



Innovation and the theory of fields

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Abstract

Innovation does not just involve the creation of new products, but also includes the need for new kinds of processes and organizations. Field theory can help us understand why some innovations are more piecemeal and others more revolutionary. It explicitly links innovation to the process of the emergence, adjustment, and transformation of markets (conceived of as fields). To illustrate this perspective, the case of the transition in the U.S. from a mortgage market dominated by savings and loan banks to the emergence of mortgage securitization dominated by the government sponsored enterprises and the largest private banks, is explicated. Field theory helps us understand the logic of this transition and the myriad players and innovations that helped produce a large part of what we consider to be modern finance. The case also shows the limits of economic theories of financial innovation and the sociology of finance. I end with a discussion of how field theory can inform subsequent research on innovation.

Keywords Innovation · Fields · Markets · Finance · Mortgage securitization

Introduction

Schumpeter famously defined innovation as “the doing of new things or the doing of things that are already being done in a new way” (1947: 151). Scholars have long recognized that innovation is not just about the creation of new products. Producing new products is embedded in organizing new processes to make those products and the creation of new forms of organization to organize that production (Schumpeter, 1947: 154; Crossan & Apaydin, 2011). All innovations depend on actors with knowledge to implement new technology and enable the possibilities that the technology affords (Helpman, 1998; Bresnahan & Trajtenberg, 1995; Garcia & Calantone, 2002). But technology requires interpretation. The use of new technology depends on actors figuring out what a new product is good for and crafting

products for customers that they will find useful (Rosa et al., 1999; Read et al., 2009).

In this paper, I propose that this recognition that innovation is broader than just the creation of new products needs more explicit situating in existing market situations. Innovations of any kind do not take place in a social vacuum, but occur in already organized markets with existing firms and extensive links to governments. As such, conceptualizing how innovation is situated in existing markets will give us more tools to make sense of the forces that come together to produce new products and markets. I propose here to use field theory as an underpinning to our understanding of how governments and firms create markets and implement innovation (Fligstein, 1996). Field theory provides us with conceptual tools to comprehend how innovation interacts with market processes in the production of new and useful things. It makes sense of the most consistent results in the literature on innovation by providing an understanding of how the current structuring of the market determines what kind of product, process, and organizational innovation will occur.

A field perspective on markets conceives of markets as social arenas where firms take one another into account in their actions, operate with a common understanding of the product produced, are involved in an active competition with one another for market dominance, and share a common understanding of the existing resources and constraints in

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the market (White, 1981; Fligstein, 1996; Rosa et al., 1999). Field theory posits that stable markets have incumbents and challengers where the largest firms dominate and set the terms for the operation of the market. The contestation within fields over market position affects the possibility for stability and change. Field theory proposes an explicit set of mechanisms by which markets come into existence, undergo constant piecemeal change, and occasionally are transformed (Fligstein, 1996). Part of using field theory to understand market process involves making sense of the role of government in market making processes. This reflects the theoretical argument that in modern capitalist economies, governments help constitute markets (Fligstein, 2001).

These ideas prove remarkably useful when applied to the context of innovation. First, innovation always occurs in and around existing fields. The possibility of creating new products can occur, for example, within the confines of an existing market as product extensions in response to new opportunities (for example, 5G cellphones). Field theory also promotes the view that new products, processes, and organizations can be introduced when challenger firms invade the terrain of existing markets and promise a new way of delivering the goods (for example, Uber and Lyft). The creation of wholly new markets can imply the innovation not just of new products but also by necessity new processes and new organizations to organize that space. Truly revolutionary new products are accompanied by the building of a whole ensemble of new markets as well as the transformation or extinction of existing ones. Field theory suggests that the entrepreneurs who innovate to create new markets operate like a social movement whereby new firms produce a political coalition with other competitors to define products, processes, and organizations in order to organize a new market (Fligstein & McAdam, 2012). At the same time, the success of a new market depends on interactions with customers; to produce a new product helps provide them not just with useful things, but things that can provide them with a positive identity (Levy, 1959; Belk, 1988).

The role of government usually in most accounts of innovation is passive or nonexistent, and when present, frequently seen as obstructive or negative. In the markets as fields perspective, governments help co-constitute markets.¹ Governments play important roles in the creation of new markets by helping create the conditions for firms to thrive and in many cases, act as an innovator of products that are then given over to firms to exploit (Block & Keller, 2011).

¹ The debate over whether or not governments can only be rent seekers or can indeed produce good industrial policy is beyond the scope of this paper. Suffice it to say, that understanding when and how governments aid or inhibit innovation requires theorizing how such intervention operates. Here, I focus on making sense of the myriad ways government can impact innovation.

In some cases, the government creates enterprises to help organize the market. Government purchases of products and services can stabilize markets and favor one set of producers over another. Governments provide research and development funds for many high technology markets thereby underwriting innovation. In stable markets, governments act as regulators. Governments respond to market crises by helping to choose winners and losers and frequently helps produce stability by supporting incumbents.

To illustrate the utility of the field approach to understanding innovation, this paper considers the case of financial innovation generally and a specific case of that innovation, the emergence of the market for mortgage securitization and the creation of products, processes, and organizations that formed that field. This was a case where there existed a stable market to provide consumers with mortgages. It was dominated by the savings and loan banks who had a model of financing mortgages where they took in deposits from individuals, lent those funds to home buyers, and held the mortgages until they were paid off. During the 1970s and 1980s, that business model underwent a severe crisis that eventually led to the bankruptcy of most of the savings and loan banks that dominated that market.

The crisis presented an opportunity for an entirely new set of markets to emerge to take control over the production of mortgages. It was based on an entirely different model for funding mortgages. Instead of using deposits from individuals, mortgages were funded by turning them into securities and selling those securities to a vast variety of investors. The government pioneered the securitization of mortgages. They created three organizations, called government sponsored enterprises (hereafter, GSE) in order to help raise funds for mortgages and create the market for mortgage securities. The organizations were called the Federal National Mortgage Association (known as “Fannie Mae”), the Government National Mortgage Association (known as Ginnie Mae”), and the Federal Home Loan Mortgage Corporation (known as “Freddie Mac). to organize this new market (DiVenti, 2009). This created a whole set of innovations that revolutionized not just the products being produced, but also the processes by which mortgages were procured and the organizations that did the work. Indeed, entirely new sets of markets emerged to eventually allow for the massive production and sale of mortgage securities.

It is useful to consider alternative accounts of how this happened and what it meant in order to see the value of the field approach. Economists in general view innovation as any kind of change that leaves society better off (Bresnahan & Trajtenberg, 1995; Helpman, 1998). In the case of financial innovation, financial economists have proposed that innovation should move capital markets towards being more “efficient” (Frame & White, 2011; Levine, 1997; Lerner, 2006). What they mean by this is that capital should be allocated

towards its most productive use. In order for this to happen, risk needs to be controlled and access to financial products needs to be diffused to anyone who might profitably use them.

Recently, the sociology of finance, inspired by science studies has posited that financial innovation is about the creation of new financial instruments (Preda, 2007). In their account, one set of main actors are financial economists themselves. They take the tools they have invented in the academy to financial markets to create products that push financial markets towards greater efficiency. This kind of action, what is called “performativity,” is thought to underlie many of the financial innovations that have created the integration of national and international capital markets (Callon, 1998). From this perspective economic models are not just a description of reality, but instead a way to help structure how markets ought to be (MacKenzie, 2006; Callon, 1998). The sociology of finance and the view of financial economics are complementary accounts. The one emphasizes that the innovated instruments make markets more efficient in the way that capital is allocated while the other gives authorship for those instruments, at least partially, to economists themselves.

The evidence for the strong form of the claim of the role of financial economists in the making of financial markets is mixed (MacKenzie et al., 2008). At best, the claim can be made that some of the tools of modern finance have been invented by financial economists, but their implementation depended on a wide variety of actors in financial markets including government, companies, traders, and institutions like stock and bond exchanges to make them work (MacKenzie & Millo, 2003; MacKenzie, 2006).² The performativity perspective is narrow in another way. By focusing only on the financial products, it misses the focus in innovation studies on process and organizational innovation. These kind of innovations have proved to be as important to the social structuring of markets as the financial instruments themselves.

The rest of this paper has the following structure. First, I discuss innovation in general. Then, the ideas of field theory are developed to help situate our understanding of innovation. Next, I turn to an explication of financial innovation by focusing on the sociology of finance and financial economics. Then, I show the utility of the field perspective in making sense of one of the most important financial transformations of the past 50 years: the use of securitization to create mortgage backed securities. In doing so, I show how

many of the processes that field theory highlights help make sense of the product, process, and organizational innovations necessary to understanding the securitization revolution. The paper concludes by discussing the utility of field theory in the study of innovation.

What is innovation?

The study of innovation in the economy has a long history in organizational theory, business studies, engineering, and economics. Not surprisingly, like most aspects of social science, the study of innovation has been siloed by disciplines. This has meant, not just that scholars ignore work in nearby fields, but it has resulted in a plethora of definitions of innovation (Garcia & Calantone, 2002). There are a useful set of literature reviews that have worked to narrow this gap (Anderson et al., 2004; Camison-Zornoza et al., 2004; Garcia & Calantone, 2002; Gopalakrishnan & Damanpour, 1997; Hansen & Wakonen, 1997; Crossan & Apaydin, 2011). In this section, I briefly review some of these issues to lay out the broad outlines of innovation research in order to suggest how field theory and field research have points of connection.

I offer two useful related definitions of innovation. First, Garcia and Calantone (2002: 112) suggest that.

“‘Innovation’ is an iterative process initiated by the perception of a new market and/or new service opportunity for a technology based invention which leads to development, production, and marketing tasks striving for the commercial success of the invention.”

This definition stresses that it is just not products that are innovations, but the social structure built around an invention that is necessary to make it commercial. If you can’t reliably produce a product and find customers for it, it does not count as an innovation. It also implies that innovation is not a one off process. The ongoing feedback between the creation of the product, the processes used to create the product, and the organization of the firm and market require constant adjustment on the part of market actors.

Crossan and Apaydin define innovation as:

“Innovation is: production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and (an outcome 2011: 1155).

Like the first definition, this perspective views innovation as not just dependent on having something be a physical object, but can reflect more broadly the way services are delivered, marketed, and produced. By this definition, new

² MacKenzie, one of the principal advocates of this view, has treated the performativity idea as a hypothesis. His empirical work has always been sensitive to the context of such innovation by showing how financial products are embedded in larger arenas which are consistent with the discussion of markets as fields (MacKenzie, 2003, 2006).

processes or organizational forms are to be considered innovations consistent with Schumpeter's view (1947).

Garcia and Calantone (2002) suggest that research has shown that one can conceive of innovations on a scale from quite disruptive to product or process extensions. A disruptive innovation creates entirely new markets, engulfs, co-opts, or destroys existing markets, allows entirely new processes of production to evolve, and promotes entirely new organizational forms (Christenson, 1997). These kinds of innovations are rare, but when they occur, they can transform whole parts of economic life (e.g., electricity or the computer chip). At the other end of the spectrum, an innovation might act to produce a new product, process, or organizational change, but it will do so in the context of an existing market. This is the more “normal” kind of innovation, one that tends to reproduce the positions of the largest and more powerful firms. A related distinction that is also found in the empirical literature is the idea that a revolutionary innovation occurs at the beginning of a product lifecycle when more needs to be done to create a new market for a new product. Once products and markets exist, innovation can involve piecemeal changes to the product, process, and organization. Scholars view innovation as not just those moments where something entirely new emerges, but as something that occurs throughout the entire continuum of a product lifecycle.

One can also separate out the causes of innovation from the diffusion of an innovation across firms and markets. Generally, scholars have found that product innovation occurs in larger firms in more concentrated markets that might face more serious competition. Innovation in such markets is viewed as an ongoing process whereby the distinct advantages of firms who are innovative allow them to maintain their positions as incumbent firms. In the management literature, there is good evidence that innovative firms are more likely to stay at the top of the heap for a substantial period of time (Crossan & Apaydin, 2011). Diffusion of innovation in a particular market frequently occurs between firms that are connected through networks that promote information flow, cooperation, and knowledge about innovation.

Pittaway et al. (2004) review the literature on how the social structuring of markets, which they characterize as networks, affect the innovative capacity of firms more generally. They show that relationships with suppliers, customers and intermediaries such as professional and trade associations are important factors affecting innovation performance and productivity. These relationships generally act as a way to obtain information on external knowledge. They also offer firms access to partners with whom they can cooperate on new projects, obtain access to new markets and technologies, get help moving products to market faster, pool complementary skills, and safeguard property rights. The evidence also illustrates that those firms which do not co-operate, and which do not formally or informally exchange knowledge

tend to innovate more slowly. In the marketing literature, Hakansson and Eriksson (1993) demonstrate how buyers and suppliers respond to each other to engage in innovation. Pittaway et al. (2004) also acknowledge that research has shown that national systems of innovation play an important role in the diffusion of innovations by providing regulatory and monetary support for innovation.

Finally, Crossan and Apaydin (2011) work to provide an integration of factors thought to effect innovation from macro to micro, based on the literature. They find that there were 10,946 papers with innovation in the title in the Social Science Citation Index 1981–2008. They sampled 545 of these papers and analyzed their abstracts in order to understand the topics covered. They show that the literature has grown dramatically over time and that it is mainly focused on firms. The topics covered in these papers mirror the topics already discussed. One facet of organization that they add is an interest in leadership and entrepreneurship. Here, they cite the literature on how individual leaders act to create an environment of innovation at a firm and how their motivational skills matter. The literature they discuss suggests that strategic actors are at the center of innovation in firms and that they matter for the success or failure of innovation within firms.

Markets as fields

Field theory offers the study of innovation two conceptual devices that help to organize how to think about the innovation process. First, field theory can be used to construct an explicit theory of the social construction of markets, something that is often lacking in innovation accounts which assume markets exist and introduce elements of their structure in an ad hoc fashion. It does so by theorizing the dynamics of the emergence, stability, and transformation of markets. So, understanding the underlying state of the market explains why market emergence has to create so much innovation: products, process, and organizations have to be created from scratch. It also explains why stable markets produce continuous improvement and extensions of products as incumbent firms work to preserve their positions. Field theory is explicit in its acknowledgement that a particular field is embedded in other fields and those connections impact what kinds of innovation are possible and likely. It connects markets to each other in a way that allows scholars to understand how innovation occurs, in close by markets, and helps to produce new markets. Unlike much of innovation research, field theory also views the government as potentially part of every market project.

Second, field theory offers scholars insights into how skilled strategic actors (“leaders”) help to organize firms and markets in the first place and create the possibility of

continuous innovation. It posits that such actors must figure out how to get other people to cooperate to produce something in the first place. From the perspective of field theory, “entrepreneur” is a social role that exists when a field has not yet been organized, and actors need to figure out all of the elements of creating the possibility of a new market. In settled markets, skilled actors in incumbent and challenger firms still must work to maintain the position of their firm. This entails constant monitoring of the markets and constant attempts to improve their products and processes. Using field theory to understand markets offers a way to combine many of the insights of work mentioned in the reviews above into a framework that makes sense of the various elements that scholars have uncovered.³

Field theory has been used intensively and explicitly in making sense of market dynamics. White (1981: 571) defines a market as a “reproducible role structure.” This implies that a stable market is a field that contains firms who compete with one another by watching one another and making moves in response to what others are doing (Fligstein, 1996; White, 1981). This allows them to reproduce their position in the market on a period to period basis. Note that field theory begins with exactly the opposite view of neo-classical theories of stable markets. Instead of anonymous buyers and sellers, we have instead producers who know each other. This fits most of innovation theory which views innovation taking place in a market where firms are connected to their competitors, suppliers, and customers.⁴

There are four kinds of shared understandings necessary to make a stable market (Fligstein, 2001). First, actors share a sense of what the product is and how to organize to produce that product. Second, actors have a shared sense of the positions of others in recognition of which actors in the field have more or less power and who occupies which roles. Markets tend to coalesce around incumbents (dominant firms in terms of market share and positioning in the market) and challengers (smaller firms who occupy less central positions). Third, they have a shared understanding of the “rules of the game” that guide what actors are doing in response to others’ moves in the market. Finally, incumbents and challengers have differing interpretative frames about what it means when their competitors make a move.

Markets as fields are structured along incumbent/challenger dynamics, with actors possessing varying resource endowments and vying for advantage. Incumbents claim a disproportionate share of the material and symbolic

resources in the field, and their interests and views tend to be disproportionately reflected in the rules and organization of the field (Porac et al., 1995). Challengers usually conform to the prevailing order of the field by taking what the system gives them, but they can also usually articulate an alternative vision of the field. Fields can be hierarchical and conflictual but can also contain coalitions and cooperation.

Field theory conceives of existing fields as being embedded in complex webs of other fields. Three sets of binary distinctions will help us characterize the nature of these “other fields” and their relationships with any given field. The first distinction is between *distant* and *proximate* fields. Proximate fields are those fields with recurring ties to, and whose actions routinely impact, the field in question. In the case of markets, these can include suppliers, customers, and the government. Distant fields are those who lack ties and have virtually no capacity to influence a given field. The second distinction is between *vertical* and *horizontal* fields. The distinction captures the formal hierarchical relations that exist between a specific pair of proximate fields. A field that is vertically linked to another is one that exercises authority over it. This implies that a field in a dependent position is subservient. When neither field exercises authority over the other, but they mutually depend upon each other, we say their relationship is horizontal or even cooperative. In the world of markets, whether or not the relationship is vertical or horizontal depends on the empirical links between buyers, sellers, suppliers, and the government. In one kind of market, upstream suppliers may have dominance while in another, suppliers might be at the mercy of customers.

The final distinction is between *government* and *non-government* fields. In the modern world government actors generally have the formal authority to intervene in, set rules for, and generally pronounce on the legitimacy and viability of most non-governmental fields. Sometimes this authority can be given over to third party NGOs or intergovernmental organizations. But this is usually by the agreement of state authorities. One of the basic insights of field theory is that the government is itself a set of fields (Laumann & Knoke, 1987; Bourdieu et al., 1994). This means that the construction of the government results in a set of policy domains where government and non-government actors have varying amounts of power and operate according to rules. In a democratic government, these rules can be legislated or constructed by an administrative government. Governments do not just act as rule makers or regulators but can also engage in policies whereby they support research, innovation, and education. They can own firms, invent products, and act as customers for the private sector.

It follows that the government will be one main source of attention for non-government actors in many fields. In modern societies, the policy domains of the government are dominated by people who work for a bureaucracy.

³ Field theory has several roots in sociology including the work of Pierre Bourdieu (see Bourdieu and Wacquant (1992) for an introduction). For an explication of the differences between such theories see Kluttz and Fligstein (2015).

⁴ A similar point is made in the markets as networks perspective in marketing (Kjellberg & Olson, 2016; Mattson & Johanson, 2006).

Table 1 Innovation, Strategies, and Field Structures

Actors	Emergence	Stable Market	Transformation
Entrepreneurs/Challengers	Products, process, and organization	Follow incumbents	Products, process, and organization
Incumbents	—————	Product extensions	Defend old order, get government help; follow and/or co-opt challengers
Government	Research and development; create regulations for new products, underwrite market product, process, and organization	Regulation, defend incumbents, research and development	Help produce new order; product, process, and organization

Non-government actors can lobby government agencies of varying kinds. Field theory is agnostic about who gets dominant and dominated positions in these conflicts and suggests it is an empirical question as to the relative power of the regulated and the regulators. Sometimes government agencies might rule, in others, powerful actors in the field being regulated, and sometimes the dominated may rise up to change both.

Armed with these distinctions, it is now easier to appreciate just how complicated and potentially consequential are the ties that link any given field to its broader field environment (Schneiberg, 2013). Consider a firm producing and selling its products in a single market. That firm participates in a complex web of proximate fields external to the firm: financiers, suppliers, customers, competitors, and government regulators. Each of these fields can be consequential for a given firm. They can prove to be a source of innovation and information or a potential threat to the stability of a firm in a particular market.

Take some simple examples. If a government decides to provide financial incentives for people to buy electric cars, those who produce such cars are getting a subsidy that improves their position vis a vis those who only produce cars with gas engines. It might move the suppliers of electric cars from being challengers to being incumbents. Alternatively, if governments decide to raise tariffs against foreign producers for inputs into a production process, firms in a downstream market that use the inputs may find themselves in crisis. By virtue of their increasing costs, they may lose market share to firms who may be from other countries but are not subject to those tariffs. These kinds of complex direct and indirect effects of changes in the relations between fields can produce much of the turbulence in market economies. One of the key findings in innovation research is that challenges push firms towards innovation. While some of this comes from direct competitors in a market who might be innovating new products or processes, it can also be due to competitive challenges that are the unintended outcome of the dependence of firms on the government and firms in other markets.

Innovation and market dynamics

Table 1 summarizes the link between the state of the market (emerging, stable, or undergoing transformative change), the types of innovation common to that condition, and the role of various actors in producing different kinds of innovations depending on those conditions. It is useful to work through the links between the state of the market, what actors are doing, and what kinds of innovation this implies.

By definition, an emerging market requires that the product, processes, and organizations must be invented to create a stable market. Everything is up for grabs. No one knows what the product will be, how money will be made, how to organize production, who the incumbent and challenger firms will be, and what the rules and resources governing stable production will look like. By definition in newly forming markets, firms have to form, they have to innovate new processes, and of course, find customers for new kinds of products. This will cause entrepreneurs to operate as coalition builders who work pragmatically to solve their own and others collective problems.

In this account, governments are important as they may provide funding resources, opportunities to innovate, and new forms of rules or regulations to promote market formation. They may be the source of new products, processes, and even create new forms of organization. They can aid the process of stabilizing markets by producing regulation that favors one set of firms over another that helps establish who is an incumbent and who is a challenger and legitimates the business model that dominates the market.

A stable market implies that products are well defined as are production and marketing strategies. Dominant firms have advantages and use their resources and the existing structure of the field to reproduce their position while challengers work to stay in the game. The role of innovation in a stable market is to work to maintain or improve one's position in the market. One reason that

research finds that incumbent firms tend to be the most innovative is that they have the most resources to begin with and the most connections to suppliers and customers. As the game is being played, they can introduce new products and processes to maintain their position. It is possible for challengers to innovate to improve their position or at least imitate the incumbents in order to keep their position in a field. If challengers prove too threatening, incumbents can imitate them or use mergers to acquire them. If challengers follow incumbents in innovation, this means that even as an innovation spreads through firms in a market, the current positions of firms in the market can remain stable. Government may act as a regulator of competition, supply funds for research and development, and on occasion defend incumbents from attacks by challengers.

The most common source of transformative market change in an established market is some form of exogenous shock (Fligstein & McAdam, 2012). The transformation of markets can also be endogenous if challenger organizations can innovate in a radical enough fashion to overcome their disadvantages. This is the most unusual case for a large scale transformation of a market largely because incumbent firms have huge advantages which would have to disappear in an immense crisis that only challengers are fit to exploit. The advantage of size, market position, and product extensions simply have to fail to work to reproduce the market order. Incumbents will then respond by trying to get government to intervene on their side. One solution can be some form of compromise where incumbents adapt to the incursions of challengers by adopting the new product and processes or buying up challenger firms thereby ceding the market order to the challengers.

Markets may be transformed by invading groups that had not previously been active players in the focal market. These outsiders will not be bound by the conventional rules and understandings of the market.⁵ The success of outsiders at altering the market order may depend on many factors, including their strength prior to invasion, the proximity (in social space) of their former field to the target field, and their social skill in forging allies and mobilizing defectors. While governments may begin by helping incumbents, they may also eventually help to re-organize the market for the new challengers.

Transformative change can be due to large-scale, macro-level events that disrupt numerous field linkages and lead to crises. These often, but not always, involve the government.

⁵ This process is akin to the one suggested by Christensen (1997). Even incumbents who are engaging in some innovation will not undertake disruptive innovation for fear of upsetting their customers and their control over the market. Challengers are thus more likely to produce such radical innovations.

Examples include economic depressions, wars, and regime change. Like a Russian doll, markets can be nested hierarchically within broader sets of markets, meaning that they are dependent on other markets. Destabilizing change in one market can influence another one, making a market particularly susceptible to change when there is rupture or crisis in the market on which it depends. But in other circumstances, interdependent market relations can also buffer *against* change to the focal field (Fligstein & McAdam, 2012:59–61). This is because that market can count on the reciprocal legitimacy benefits and resource flows that it shares with related markets to resist change from within. Overall, the transformation of an existing market resembles the emergence of a new market in terms of the amount of innovation necessary to reorganize things. To build a new market to replace the one that exists requires new products, processes, and organizations.

Financial innovation

It is useful to illustrate some of these principles of market dynamics and innovation by working through one particularly important case of financial innovation: the creation of the market for mortgage securities. The traditional function of finance has been to intermediate between those who have capital they are not using and those who seek capital to invest (Frame & White, 2004). The development of a financial sector that does this efficiently has been shown to be important for economic growth (Levine, 1997). The financial part of the economy has grown dramatically in the past 40 years (Fligstein & Shin, 2007; Krippner, 2010). Moreover, while the financial economy accounts for 10–14% of GDP in the U.S., the sector has captured the lion's share of profits, from 20–40%. It is the case that people who work in finance have seen their incomes grow dramatically. Greenwood and Scharfstein (2013) show that while employment has increased, the average wages and salaries paid in the sector have doubled since 1980 both in absolute and relative terms. These changes have been so substantial that scholars have posited that we are experiencing a process of financialization by which the tools and products of finance have come to not just dominate the traditional financial markets like banking, stocks, and bonds, but have constructed a logic that extends to nonfinancial firms, governments, and households (Epstein, 2005, Krippner, 2010; Van der Swan, 2014; Davis, 2009; Erturk et al., 2007; Engelen et al., 2010).

The economics literature on financial innovation provides several definitions. Tufano (2003: 178) says.

“Broadly speaking, financial innovation is the act of creating and then popularizing new financial instruments as well as new financial technologies, institu-

tions and markets. 'The 'innovations' are sometimes divided into *product* or *process* innovation, with product innovations exemplified by new derivative contracts, new corporate securities or new forms of pooled investment products, and process improvements typified by new means of distributing securities, processing transactions, or pricing transactions.'

Frame and White (2004: 118) concur:

“A financial innovation represents something new that reduces costs, reduces risks, or provides an improved product/service/instrument that better satisfies participants' demands. Financial innovations can be grouped as new products, new services, new 'production' processes, or new organizational forms.”

Both definitions stress that financial innovation is not just products, but processes and organizations. The empirical economic literature on financial innovation arrives at similar conclusions to the literature on innovation in general. Financial innovation is likely to be undertaken by larger financial firms. There are a couple of twists on these results as well. First, there is substantial literature that suggests that some financial innovation is in response to regulation, often to try and work around it (Silber, 1983; Tufano, 2003). Second, not all financial products may serve their most important function of bringing together the suppliers of capital with those who have a productive use for it. In this way, financial innovation might produce products that are “good” or “bad” from the perspective of overall efficiency (Litan, 2010).

One interesting feature noted by the authors of the most recent surveys of the literature on financial innovation is the relative lack of empirical research by economists on the topic (Silber, 1983; Frame & White, 2004, 2011; Tufano, 2003). Frame and White (2004) speculate that the main reason this is so, is that financial economists, the natural set of scholars who might do such work, are more interested in the question of the degree to which financial markets are efficient. This means they are intent on demonstrating that efficiency and if there is evidence they are not, work to provide solutions that might help make them more so. This speculation fits nicely the performativity perspective in the study of the sociology of finance (Preda, 2007). So, for example, the Black-Scholes-Merton formula for the pricing of derivatives was created to make financial markets work to price those products more efficiently (MacKenzie & Millo, 2003). The implementation of that formula required buy in on the part of traders and took some time to become generally used.

The account that I will give of financial innovation in the mortgage market is critical of this approach. My account places financial products in an important position in the discussion. But, as I will show, these products were likely to have been invented by people in industry who were trying

to solve a practical problem presented by their search for customers. Moreover, in spite of the definition of financial innovation that included process and organization as part of innovation, the empirical literature in economics has had too much of a focus on financial instruments and tends to downplay the creation of new processes and organizations that were as important to the market as the financial products. By using field theory to make sense of what innovations occurred and how the instruments, firms, and markets were re-organized, I show how financial innovation follows the path of innovation more generally. Indeed, it is difficult to understand financial innovation without seeing it in this broader context.

Field theory and the transformation of mortgage finance

The context for the study is the fall of the savings and loan model of mortgage acquisition and the rise of mortgage securitization as the source of funding for American mortgages from 1970–2008. I choose this case because it illustrates many of the principles of how field theory predicts what has to happen for a new market to emerge and replace an existing one. It also provides for a context to illustrate what kinds of innovation have to occur and which actors we will expect to produce those innovations. So, for an old market to be replaced, its incumbents must have needed to face challenges that would have eventually undermined them. Here, there were a set of crises in the savings and loan model of providing mortgages that eventually bankrupted the industry. In the face of these crises, the industry appealed to the government for help, as predicted by field theory. The government tried to save the industry by providing regulatory changes to help restructure the market, but these ultimately failed.

This opened up the opportunity for a new set of entrepreneurs to innovate new products, processes, and organizations to continue to provide mortgages for the American consumer. The case illustrates how government helped pioneer mortgage securitization and other market processes and products eventually championed the takeover of that market by the GSE enterprises when the savings and loan industry collapsed. Eventually banks of all kinds came to become focused on participating in mortgage securitization establishing a new set of markets to provide funding for mortgages. This new market ended up dominating not just the mortgage industry, but finance more generally. Securitization, the process technology at the core of mortgage securitization created a massive wave of structured finance across all kinds of financial assets and thereby created additional new products, processes, and organizations. The case follows closely the perspective I put forward in discussing

the utility of field theory as a way to understand the process of revolutionary innovation in all of its complexity.

From the 1930s until the late 1980s, the main way that Americans got mortgages was by borrowing money from their local savings and loan banks. These banks took deposits locally, loaned money to home buyers, and held onto the mortgages until homeowners paid them off. This is described as the “originate to hold model” of mortgage finance (Jaffee & Rosen, 1991). This process was highly regulated by both state and federal governments. States laws controlled banking charters which generally held down competition. Federal laws restricted banks in how much they could pay for loan deposits and those deposits were insured to encourage small investors to hold passbook accounts. The Federal Government created the main product—the prime mortgage, a 30 year fixed interest rate mortgage with a 20% down payment—which was sold to finance homes (Fligstein, forthcoming, Ch. 2).

Mortgage securitization is the industry where mortgages are used as raw material to create financial instruments that mimicked bonds (McConnell & Buser, 2011). Mortgages were packaged into securities which would pay money to investors who would receive a fixed interest rate payment based on the flow of monthly mortgage payments made by homeowners. Mortgage securities were created by the Federal Government in the 1960s in order to ensure that sufficient capital was available to finance homes for the baby boom generation (Quinn, 2019). The government also created the government sponsored enterprises, who became known as Fannie Mae, Freddie Mac, and Ginnie Mae (DiVenti, 2009). Eventually private banks entered the mortgage securitization industry beginning in the 1980s. The transformation of the mortgage industry was from a local industry where mortgages were originated and held, into one where mortgages became raw materials for securities that become one of the main products in the international financial system. The invention of securitization as a process by which assets could be turned into cash flows reflected a radical change in the financial sector and was the core innovation in what scholars in the 1980s meant by financial innovation (Tufano, 2003).

It is useful to begin this discussion by noting the breadth of financial innovation in the mortgage industry since 1970. Table 2 presents a list of 29 innovations that were necessary to produce the market for mortgage securitization. Nineteen were product innovations, four were process innovations, and six were changes in organizational forms. The list was created using the existing literature and tables put together by Tufano (2003), Finnerty (1988, 1992), and Frame and White (2011). Of the 19 product innovations, seven were mortgage products, six securities products, three aided the creation of the mortgage market, and three arranged short term credit to finance mortgage funding.

What explains these changes? Financial economists generally view product innovation as oriented towards making

financial markets more efficient, i.e. promoting the allocation of capital towards users who have a need for it from those who have it to lend. The problem with this explanation is that it is quite vague. Plausibly, all of these innovations might do this. But such a perspective does not explain much about why the innovations take these forms nor the conditions under which an innovation might come into existence. More recent work in economics suggests these innovations serve a number of purposes (Frame & White, 2011). Some exist to lower transaction costs (like process innovations); others to reduce some form risk or to reallocate risk from one market participant to another (many of the securities products); some provide opportunities to increase an asset’s liquidity (securities products); some are in response to a regulatory or legislative change (new organizational forms); and others in response to the level and volatility of interest rates (mortgage products). While these explanations can be used to plausibly classify the motives behind the innovations, they tell us little about the context in which they occur.

Table 2 contains two other pieces of information: who pioneered an innovation and when the innovation occurred. The first thing to note is that the government directly is responsible for seven of the 29 innovations. These innovations were amongst the most important in the market. They include creating the first mortgage backed securities, the creation of the GSE to organize the market for such securities, and the efforts of the GSE to standardize the mortgage origination process through computerization (Green & Wachter, 2005).

This count of government involvement actually undercounts the role of government in financial innovation. The government, through its regulatory agencies and legislation, provided rules that created many of the opportunities that private firms were able to exploit to grow entirely new products and businesses (Sellen, 1990). Such reforms included the creation of the GSE, the various acts to regulate banking, and regulatory agencies like the FSLIC, SEC, Federal Reserve, and FDIC. In this case, the Tax Reform Act of 1986 made the creation of MBS-CDO simpler by creating special purpose vehicles to organize such securities (Ranieri, 1996). Reading the economics literature, one would be hard pressed to see an account that stressed the positive role of the government. Indeed, the standard line is that most financial innovation is the result of trying to escape regulation by avoiding taxes or creating products that skirt rules made by regulatory agencies. My superficial counting of those innovations reveals the central importance of government, consistent with field theory.

Most of the rest of the innovations were made by individual financial institutions. The role of finance economics in these innovations is harder to sort out with this cursory analysis. But there are not many of these products

Table 2 Product and Process Innovations in the American Mortgage market, 1970–2007

Product innovation	Entrepreneur	Date
Securities		
Mortgage backed security (MBS)	Ginnie Mae	1970
Collateralized Debt Obligation (CDO) (Tranching)	Lewis Ranieri-Solomon Brothers	1984
Asset Backed Security (ABS)	Sperry Lease Investment	1985
ABS-CDO	Various investment banks	1980s
CDO-CDO	Various investment banks	2004
Credit Default Swaps	J.P. Morgan	1991
Mortgage Products		
Adjustable Rate Mortgage (ARM)	Federal Home Loan Bank authorized	1981
Option ARM	Golden West	1981
Home Equity Loan (HEL)	Countrywide Financial	1993
Alt-A Mortgage	Countrywide Financial	1990s
Subprime Mortgage	Various banks	Early 1990s
Interest only Loan	Various banks	2000s
Loan Refinancing with Cash Withdrawal	Various banks	1990s
Instruments to aid mortgage market		
Credit Scores	Fair Isaac Co	1989
Bond ratings (used for CDO)	Moody's	1909
Special Investment/Purpose Vehicle (SPV/SIV)	Drexel Burnham Lambert	1980s
Instruments to buy short term credit (shadow banking)		
Money Market Funds	Henry Brown TIAA-CREF	1970
Asset Backed Commercial Paper (ABCP)	Federal Reserve	1917
Repurchase Agreement (Repo)	Federal Reserve	1917
Computerized common application	GSE, Mortgage Bankers Association	1980s
Computerized processing of loans	Countrywide Financial	1980s
Use of models to determine credit worthiness	Countrywide Financial	1980s
Securitization models and tranching	Solomon Brothers	1980s
Organizational innovation		
Government Sponsored Enterprises (Fannie, Freddie, and Ginnie)	Federal Government	1968
Mortgage brokers	Sonnenblick-Goldman	1983
Mortgage wholesalers	Various banks	mid 1980s
MBS/CDO Securitizers	Solomon Brothers	1980s
Loan Servicers	Many banks	mid 1980s
Vertically integrated Mortgage Securities producers	Countrywide Financial	mid 1990s

that reflected purely academic theories. So, for example, we know that the tranching of mortgage backed securities (hereafter, MBS) was the invention of Lewis Ranieri at Solomon Brothers in the early 1980s. Ranieri (1996) saw tranching as a way to convince investors to buy MBS. Customers were nervous about buying MBS because they were worried that mortgagees would resell their homes before investors recouped their investment in the bond. This is called prepayment risk. Ranieri solved this objection by dividing the mortgage pool in any security into tranches that reflected the likelihood of prepayment. That way,

investors could buy riskier tranches which had higher interest rates but also higher chances of prepayment (say, bonds rate BBB) or safer ones that had lower interest rates but less chance of prepayment (AAA) (McConnell & Buser, 2011). Similarly, all of the new mortgage products (Alt-A, Home Equity Loans, Jumbo Loans), were created to expand the number of people who could afford to buy a house and can be usefully described as product extensions. Here, products were marketed to the financial situations of various parts of the population and thus reflected market segmentation of customers (Green & Wachter, 2005; Lea, 1996).

Table 3 New markets created as result of shift from Originate-To-Hold market to Securitization

Market	Entrepreneur	Year
MBS-CDO Issuers	GSE	1970
MBS-CDO Underwriters	Investment banks	1970
Credit Scores for mortgages	Equifax	1975
Bond rating	Moody	1909
Servicers	Various banks including Countrywide	1980s
Credit Default Swaps	J.P. Morgan	1994
Sellers MBS-CDO	GSE and Investment banks	1980s
ABCP Market for MBS-CDO	Various banks	1990s
Repo Market for MBS-CDO	Various banks	1990s
Money market for MBS-CDO	Various banks	2000s

A second important thing to note about Table 2, is the timing of these innovations. Six occur before 1980, 15 happen in the 1980s, six in the 1990s, and only two after 2000. This implies that in order to understand financial innovation in the American mortgage market, the most active period was the 1980s, the time when most of the markets that make up mortgage securitization were put into place. Again, neither the literature on financial innovation nor the literature on the role of financial economics in creating new financial products has much to say about this timing. If innovations were unrelated to one another, one would expect them to occur evenly spaced in time, not bunched up. Clearly, this was not the case.

Table 3 presents the emergence of new markets for mortgage products over the 1970–2010 period. The idea here is to not just look at innovations or single firms, but the creation of new product markets. Again, the role of the government is important. The GSE helped to create the market for MBS in the first place by innovating the product. They also organized the great expansion of the market that drew in other financial institutions including savings and loan, commercial, and investment banks. They helped create large markets for MBS fixed rate securities for customers in all kinds of financial institutions including those outside of the U.S. (McConnell & Buser, 2011). The other feature that is evident is that many of these markets pre-existed the innovations that appeared in the 1980s. The innovations of the 1980s and 1990s in the mortgage market were based on already existing markets where products that proved useful to the creation of the MBS market were available and could be re-directed for the great expansion of the mortgage market. Field theory, with its emphasis on the links between markets as a source of crisis, innovation, and change can be used to see that these older markets provided new outlets for products necessary to make the MBS market work.

Field theory as an explanation of the innovation that produced mortgage securitization

Taken together, these results suggest some important conclusions and present an interesting puzzle. First, economic views that stress efficiency or how innovation responds to regulation do not provide us with much of an understanding of the timing and forms of innovation in the mortgage market. The positive proactive role of government is striking here and the concentration of innovation in the 1980s and to a lesser degree the 1990s begs attention. Similarly, there is little evidence that these innovations reflect the financial economics profession helping to produce products to make these markets more efficient. The sociology of finance just does not offer us much insight into innovation in the mortgage market. The puzzle here is what explains what happened. In particular, what happened in the 1980s to create this frenzy of innovation and why did the government play such an important role?

Field theory suggests that where we should begin, in trying to understand financial innovation in the mortgage market, is with the social structure of the mortgage market field circa 1975. In field theory, a rapid period of extreme change would imply a large crisis (or set of crises) that worked to transform an existing field. The wholesale changes of the types observed in Tables 2 and 3 that were focused in the 1980s and 1990s offer us a clue as to what to look for. If the changes in the tables had been piecemeal, one would have expected that the new innovations would be more continuous over the 40 year period. But the explosion of change implies a wholesale transformation of the field. The clues to this change would revolve around making sense of the crisis in the existing market whereby both incumbents and challengers failed to be able to reproduce their positions.

Circa 1975, most borrowers got their mortgages from savings and loan banks (Fligstein & Goldstein, 2010). The conventional or prime mortgage that was their main product had its roots in the Great Depression of the 1930s. The government, through a series of regulations and the creation of regulatory authorities defined the conditions under which savings and loan banks could pay out interest with accounts protected by depository insurance. This system worked remarkably well from 1940 until 1975 (Green & Wachter, 2005; Sellen, 1990). The rate of home ownership in the U.S. went up from 40% in 1940 to 63% by 1970. A standing joke was that banking was a boring business based on the principal of 3–6–3. Bankers would pay depositors 3% interest, loan money to mortgagees at 6%, and be out on the golf course by 3 P.M.⁶

This business model depended on stable interest rates and relatively low inflation (Fligstein & Goldstein, 2010). Beginning in the 1960s, interest rates increased dramatically as did inflation. This external shock undermined the stability of the savings and loan dominated mortgage market field. It meant that savings and loans banks could no longer borrow money from depositors at low interest, nor could they raise the prices they charged for loans. By the late 1970s with inflation running at 10% or more and interest rates peaking at 17%, the entire industry was in a crisis (Barth, 1991; McConnell & Buser, 2011).

Field theory suggests that incumbent market actors in a crisis will appeal to the government to help them out. This is exactly what happened. In order to save the industry, the Federal government passed a series of measures that the industry wanted (Gilber, 1986). First, Regulation Q that controlled interest rates was abolished. Second, banks were allowed to experiment with adjustable rate mortgages that would respond to changes in interest rates. Most importantly, depositors had their insurance raised from \$25,000 to \$100,000. Banks were allowed to give depositors any interest rate they chose and make whatever investments they wanted. I note that the government favored the solution of the industry and worked to try and salvage the industry (Fligstein & Goldstein, 2010). But, these measures were not enough to save the business model of the savings and loan banks. By the late 1980s, many of them had gone bankrupt and the government stepped in to rescue the industry by selling off assets (Barth, 1991). Figure 1 shows the spike in

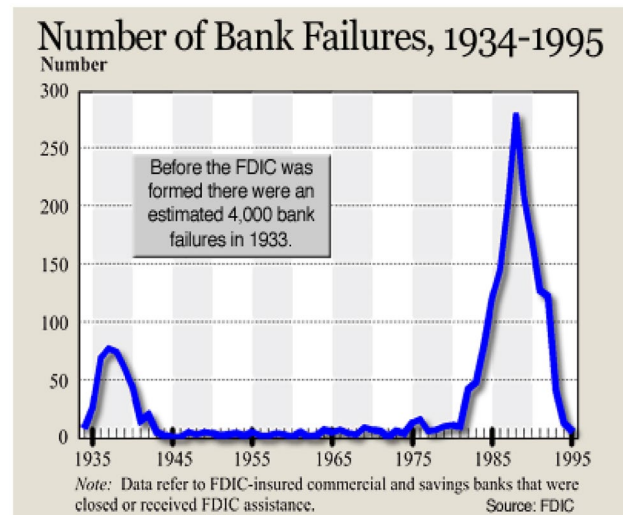


Fig. 1 Failures of savings and loan banks. Source: Federal Deposit Insurance Corporation

bank failure in the late 1980s that was the end of the savings and loan dominated mortgage market field.

This collapse of the mortgage market meant that there was an opportunity for a new way to organize how households would get mortgages. The question was, who was going to do it and how would their business model differ? From the perspective of field theory, we would have expected that new market participants would emerge from nearby markets. We would also expect that in this large of a crisis, there might be government intervention. It should be noted that by mid 1980s, the question of who was going to help Americans get mortgages was not just an economic question, but a political one as well. A Republican Administration led by President George Bush was fully in favor of using the government to make sure Americans could get mortgages (McConnell & Buser, 2011; Poon, 2009).

From the perspective of field theory, creating a new market required new products, new processes, and new players. These players would have to coalesce around a business model that benefitted them. All of the innovations of the 1980s and 1990s reflected the working out of how the new markets for mortgages were going to be structured. The short answer is that the new system would finance mortgages by having financial investors provide capital through their purchase of MBS. It turns out that some of the banks that originated the mortgages, sold the mortgages to make securities and then turned around to buy those securities as investments.

This shifted the product market from one focused on providing mortgages to consumers to one that used those mortgages as raw materials for securities sold to investors (McConnell & Buser, 2011; Poon, 2009). One helpful way to think about this is geographical. Circa 1975, the market

⁶ I note that Fig. 1 also shows that the government helped households with lower incomes to get mortgages through the use of FHA loans. These loans were backed by the government and mortgagees had to buy insurance against their potential foreclosure. They also provided loans to veterans for homes through the Veteran's Administration. Neither of these parts of the market were more than 10% of the whole market.

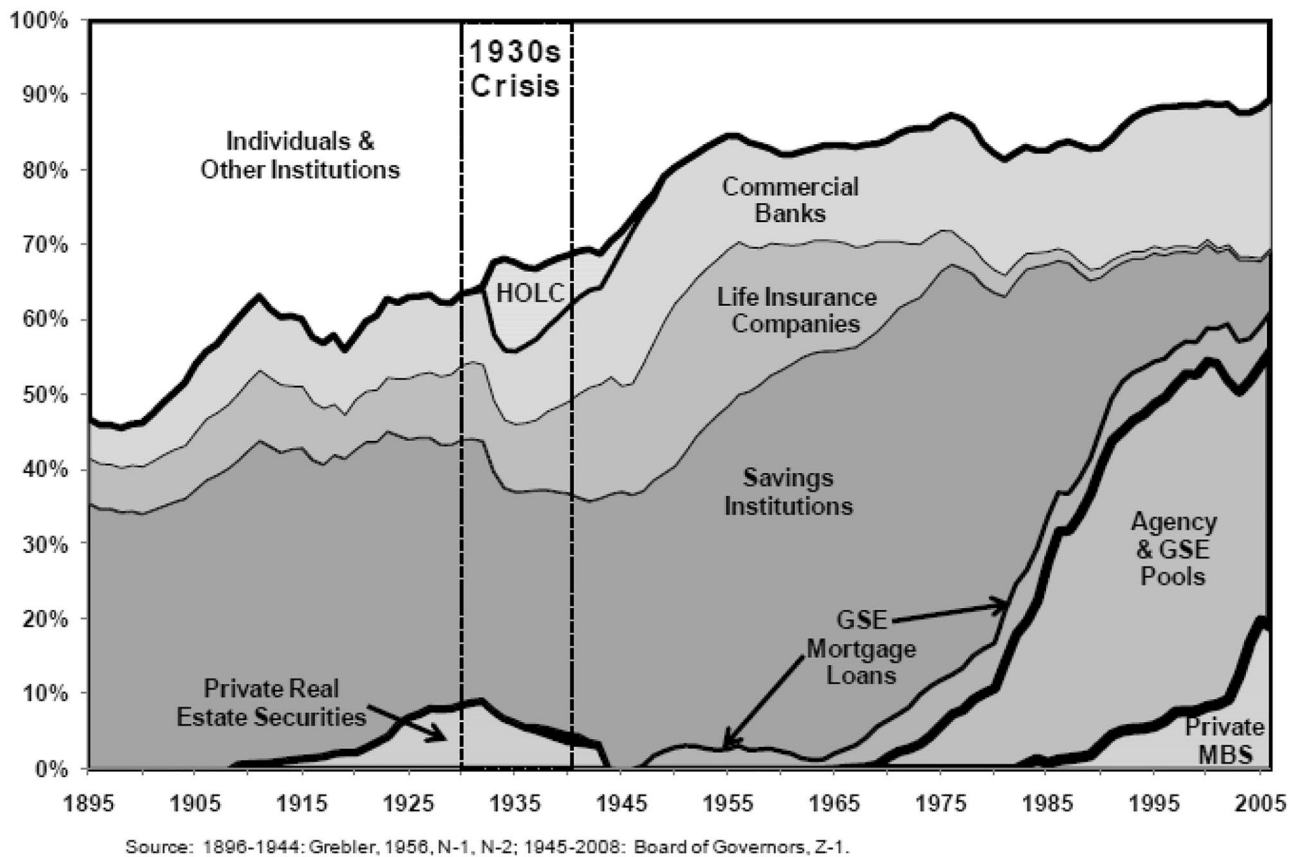


Fig. 2 Shares of home loan market by type of lender

for mortgages was local (between a buyer and a local savings and loan banks that used deposits from local citizens). Circa 1995, those mortgages had become the raw material for securities, sold to banks in mid-town Manhattan where they were converted to various kinds of mortgage securities and sold to investors all around the world. Mortgages were no longer products for people to buy houses. They became the input into new forms of financial innovations that allowed investors to load up on what appeared to be relatively safe, but high yielding investments.

Now the economics profession would view this transformation mainly from the perspective of efficiency. But in our story, it is not clear a priori why mortgage securitization was the answer. The goal of the new market as field was not to be efficient, but instead was pragmatic. The goal was to make sure Americans could continue to get home loans. This incredible transformation involved not only all of the different kinds of financial institutions, savings and loan, commercial, mortgage, and investment banks, but the government and many other existing financial markets that were repositioned to take part in these exchanges.

It is here that we see the driving force for much of this transformation was the government (Quinn, 2019). During the 1960s, the government was worried that local savings

and loan banks would be able to provide enough credit for baby boomer households to buy homes. They decided to create the GSE in order to help raise funds for these mortgages. The first mortgage backed security was issued by Ginnie Mae in 1970 (Fligstein, *forthcoming*, ch. 2).

The GSE created a new field. The GSE were not in the business of directly providing loans to individuals. Instead, they bought mortgages from mortgage brokers. The idea of the GSE was to offer a supplement to the savings and loan model, not to replace it. But, the government wanted to do this without having to hold the mortgages originated on their own accounts. By making the GSE, “private,” they were able to take the GSE mortgages activities out of the federal deficit calculations. By keeping the useful idea that the GSE was really the government, they were able to borrow money cheaply to buy those mortgages in the first place. The real innovation here was the idea that once these mortgages were bought with borrowed money, they could be turned into securities and sold off to institutional investors (McConnell & Buser, 2011; Poon, 2009). Because they were sponsored by the government, the full faith and credit of the government was thought to back up their bonds. This allowed them to borrow money at near prime interest rates to buy mortgages. It also made the bonds appear to be super safe and

attain high credit ratings. They produced securities based on those mortgages and sold them to investors as well as holding bonds on their own accounts.

This new field evolved slowly from 1970 until the mid-1980s. One reason was that most Americans continued to get their mortgages from savings and loan banks. Figure 2 shows that 50–60% of all mortgage debt was held by savings and loan banks during the 1970s and into the early 1980s. It was only with the crisis of those banks that their share began to plummet. Figure 2 shows the story of the rise of the GSE. By the mid-1980s, they had surpassed the savings and loan banks as the largest holders of mortgage debt; and securities issued by the GSE dominated the mortgage market by 1990 (Jaffee & Rosen, 1991).

Turning mortgages into securities was no small feat. The bond markets initially resisted this idea as one that was too risky (Ranieri, 1996). Moreover, the investment banks who specialized in producing and selling corporate bonds was made up of small firms organized into partnerships. One can ask why so many financial institutions making so many different kinds of financial products eventually got involved in the mortgage securitization market. The answer was simple: the size of the market was so substantial (between \$500 million–\$4 trillion a year from 1990–2007) and the profits were so large they proved irresistible. As mentioned earlier, by 2003, the mortgage securitization industry with about 10% of the labor force was earning 40% of all profits in the American economy (Fligstein & Goldstein, 2010). But to get where these markets were by 2003, the market for mortgage securitization relied on a set of complex exchanges across many markets to help process millions of mortgages every year into what became trillions of dollars of investment.

Pragmatic actors had a vision as to what they were trying to accomplish. These pioneers, particularly Countrywide Financial led by Anthony Mozillo and David Loeb, saw the potential of massively centralizing the market for originations and using mortgages as raw material for securities. But they had many practical hurdles to overcome to make this work. This process of innovation was not thought out or planned. What happened is that actors saw opportunities and pragmatically figured out how to produce products to take advantage of those opportunities (Fligstein, forthcoming, Chapter 4). If Countrywide had failed, we might have gotten an entirely different model, one more focused on the GSE and perhaps, one that would not have produced the crisis of 2008.

Countrywide Financial had the ambition of becoming the largest mortgage originator in the country (Rose & Haney, 1992). But to do so, they need to solve a number of practical problems. So, for example, they pioneered using computerized applications to make loan decisions (Markus et al., 2005). But to make thousands of decisions every day, they needed to create algorithms that would allow them to quickly decide for most people if they would get mortgages (Hess

& Kemmerer, 1994). These algorithms needed to be able to quantify the likelihood that someone would continue to pay their mortgage. There was a huge amount of historical data on who was likely to pay off their mortgage and who would not. Computers allowed Countrywide Financial to model this data and provide an estimate of the likelihood that a particular person would continue to pay. The two strongest predictors in this model were a person's credit score and the changes in house prices in the households' zip code (LaCour-Little, 2000).

Credit scores had been mostly used, up to this point by local retail stores to decide if they should give credit to customers (Poon, 2007). But the need to have standardized credit scores for millions of households meant that a new lucrative business could be built off of gathering systematic information, computerizing it, and using formulas to generate a credit score. The companies that produced these products got large and rich by gathering information and generating those scores. Fair, Isaac Co. held onto its formulas for determining those scores but made those formulas available to companies who gathered data like Equifax.

But Countrywide's push to originate millions of mortgages every year did not take place in a vacuum. They needed to be able to fund mortgages and if they were not going to hold onto all of the mortgages they originated, they needed someone to buy them and turn them into securities. This reorganization of the mortgage market operated in a complex way to promote financial innovation but also to connect financial markets that had previously been separated. To do mortgage securitization required a whole new set of firms, markets, products, and regulators (Poon, 2009). First, because MBS were securities they fell under the purview of the Securities and Exchange Commission. This created new roles for those who owned the mortgages. Issuers were those who had the mortgages and wanted to create the bonds (in this case the GSE became the largest issuers). Underwriters were hired from the investment banking community to build the securities and sell them to institutional investors. Because MBS were securities, bond rating companies had to be employed to rate the tranches of MBS. Finally, the mortgages were sold into special purpose vehicles to separate them from banks. A special purpose vehicle is a subsidiary created by a parent company to isolate financial risk. Its legal status as a separate company makes its obligations secure even if the parent company goes bankrupt. These vehicles owned nothing but the mortgages. They were managed by loan servicers who received payments from mortgagees each month and passed on their share to investors (McConnell & Buser, 2011).

One way to think about the mortgage securitization field was that it created a market for those securities. But in doing so, it had to connect the institutions who originated mortgages, the institutions who knew how to create securities and sell them, and providers of capital from

financial markets to provide money to buy mortgages and hold them on institutions accounts. This process increased the demand for these instruments, and this pushed forward the search for more mortgagors. This created innovation in the mortgage market in order to attract more home buyers. Home buyers were offered mortgages that would allow them to buy into the housing market in the first place and allow them to buy the largest house they could afford. Adjustable rate mortgages, Alt-A, and subprime, were all products to expand the size of the markets. Jumbo loans and home equity loans were created to allow borrowers who lived in geographic markets where prices for houses were high, like California and New York in expensive markets, to borrow more money to buy a house in the first place or take money out of their rapidly appreciating homes (Goldstein & Fligstein, 2017).

This was not the end point of the organization of the securitization market. During the mid-1990s, Countrywide Financial, Bear Stearns, and Lehman Brothers began to vertically integrate their banks (Gellrich et al., 2005; Goldstein & Fligstein, 2017; Fligstein, forthcoming). They began to realize that by being in one part of the chain to produce mortgage securities, they were potentially losing out on charging lucrative fees for other parts of the business. Origination and securitization were classic fee generating businesses. By the mid-1990s, fees were one of the main sources of growth for many banks (DeYoung & Rice, 2004). By selling mortgages to the GSE, financial institutions missed a chance to reap all of the benefits. In practice, this meant that the two investment banks bought mortgage originators to help them keep up a supply of mortgages for securitization. It also allowed them to capture fees associated with mortgage origination. Countrywide Financial saw that money was to be made at all parts of the process. They could originate mortgages, sell some of them to the GSE, start their own securitization business, and hold securities as investments. They were able to do this by borrowing money in the Asset Backed Commercial Paper Market and the Repo Market. They also proliferated loan products and innovated home equity loans, Jumbo loans, and subprime loans. This allowed them to reap fees at all parts of the mortgage process.

By the late 1990s, the Countrywide Financial vertically integrated model spread across the largest American banks (Goldstein & Fligstein, 2017). By the turn of 2000, there were no longer savings and loan, investment, or commercial banks. For banks involved in the mortgage securitization market, they participated in all parts of the market. From one perspective, these banks looked like financial conglomerates involved in lots of markets and products, like Citibank. From another, they looked like classically vertically integrated resource producers, like oil companies (Countrywide Financial). They controlled the market from origination, to securitization and held onto and sold securities

using borrowed money. While the good times rolled, these banks captured large and growing profits (Goldstein & Fligstein, 2017).

Conclusion

My brief rendition of innovation in the American mortgage market shows how the economic and sociology of finance approaches to financial innovation miss the important structuring of markets as fields. In this case, there is little evidence that the financial economics profession played a large role in the restructuring of the mortgage industry into the mortgage securitization industry. Moreover, some of the main innovations in the new market were organized and created by the government, not entrepreneurs or small scale producers who were trying to get around government rules.

From the perspective of product innovation, new financial products and processes played two sorts of roles in the structuring of mortgage securitization. First, they facilitated the integration of various markets by providing processes and products that could feed upstream from the origination of mortgages, to their construction as securities, to their funding, and ultimately, their purchase by financial institutions. So, for example, without computerized applications systems and credit scores, the mass production of mortgages would have been difficult. Without historical data on mortgages and algorithms to parse the data, the tranching of securities could not have been done.

Second, and equally important, many product innovations were to interest customers in new products. The proliferation of mortgage types allowed households with varying needs and credit records (for better or worse) to obtain mortgages. The financial securities created from mortgages were packaged in such a way as to sell the kind of risk that investors wanted to take at a profitable price. Much of the innovation was about sellers looking for customers, a classic marketing problem. This means that financial innovation is not so different from all other forms of product innovation. The construction of markets involves finding ways to create not just a system of production, but a set of customers who understand the products and find them useful.

Field analysis provides a set of general theoretical takeaways. By viewing product, process, and organizational innovation as independent of one another, innovation scholars take both a descriptive and positivist approach to such innovation. Most of the work we have describes such changes and then asserts motivations to innovation. Most approaches also act as if each innovation is unrelated to others. So, we have a laundry list of possible causes that we apply to each of them in a search for common themes. This makes each case independent of one another. It definitely makes analysts miss being able to understand moments of revolutionary innovation from more piecemeal innovation.

Field analysis pushes those interested in innovation to seriously situate innovation not just in products, processes, or individual firms. Instead, field analysis pushes forward the study of innovation by providing an explicit set of concepts to tell if a particular market is emerging, stable, or in crisis. It provides conceptual tools to not just evaluate the current state of the market and its participants, but also the forces that might push innovation forward. It helps us understand what kind of innovation is likely given the particular organization of a field.

One innovative part of field analysis is that by explicitly considering the role of government in the construction of markets as fields, government moves from being the enemy of innovation to being a watchful participant. This does not say that government always does good in field construction, but only that field analysis without government is incomplete. Given government's role in creating property rights, governance structures, and rules of exchange as well as regulation, innovation, and sometimes market creation, analysts risk making sense of innovation by willfully ignoring the role of government (Arndt, 1979). So, for example, Kjellberg and Olson (2016) document the key role of government in the construction of legal cannabis markets. Other scholars have shown how important government was to the construction of casino gambling (Humphreys, 2010) and clean technology (Doganova & Karnoe, 2014).

A conception of markets as fields represents one way for scholars to make sense of the dynamics of market change. Innovation allows firms to maintain their positions in an established market. It also can help produce entirely new markets as fields. By considering innovation as a strategic pragmatic action, instead of celebrating the lone entrepreneur, we see that market actors watch one another, work to solve their problems pragmatically, worry about what customers want, and when they do so, borrow new innovations from one another. But the dynamics of markets as fields means that the basic order can be undone no matter how innovative. Creative destruction is for better or worse the eternal truth about capitalism.

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References

- Anderson, N., De Dreu, C. K. W., & Nijstad, B. A. (2004). The routinization of innovation research: A constructively critical review of the state-of-the-science. *Journal of Organizational Behavior*, 25, 147–173.
- Arndt, J. (1979). Toward a Concept of Domesticated Markets. *Journal of Marketing*, 43(4), 69–75.
- Barth, J. (1991). *The Great Savings and Loan Debacle*. Washington D.C.: American Enterprise Institute.
- Belk, R.W. (1988). Possessions and the Extended Self. *Journal of Consumer Research*, 15(2): 139-68.
- Block, F., & Keller, M. (2011). *The State of Innovation: The U.S. Government Role in Technology Development*. London, UK: Routledge.
- Bourdieu, P., & Wacquant, L. (1992). *An Invitation to a Reflexive Sociology*. University of Chicago Press.
- Bourdieu, P., Wacquant, L., & Farage, S. (1994). Rethinking the state: Genesis and the structure of the bureaucratic field. *Sociological Theory*, 12, 1–18.
- Bresnahan T., & Trajtenberg M. (1995). General purpose technologies 'engines of growth'? *Journal of Economics* 65:83–108.
- Callon, M. (1998). *Laws of the Market*. London, UK: Sociological Review Monograph Series.
- Camison-Zornoza, C., Lapiedra-Alcami, R., Segarra-Cipres, M., & Boronat-Navarro, M. (2004). A meta-analysis of innovation and organizational size. *Organization Studies*, 25, 331–361.
- Christensen, C. (1997). *The Innovator's Dilemma*. Harvard Business Review Press.
- Crossan, M. M., & Apaydin, M. (2011). A Multi-Dimensional Framework of Organizational Innovation: A Systematic Review of the Literature. *Journal of Management Studies*, 47(6):1154–1191.
- Doganova, L., & Karnøe, P. (2014). Building markets for clean technologies: Controversies, environmental concerns and economic worth. *Industrial Marketing Management*, 44, 22–31.
- Davis, G. (2009). *Managed by the markets: How finance reshaped America*. Oxford University Press.
- DeYoung, R., & Rice, T. (2004). How Do Banks Make Money? The Fallacies of Fee Income. *Economic Perspectives*, 28(4), 34–51.
- DiVenti, T. (2009). Fannie Mae and Freddie Mac: Past, Present, and Future. *Cityscape: A Journal of Policy Development and Research*, 11(3):231–242.
- Epstein, G. (2005). *Financialization and the World Economy*. London, UK: Edgar Elgar.
- Erturk, I., Froud, J., Johal, S., Leaver, A., & Williams, K. (2007). The democratization of finance? Promises, outcomes and conditions. *Review of International Political Economy*, 14(4), 197–216.
- Engelen, E., Erturk, I., Froud, J., Leaver, A., & Williams, K. (2010). Reconceptualizing financial innovation: Frame, conjuncture and bricolage. *Economy and Society*, 39(1), 33–63.
- Finnerty, J. D. (1988). Financial Engineering in Corporate Finance: An Overview. *Financial Management*, 17(4), 14–33.
- Finnerty, J. D. (1992). An Overview Of Corporate Securities Innovation. *Journal of Applied Corporate Finance*, 4(4), 23–39.
- Fligstein, N. (1996). Markets as politics: A political-cultural approach to market institutions. *American Sociological Review*, 61, 656–673.
- Fligstein, N. (2001). *The Architecture of Markets*. Princeton University Press.
- Fligstein, N. (Forthcoming). *The Banks Did It: An Anatomy of the Financial Crisis*. Cambridge, Ma.: Harvard University Press.
- Fligstein, N., & McAdam, D. (2012). *A Theory of Fields*. Oxford University Press.
- Fligstein, N., & Shin, T. (2007). Shareholder value and the transformation of the U.S. economy. *Sociological Forum*, 22(4), 399–424.

- Fligstein, N., & Goldstein, A. (2010). The anatomy of the mortgage securitization crisis. In M. Lounsbury & P. Hirsch (Eds.), *Research on the Sociology of Organizations* (pp. 29–70). Emerald Publishing.
- Frame, W. S., & White, L. J. (2004). Empirical Studies of Financial Innovation: Lots of Talk, Little Action? *Journal of Economic Literature*, 62, 116–144.
- Frame, W. S., & White, L. J. (2011). Technological Change, Financial Innovation, and Diffusion in Banking. In A. N. Berger, P. Molyneux, & John. Wilson, (Eds.), *The Oxford Handbook of Banking* (pp. 356–402). Oxford University Press.
- Garcia, R., & Calantone, R. (2002). A critical look at technological innovation typology and innovativeness terminology: A literature review. *The Journal of Product Innovation Management*, 19, 110–132.
- Gellrich, T., Hackethal, A., & Holzhäuser, M. (2005). Vertical Integration and Bank Performance. *Wirtschaftsinformatik Proceedings* 2005.
- Gilber, R. A. (1986). Requiem for Regulation Q: What it did and why it passed. Federal Reserve Bank of St. Louis. February 1986:22–37.
- Goldstein, A., & Fligstein, N. (2017). Financial markets as production markets: The industrial roots of the mortgage meltdown. *Socio-Economic Review*, 15(1), 483–510.
- Gopalakrishnan, S., & Damanpour, F. (1997). A review of innovation research in economics, sociology and technology management. *Omega*, 25(1), 15–28.
- Green, R., & Wachter, S. (2005). The US Mortgage in Historical and International Contexts. *Journal of Economic Perspectives*, 19, 93–114.
- Greenwood, R., & Scharfstein, D. (2013). The Growth of Modern Finance. *The Journal of Economic Perspectives*, 27, 3–28.
- Håkansson, H., & Eriksson, A.-K. (1993). Getting Innovations out of Buyer-Supplier Relationships. *Journal of Business to Business Marketing*, 1(2), 3–34.
- Hansen, S. O., & Wakonen, J. (1997). Innovation, a winning solution? *International Journal of Technology Management*, 13, 345–358.
- Helpman, E. (1998). *General Purpose Technologies and Economic Growth*. MIT Press.
- Hess, C. M., & Kemerer, C. F. (1994). Computerized Loan Origination Systems: An Industry Case Study of the Electronic Markets Hypothesis. *MIS Quarterly*, 18(3), 251–275.
- Humphreys, A. (2010). Megamarketing: The creation of markets as a social process. *Journal of Marketing*, 74, 1–19.
- Jaffee, D., & Rosen, K. (1991). Mortgage securitization trends. *Journal of Housing Research*, 1, 117–137.
- Kjellberg, H., & Olson, D. (2016). Joint markets: How adjacent markets influence the formation of regulated markets. *Marketing Theory*, 17(1), 95–123.
- Kluttz, D., & Fligstein, N. (2015). Varieties of Field Theory. In S. Abrutyn (Ed.), *Handbook of Sociological Theory* (pp. 185–205). Springer.
- Krippner, G. (2010). *Capitalizing on Crisis*. Harvard University Press.
- LaCour-Little, M. (2000). The evolving role of technology in mortgage finance. *Journal of Housing Research*, 11, 173–201.
- Laumann, E., & Knoke, D. (1988). *The Organizational State*. University of Chicago Press.
- Lea, M. J. (1996). Innovation and the cost of mortgage credit: A historical perspective. *Housing Policy*, 7(1), 147–174.
- Lerner, J. (2006). The new financial thing: The origins of financial innovations. *Journal of Financial Economics*, 79, 223–255.
- Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, 35(2), 688–726.
- Levy, S. (1959). Symbols for sale. *Harvard Business Review* 37: July–August.
- Litan, R. E. (2010). In Defense of Much, but Not All, Financial Innovation. Working Papers 10–06, University of Pennsylvania, Wharton School, Weiss Center.
- MacKenzie, D., & Milo, Y. (2003). Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange. *American Journal of Sociology*, 109, 107–145.
- MacKenzie, D. (2003). Long-Term Capital Management and the sociology of arbitrage. *Economy and Society*, 32(3), 349–380.
- MacKenzie, D. (2006). *An Engine, Not a Camera*. MIT Press.
- MacKenzie, D., Muniesa, F., & Siu, L. (2008). *Do Economists Make Markets?: On the Performativity of Economics*. Princeton University Press.
- Markus, M.L., Dutta, A., Steinfield, C.W., & Wigand, R.T. (2005). The Computerization Movement In The US Home Mortgage Industry: Automated Underwriting From 1980 To 2004. Accessed at Research Gate on 21 May 2018.
- Mattson, L., & Johanson, J. (2006). Discovering market networks. *European Journal of Marketing*, 40(3/4), 259–274.
- McConnell, J. J., & Buser, S. A. (2011). The origins and evolution of the market for mortgage-backed securities. *Annual Review of Financial Economics*, 3, 173–192.
- Pittaway, L., Robertson, M., Munir, K., & Neely, D. D. A. A. (2004). Networking and innovation: A systematic review of the evidence. *International Journal of Management Reviews*, 5(6), 137–168.
- Poon, M. (2007). Scorecards as devices for consumer credit: The case of Fair, Isaac & Company Incorporated. *Sociological Review*, 22, 284–306.
- Poon, M. (2009). From new deal institutions to capital markets: Commercial consumer risk scores and the making of subprime mortgage finance. *Accounting, Organizations and Society*, 34, 654–674.
- Porac, J. F., Thomas, H., Wilson, F., Paton, D., & Kanfer, A. (1995). Rivalry and the Industry Model of Scottish Knitwear Producers. *Administrative Science Quarterly*, 40(2), 203–227.
- Preda, A. (2007). The sociological approach to financial markets. *Journal of Economic Surveys*, 21, 506–528.
- Quinn, S. (2019). *American Bonds: How Credit Markets Shaped a Nation*. Princeton University Press.
- Ranieri, L. (1996). The Origins of Securitization, Sources of Its Growth, and Its Future Potential. Pp. 31–44 in *A Primer on Securitization*, edited by Leon T. Kendall and Michael J. Fishman. Cambridge, Mass.: MIT Press.
- Read, S., Dew, N., Sarasvathy, S. D., Song, M., & Wiltbank, R. (2009). Marketing Under Uncertainty: The Logic of an Effectual Approach. *Journal of Marketing*, 73, 1–18.
- Rosa, J. A., Porac, J. F., Runser-Spanjol, J., & Saxon, M. S. (1999). Sociocognitive dynamics in a product market. *Journal of Marketing*, 63, 64–77.
- Rose, P., Haney, R., & Jr. (1992). The players in the primary mortgage market. *Journal of Housing Research*, 1, 91–116.
- Schneiberg, M. (2013). Lost in Transposition? (A Cautionary Tale): The Bank of North Dakota and Prospects for Reform in American Banking. Pp. 277–310 in Michael Lounsbury and Eva Boxenbaum (Ed.) *Institutional Logics in Action, Part A (Research in the Sociology of Organizations, Vol. 39 Part A)*, Bingley, UK: Emerald Group Publishing Limited.
- Schumpeter, J. A. (1947). The Creative Response in Economic History. *Journal of Economic History*, 7(2), 149–159.
- Sellon, G., & Jr. (1990). The role of government in promoting home ownership: The U.S. experience. *Economic Review July–August, 1990*, 37–44.
- Silber, W. L. (1983). The Process of Financial Innovation. *American Economic Review*, Vol. 73, No. 2, Papers and Proceedings of the Ninety-Fifth Annual Meeting of the American Economic Association 89–95.

- Tufano, P. (2003). Financial innovation. Pp. 307–355 in the Handbook of the Economics of Finance. New York: Elsevier.
- Van der Swan, N. (2014). Making sense of financialization. *Socio-Economic Review*, 12(1), 99–129.
- White, H. (1981). Where do markets come from? *American Journal of Sociology*, 87(3), 517–547.

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