-time financial analysis rooted in a Keynesian macro framework does not have to be invented de novo. This approach constituted the analytical baseline of the work of the Keynesian economist Hyman Minsky (1975, 1982). Minsky and his followers were among the heterodox Keynesian economists who had been warning about financial instability and crises for nearly three decades (see Galbraith 2009). Hyman Minsky based his theory of capitalist dynamics on the centrality of money and credit. He argued that a defining characteristic of capitalist economies was chronic financial fragility, due to the tendency of debt commitments to outpace available cash-flows over the business cycle. Built-up financial fragility would generate financial instability once debt/cash-flow gaps put downward pressure on financial market prices. Following Keynes, Minsky argued that when the panic came, a run to liquidity would result.

Whether a financial crisis resulted depends on whether the central bank and fiscal authorities in the affected nation acts as a lender of last resort (satisfying liquidity demand) and undertakes countercyclical spending. Minsky encapsulated this "financial instability hypothesis" with his oft-repeated phrase, "stability is destabilizing." In this "Wall Street view," financial crisis arises as part of the normal cyclical rhythm of capitalist economies.

This brings us to the second step noted above: linking this logic to the space of interlinked global financial crises. Heterodox Keynesians have begun exploring how to adapt Minsky's nation-state- and US-centric ideas about the crisis-prone trajectory of financialized capitalism to the case of globally-interlinked crises in the neoliberal era. Consider Keen's (2015) summary of

the heterodox Keynesian approach to crisis:

> "Post Keynesian economics has two complementary theories of crisis that were used to predict the 2007 crisis and diagnose its causes: Minsky's financial instability hypothesis and Godley's stockflow-consistent approach. Both theories take a monetary perspective on capitalism and argue that the dynamics of private debt caused the crisis. … both theories imply that the current recovery will be short-lived because the underlying cause of the last crisis has not been addressed by subsequent economic policy." (p. 298)

Here, structural imbalances at the global level are combined with Minskyian dynamics to form the heart of the analysis. Crisis is an expression of imbalances at the level of the whole, driven by debt overloads and balance-sheet inconsistency. The stock-flow consistent approach makes it clear that imbalances across the globe – trade balances, savings-investment balances, and government revenue-expenditure balances - inevitably arise, and must equal zero as a matter of logic. What makes it Keynesian is a dual assertion: first, each of the above couplets includes one of the elements of aggregate demand; second, when aggregate demand is not sufficiently high, across the globe, only government action is capable of assuring that the required balance will not be forced by global economic shrinkage – that is, crisis.[8] In the heterodox view, then, falling levels of investment or consumption due to financial market collapse will unbalance the set of interacting macro imbalances and force downward shifts in economic activity unless an external force (such as government stimulus) steps in. This is what Leijonhufvud meant in observing that mainstream models have failed to identify the balance sheet recession. In the heterodox view, an analysis of a global economic crisis requires a global structural perspective. Structural rigidities are not disturbances that must be overcome if a more desirable market equilibrium is to emerge; they are the model.

Geographers have, until now, overlooked Minsky's analysis of financial instability. There are several reasons. First, Minsky produced his opus before the geography of finance came of age; and the papers he published prior to his death in 1996 were published almost exclusively in heterodox economics journals. So while these journals frequently reference Minsky's touchstone concepts and often use "Minsky" as a keyword, geography journals do not. Underlying this lacuna, in turn, is the fact that Minsky's ideas are rooted in Keynes' central ideas - that fundamental uncertainty, not probabilistic risk, underlies investment (Keynes 1936, chapter 12), and that inadequate aggregate demand will trigger stagnation (ibid., chapters 2-4). And geographers have, to this point, engaged only minimally with the core Keynesian concepts of fundamental uncertainty and independent aggregate demand.[9]

A third reason is that Minsky himself did not write about how space and place might affect the dynamics or outcomes of financial instability. He was always focused on a stylized depiction of financial instability and crisis, with the stages enumerated – from a robust to a fragile to a Ponzi financial structure – purposely left loosely defined. These stages, by design, could refer to an economic unit or to an economy as a whole; so the notions of variations across space, or how this framework might change in national settings other than the US, were not considered.

## 7. Conclusion: Debating post-crisis finance and financial instability

[8] Significantly, IMF economists have developed and begun to explore DSGE macromodels that pay attention to stock-flow-consistent linkages in global dynamics; see Kumhof et al. (2010).
[9] Storper (2011) and Bhattacharjea (2010) discuss the non-Keynesian basis of the New Economic Geography.

While geographers have clearly demonstrated that taking space into account can more clearly identify the scale and scope of financial processes, the economic approaches to finance on which much inquiry in the geography of finance implicitly relies have largely ignored its spatial dimensions. Mainstream theoretical and empirical models of financial crisis abstract from space; the heterodox approach highlights imbalances across space, but is indifferent to which areas are experiencing imbalance and why. The seriousness of this lacuna became evident when the subprime crisis exposed the fact that geographers had, until then, largely ignored financial crisis (except as one manifestation of a broader capitalist crisis, per Harvey's vision). Closing this gap in the wake of the subprime crisis will require a consideration, within the geography of finance, of how financial instability plays out through time and in space.

In effect, what is needed is a spatialization of Minsky's financial instability framework. While some economists have explored this terrain (Dymski 1999, Schroeder 2002), a fuller mapping depends on expanding the dialogue between geographers and heterodox economists (Dymski 2010), especially those who work with Minsky's ideas. Meanwhile, the importance of analyzing instability more directly is evident in two open debates in the geography of finance.

The first of these debates concerns the role of finance in mediating relations between the global economy and national capitalist formations. If, as Sokol (2013) has suggested, "financialisation as an inherently spatial process—as part of the search for spatial–temporal fix," does global finance operate flexibly, so as to permit several semi-autonomous 'varieties' of capitalist societies to coexist; or does it instead operate as an empowered forcefield, breaking down whatever barriers any given nation-state or region attempts to place on its freedom of movement.

Geographers have expressed increasing doubts about the former view. For example, Dixon (2010), hoping for a "common agenda" between the geography of finance and varieties of capitalism, argued that the institutional mechanisms of financialization could be usefully explored within the varieties-of-capitalism framework. But in a later paper (Dixon 2012), he criticizes the latter literature for presuming that "function follows from form" (p. 279). Engelen et al. (2010) also critique the varieties of capitalism framework for its "productivist" approach to finance, and argue that geographies of financialization are "in disarray." These doubts lead to an open question for further research: are the global forces creating this disarray homogenizing global space, or do they undermine some national differences while leaving variegated remnants of differentiation behind. French and Leyshon (2010, p. 2549) pointed out the irony that while the financial crisis required massive state intervention, "rather than developing a form of capitalism wherein the state exerted more control over the economy it seems conversely to have heralded an age of austerity and an emboldened form of hyper-neoliberalisation." But what then are the spatial and temporal characteristics of this hyper-neoliberalism?

The second ongoing debate turns on whether global finance organized through financial centres is a source of economic growth or instability and crisis. It was brought into focus by Martin (2011), who emphasized the uneven regional impacts of the crisis in the UK and the US, and then argued that the costs of hosting a global financial centre may outweigh the benefits. Martin et al. (2015) make a further argument: "spatial economic imbalance in the UK has to do with the progressive concentration of economic, political and financial power in London and its environs" (2015, p. 1). Wójcik (2012, 2013) argues that global financial centres have undercut effective regulation, both before and after the subprime crisis: "the global financial crisis 2007–09 originated to a large extent in the [New York-London] axis rather than in an abstract space of financial markets. … contrary to expectations the axis is not in decline" (Wójcik 2013, p. 2736).

This debate also involves the question of how to understand financial centres' spatial footprints.

On one hand, Cook et al. (2012), elaborating a theme introduced by Thrift (1994) and Leyshon and Thrift (1997), show how City of London insiders use cultural capital to reproduce its social exclusivity. On the other, Taylor et al. (2009) identify 20 command-and-control financial centres throughout the global economy; and Wainwright (2013) argues that the subprime crisis hit as deeply as it did precisely because the growth of "communities of practice" and expertise in peripheral regions (such as Leeds) linked by growing network relations to financial hubs (London) helped to "expose British mortgage lenders to the crash" (p. 1041).

In conclusion, the Queen could not accuse geographers, as she did mainstream macroeconomic theorists, of being blind to the perverse financial dynamics that preceded the subprime crisis. To the contrary, geographers had undertaken in-depth analyses of key elements undergirding these dynamics – from the global spread of innovative financial instruments and practices to the growth of subprime lending. But geographers did have an analytical blind spot: their work paid almost no attention to the increasingly severe financial crises that dotted the globe prior to 2007. The few economists who did "see it coming" largely built on the fragility-instability framework of Hyman Minsky. We have argued here that the problem of how to incorporate financial instability into spatial analysis is among the logical next steps for research in the geography of finance. Spatializing the analysis of instability in finance, in effect, will shed further light on some open debates among geographers. In the two debates reviewed immediately above, the dynamic of financial instability is present but not explicit. This is not to say that there is one clear answer to the question of how space and financial instability are interrelated. Given the plethora of institutional structures and regulatory regimes now characterizing financial systems around the globe, it would be surprising if one analytical conclusion sufficed. But the ongoing economic and financial crises clearly demonstrate the urgency of rendering more visible the links between financial instability and the space of financial systems.

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