Chapter 2
Empirically Grounded Theory

Introduction

Suppose financial markets are not empirically “perfect.” Further suppose that “regulation” of financial markets is required for any financial market to operate toward the economic ideal of market perfection. And suppose the practice of regulation should be based upon a theory of regulation (regulatory principles) which can be empirically shown to have worked in financial history. Then what kind of regulatory theory could this be and how constructed and how verified? The goal is a cross-disciplinary theory of regulation—which can prescriptively direct financial markets toward the ideal of economic perfection. The economic ideal is for any financial market to operate with transparent financial information, rational financial behavior, effective financial performance, and integrity in economic risk. And this is a traditional idea in banking regulation.

One can see this in the perspectives of practitioners of regulatory processes. For example, Paul Volcker, former chairman of the US Federal Reserve System, wrote of his experience: “Twenty years ago, I left the world of central banking… In the world in which I grew up and had policy and regulatory responsibilities, commercial banks (and their sister deposit-taking institutions) dominated the financial structure of advanced economies. By its nature, that process carried risks and was potentially crisis-prone, particularly when the financial intermediaries were thinly capitalized. Consequently over time, modern economies developed an elaborate system of supervision and regulation,… From a competitive standpoint, there are burdens and costs in regulation. There are also advantages in access to the ‘safety net’ provided by official oversight and protections.” (Volcker 2008)

Based upon new information technologies, dramatic change occurred in the world’s financial systems: “But that was coherence and simplicity compared with the financial world of the 21st century. One symptom is the seemingly infinite variety of financial practices and instruments… (And) underneath all that financial innovation is the reality of the computer and communications revolution. That is what has made possible the speed and complexity of financial transactions and the
internationalization of markets. With change so rapid and diverse, it is difficult—indeed impossible—for the bureaucratic world of regulation and supervising to keep pace. Indeed, some of the incentive to innovate is the attraction of escaping official oversight. For financial operations national borders have become almost irrelevant in a world of open markets and global finance.” (Volcker 2008)

One can see this view about the relation of financial practice and theory in the academic research community. For example Charles W. Calomiris and Gary Gorton wrote: “Banking panics have long been a motivating factor in the development of financial regulation and monetary policy. Ideally, public policy should reflect the lessons of history, once relevant differences between historical and contemporary environments are considered. Designing public policy is complicated not only because it is difficult to distill the appropriate lessons from history, but also because banking and capital markets continue to be transformed by technological change. That is to say, history does not end.” (Calomiris and Gorton 1991)

Financial panics have been studied by historians to provide an empirical ground for economic theory and appropriate public policy in banking regulation. However as witnessed by the continuation of bank panics (particularly the global financial panic of 2007–2008 and the bank panics of the Euro dollar crisis of 2011–2112), bank panics persist. Why? Why has contemporary regulatory theory (based upon only disciplinary economic theory) not yet solved the financial system challenge?

**History: Panic of 1857**

Charles Calomiris and Gary Gorton provided a definition of a bank panic: “Historically, bank debt has consisted largely of liabilities which served the function of a circulating medium of exchange, bank notes and demand deposits. The contract defining this debt allowed the debt holder the contractual right to demand redemption of the debt (into currency) on demand at par… A banking panic occurs when bank debt holders at all (or many) banks in the banking system, suddenly demand that banks convert their debt claims into cash (at par) to such an extent that the banks suspend convertibility of their debt into cash…” (Calomiris and Gorton 1991)

In 1857, a bank panic occurred; and it was the first US panic on a national scale, involving both the east and west of the USA. Charles W. Calomiris and Larry Schweikart wrote: “We explain the origins of the Panic of 1857, examine its spread, and compare state banking systems’ responses. We describe the decline in western land and railroad investments and the consequent stress on securities brokers and banks in eastern cities, and trace the transmission of the shock to other regions. Bank performance depended not only on regional conditions and links to eastern banks, but on the ability to coordinate behavior…our explanation for the origin of the Panic of 1857 revolves around the financing of western railroad and land speculation in eastern financial markets. The proximate cause of the panic was the bankruptcy of securities brokers who borrowed from eastern banks to finance their dealings in the stock and bond markets. To understand the panic’s origins, one must
begin with the economic and political history of the speculative boom and bust in investments in the West during the 1850s.” (Calomiris and Schweikart 1991)

In that decade prior to 1857, large amounts of securities were issued by private companies. These were mainly stocks in railroad companies and bonds issued as loans to railroad companies. There were also bank stocks and warrants to western lands. Calomiris and Schweikart wrote: “By the mid-1850s railroads could be grouped usefully into three categories: eastern roads that served established routes; older western roads built mainly to serve local distribution needs; and newer western roads, sometimes financed through special land grants to serve as trunk lines connecting older areas of settlement and eastern markets with new areas of settlement. As early as 1854, older locally oriented roads in the West found their earnings falling and their opportunities shrinking, as a result of competition from the new trunk lines. These new lines, with their aggressive land-purchasing policies and far-reaching loans for transcontinental expansion, provided the principal speculative opportunities for railroad investors of the 1850s. Their fortunes depended on a continuing inflow of settlers and the growth of commerce on the frontier, which required confidence in the viability of expansion westward” (Calomiris and Schweikart 1991).

By 1857, financial enthusiasm had focused upon Kansas, which was the next western territory as a candidate for the next state. Allen Nevins described: “...a fever of speculation in Kansas lands was raging, men selling homes, giving up well paid positions, and even borrowing money at ten percent to purchase farms. Newspapers published along travel routes to Kansas in early 1857 described a veritable torrent of humanity. “The lure of Kansas lands led some to expect Kansas to increase by seventy thousand people that year” (Nevins 1950).

Western land was attracting immigrants and increasing rail traffic. Calomiris and Schweikart wrote: “In April settlers arrived at the rate of 1,000 per day. The link between immigrant traffic and expectations of railroad profitability is visible in the responses to this great influx. As passengers to Kansas increased, the railroads lowered rates for through traffic, indicating expectations of a lasting increase in the volume of business (and perhaps the railroads’ desire to encourage immigration to stimulate development). Entrepreneurs laid ambitious plans for new railroads… (But) by late summer that optimism was shattered, the value of western land fell and the speculative railroad securities fell with it… The decline in speculative railroads’ earnings and prospects forced several companies into default, including the Illinois Central, the Erie &Pittsburgh, the Fort Wayne & Chicago, and the Reading lines. Several thinly capitalized railroad companies—including the Delaware, the Lackawanna & Western, and the Fond du Lac—went bankrupt...mid-1857 represented a turning point in expectations about the profitability of westward expansion.” (Calomiris and Schweikart 1991)

Thus in 1857, there was a peak of speculation in Kansas land and in railroads—just when the panic began. In addition, Kansas became the focus over the political issue of slavery. Dred Scott had filed a lawsuit for his freedom from slavery, but the Supreme Court denied it, making it a key legal decision to open up western territories as possible slave states. This reduced immigration to Kansas from people in the northern US states.
The decline in the markets of Western land and wheat and declining railroad traffic had links to the banking system. Investment in the railroad stocks and bonds had been heavily subscribed by European capital in London banks. Calomiris and Schweikart wrote: “The central puzzle of the panic is the links among the early securities markets’ decline, the later decline in bank note prices and bank stocks, and the eventual suspension of convertibility. Why should a region-specific shock to western land and railroads cause a nationwide suspension originating in the East? And why the protracted delay in the reaction of bank note discount rates, bank stock prices, and bank suspension to the July-September decline in land and railroad securities?” (Calomiris and Schweikart 1991)

What linked those western markets to eastern bank failures? Calomiris and Schweikart wrote that: “Three destabilizing elements combined to transform the securities collapse into a banking panic.”

“First, the initial increase in bank risk prompted some note holders and depositors in New York State to convert their bank debt into specie. New York’s free banks met this demand through sales of bonds in New York, which helped to depress bond prices further.”

“Second, New York banks outside New York City converted their notes into specie mainly through their city correspondents. (A regulation of June 1857 regulated city banks’ trading in country notes, restricted the discount rate which city banks could charge, and limited the amount of notes that could be returned to peripheral banks without sufficient notice.) This regulation, along with rising bank risk, caused a flood of peripheral banks’ notes into the city for redemption. This added to the drain of specie from New York City to its correspondents in other eastern financial centers.”

“Third, as New York City banks came to doubt the solvency of some prominent securities dealers, and as city banks’ gold reserves fell in response to the accelerating demand for redemption of peripheral banks’ notes, the city banks refused to rollover the debt of the brokers. This forced brokers to sell their bond holdings at rock bottom prices and forced many into bankruptcy. As these bankruptcies mounted, and as securities prices continued to fall, the solvency of New York City banks—whose loans to brokers and dealers often were backed by bonds—came into question.”

“This was the proximate cause of the run on the city banks in mid-October. Thus the declining fortunes of western railroads and declines in western land values, along with a concentration of asset risk and reserve drain in New York City banks, ultimately explain the origins of the panic.” (Calomiris and Schweikart 1991)

The decline in western markets was connected to stock price declines which was connected to brokers’ debts which was connected to decline of bank assets. From such empirical research into banking panic, Calomiris and his colleagues demonstrated the importance of the context of banking in explaining panics. Calomiris and Gorton wrote: “Empirical research has demonstrated the importance of such institutional structures as branch bank laws, bank cooperation arrangement and formal clearing houses for the probability of panic and for the resolution of crisis…banking panics are not inherent in banking contracts (bank transactions); institutional structure matters.” (Calomiris and Gorton 1991)

*One sees that a “structure” interacted with a “process”—banking infrastructure with financial speculation.*

As an example of events in the panic involving the banking infrastructure, Calomiris and Schweikart wrote: “…the Clearing House banks of New York City met on September 29 to reassure everyone that such credit would be forthcoming. This
promise, however, was not kept due to a combination of the city banks’ inability to do so (due to the persistent gold outflow) and their unwillingness to do so (given the rising threat of insolvency for brokers). The contraction of credit forced more and more securities houses into liquidation… When New York City banks opened for business on October 13, an unprecedented run by depositors greeted them. Before agreeing to suspend, the banks paid out between $4 million and $5 million. Wall Street literally was filled with depositors hurrying to withdraw their funds. “The banks went down before a storm they could not postpone or resist.” 32 Between October 1 and October 13 deposits had fallen by $10 million. Roughly half of the specie held by city banks on October 10 was paid out on October 13.” (Calomiris and Schweikart 1991)

As described by Calomiris and Schweikart, the 1857 panic was not caused by any single factor. Instead, the event occurred due to connections between market processes (western land speculation and railroad finances) and banking networks (eastern banks) and stock exchanges (eastern brokers). In effect, commodity (land) and industrial (railroads) markets were involved—along with an emerging national banking network, western banks and eastern banks, and an emerging national stock market, New York brokers. (The US banks and brokers connected to international finance through London banks.)

As is any societal event, the Panic of 1857 was a complicated event. It had no single cause, and many factors contributed to it: end of the Crimean War, decline in wheat prices and western land values, decline in railroad traffic and revenue, flight of gold to Europe, failure of railroads, failure of an insurance company, and Dred Scott case. All these factors contributed, but none in a simple causality. No single factor “caused” the panic; but all taken together at the time triggered the panic.

**Societal and Perceptual Space for Observing History**

How to explain a complicated societal event? For this, we use a method for analyzing multiple explanations in a historical event. For example, in the physical sciences, one observes and analyzes a physical event as one of motion, as shown in Figure 2.1. In historical studies of society (such as economic history), one does not observe “physical objects” but instead “societal objects.” Thus physical concepts (i.e., “physical objects,” “space and time,” “motion,” “forces,” “causality”) are not useful (not methodologically appropriate) to accurately describe societal history. Accordingly, there never is any “causality” in historical explanation. But there are other kinds of explanations in history. What are they? To find them, we can use a methodological analogy to a “physical observational space,” which is a “societal observational space.” This has been constructed from the three basic dichotomies in the social sciences: *individual–society, groups–processes, and reason–action.* (Betz 2011)

The first basic idea in the sociological literature is the distinction between individuals and the society in which the individuals live—the dichotomy of *individual and society.*

The second basic idea in sociology distinguishes how individuals associate into groups within a society and the processes a group inculcates in members—the dichotomy of *group and process.*
In sociology, groups, masses, and organizations are basic units in which individuals in collect together for action. A social process is a series of actions coordinated to produce an outcome planned by a group.

The third basic idea found in the sociological literature (and in the management science literature) is about the thinking of individuals and their behavior. Individuals described as sentient (or cognitive) beings acting according to perceived reasons—the dichotomy of action and reason.

We can graphically show these three basic social science dichotomies upon a three-dimensional societal space, as shown in Fig. 2.2.

In any historical event describing an epoch of a society, the event can be described as factors and interactions of three dichotomies (in the sociological perception of the event). These dichotomies are individuals–societies and action–rationality and groups–processes. To conveniently inscribe events in the perceptual space, we will show the areas around the dimensional axes as a kind of event box—in Fig. 2.3. In this picture, we show a three-dimensional space for perceiving historic events in a society as arrows in the space. Next, we build a box around the axis arrows, in order to have surfaces for conveniently listing the factors (happenings) in the event. Since this box is three dimensional, we then open up the box to see all surfaces in one view.

In societal events, social structure and social process provide contexts for each other. To explore such contextual dependence of structure and process, we next use the societal observational space to analyze the history of the 1857 event, as shown in Fig. 2.4.

**Action**—Actions included railroad construction, land speculation, immigration, and wheat market prices. Rail development in western USA generated stock offerings and bonds financed in New York banks, with connections to London banks. Western land speculation and immigration generated traffic for the railroads. Wheat grown in Midwestern farms found markets in Eastern USA and in Europe. Decline of demand for wheat in Europe lowered wheat prices, and competition among railroads lowered revenues. Immigration to Kansas slowed. The US Supreme Court’s
decision on the Dred Scott case opened Kansas to the possibility of becoming a slave state, and the land market declined. Railroads defaulted upon bonds and some went bankrupt. Some stockbrokers making markets in railroad stock collapsed, as banks called in loans and stopped withdrawal payment in species.

**Reason**—Financial speculation expected price rises in land and railroads and also stimulated loans taken by security brokers from banks for stock speculation.

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**Fig. 2.2** Basic sociological dichotomies

**Fig. 2.3** Societal perceptual-space event box interactions of an individual and society are mediated through reason and action and through groups and processes
Group—Railroads, banks, security brokers, immigrants, and London banks were some of the key groups involved in the event.

Process—Financial capital flows and firm bankruptcies were key processes in the event.

Individual—Dred Scott had filed a lawsuit for his freedom from slavery, but the Supreme Court denied it, making it a key legal decision to open up western territories as possible slave states.

Society—The society in the event was the USA: with regional focus upon Eastern, Western, and Southern states.

**Explanation in a Societal Perceptual Space**

Within this framework, we can now address the issue of explanation in history. We have emphasized that causality is essential to the physical sciences is a kind of explanation, but wholly inappropriate to the social sciences. One needs to ask what kinds of explanations are methodologically appropriate to the social sciences, to the observation of a societal event? And one can find this by constructing a topological graph in the societal perceptual space, as shown in Fig. 2.5.

The six-dimensional points of the space can be connected by fifteen lines as a topological graph. Each graph relationship provides a kind of explanation.
connecting two factors (Betz 2012). Topology is a field of mathematics concerning the connectedness of geometrical forms, and topological graphs display this connectivity as lines connecting points in the geometrical form. The societal dynamics event graph displays the explanations connecting principle factors in a historical event. The fifteen kinds of explanations which can occur as relationships between the principle factors are:

1. Ethics—The explanatory relationship between individual and society can be called the ethical context in the explanation of a historical event.
2. Principles—The explanatory relationship between reason and action can be called the principles of order in the explanation of a historical event.
3. Institutionalization—The explanatory relationship between group and process can be called the institutionalization in the explanation of a historical event.
4. Ideas—The explanatory relationship between individual and reason can be called the ideas which an individual uses in reasoning.
5. Policies—The explanatory relationship between individual and process can be called the policies an individual in power formulates to control social processes.
6. Strategy—The explanatory relationship between individual and action can be called the strategy in which a leader formulates the direction for action.
7. Leadership—The explanatory relationship between individual and group can be called the leadership of an individual in guiding the efforts of a group.
8. Knowledge—The explanatory relationship between society and reason can be called the knowledge which a society has to use.
9. Regulating—The explanatory relationship between society and process can be called the regulation of activities within the infrastructure of the society.

Fig. 2.5 Explanations in a historical societal event as relationships between the principle factors
10. Performance—The explanatory relationship between action and society can be called the *performance* attained by processes in societal sectors.

11. Infrastructure—The explanatory relationship between group and society can be called the social *infrastructure* which groups provide in building and operating sectors of a society.

12. Technology—The explanatory relationship between action and process can be called the *technology* used in a process in producing an action.

13. Operations—The explanatory relationship between action and group can be called the *operations* of a group which produce a group action.

14. Ideology—The explanatory relationship between group and reason can be called the *ideology* as the concepts groups use to associate and justify association, the ideology of a group.

15. System—The explanatory relationship between process and reason can be called the *system* of controlled process in the societal event.

This list is a cross-disciplinary in the kinds of explanations used in the different social science disciplines; and it is particularly useful in describing the complexity of societal events. It provides both a generality and a logical completeness, for comparing explanations across different historical events and across different societies.

We now apply this formal explanatory framework to Calomiris–Schweikart’s explanation of how the linking of western markets to the eastern banking failures occurred as the destabilizing elements which together transformed the securities collapse into a banking panic.

“First, the initial increase in bank risk prompted some note holders and depositors in New York State to convert their bank debt into specie. New York’s free banks met this demand through sales of bonds in New York, which helped to depress bond prices further.” (Calomiris and Schweikart 1991)

Bank risk—(4. Ideas)
Convert their bank debt into specie—(6. Strategy)
Sales of bonds in New York—(6. Strategy)
Depress bond prices—(10. Performance)

“Second, New York banks outside New York City converted their notes into specie mainly through their city correspondents. (A regulation of June 1857 regulated city banks’ trading in country notes, restricted the discount rate which city banks could charge, and limited the amount of notes that could be returned to peripheral banks without sufficient notice.) This regulation, along with rising bank risk, caused a flood of peripheral banks’ notes into the city for redemption. This added to the drain of specie from New York City to its correspondents in other eastern financial centers.” (Calomiris and Schweikart 1991)

Converted their notes into specie mainly through their city correspondents—(3. Institutionalization)
This regulation—(9. Regulating)
Rising bank risk—(4. Ideas)
Flood of peripheral banks’ notes into the city for redemption—(10. Performance)
Drain of specie—(10. Performance)

“Third, as New York City banks came to doubt the solvency of some prominent securities dealers, and as city banks’ gold reserves fell in response to the accelerating demand for redemption of peripheral banks’ notes, the city banks refused to rollover the debt of the brokers. This forced brokers to sell their bond holdings at rock bottom prices and forced many into bankruptcy. As these bankruptcies mounted, and as securities prices continued to
fall, the solvency of New York City banks—whose loans to brokers and dealers often were backed by bonds—came into question.” (Calomiris and Schweikart 1991)

Doubt the solvency—(4. Ideas)
City banks’ gold reserves fell—(10. Performance)
Accelerating demand for redemption of peripheral banks’ notes—(10. Performance)
City banks refused to rollover the debt of the brokers—(13. Operations)
Forced brokers to sell their bond holdings at rock bottom prices and forced many into bankruptcy—(7. Governance)
Bankruptcies mounted—(10. Performance)
Securities prices continued to fall—(10. Performance)
Solvency of New York City banks came into question—(4. Ideas)
“This was the proximate cause of the run on the city banks in mid-October. Thus the declining fortunes of western railroads and declines in western land values, along with a concentration of asset risk and reserve drain in New York City banks, ultimately explain the origins of the panic.” (Calomiris and Schweikart 1991)
Run on the city banks—(10. Performance)
Declining fortunes of western railroads and declines in western land values—(10. Performance)
Concentration of asset risk and reserve drain—(11. Infrastructure)

In Fig. 2.6, we summarize all the above explanations on a societal dynamics event-space graph: “ultimately explain the origins of the panic”—(4. Ideas) (6. Strategy) (10. Performance) (3. Institutionalization) (7. Governance) (11. Infrastructure).

Thus by analyzing the Calomiris’ and Schweikart’s explanation for the “cause” of the 1857 in the societal dynamics topological graph, one can see that there was no one “cause” but several kinds of explanations—as relationships of the following: (4. Ideas), (6. Strategy), (10. Performance), (3. Institutionalization), (7. Governance), (9. Regulating), and (11. Infrastructure).

The concept of “Ideas” has traditionally been studied in philosophy, under the topic or reason, and also in psychology under the topic of cognition. The concept of “Strategy” is a focus of business schools, specifically in management science. The concept of “Performance” is studied both in business schools and in engineering schools—as, respectively, organizational performance and technology performance. The concept of “Institutionalization” is a focus of sociology and of political science. The concept of “Governance” is principally studied in political science and in political economy. The concept of “Infrastructure” is principally studied in sociology. Thus one sees that a cross-disciplinary framework provided many social science concepts to analyze an event in the history of economics.

This is the advantage of a cross-disciplinary approach to analyzing empirical events—a systematic identification of the kinds of explanations necessary to understand and clarify the occurrence of a historical event. Societal dynamics theory can supply more than one disciplinary view in the analysis of a society. This can assist the methodological approach of history researchers in their search for explanation of “structural and institutional” features, along with explanations of “processes.”
Cross-disciplinary analytic framework of societal dynamics theory can assist in identifying the kinds of “structure and institutional differences” essential to explaining events of financial process—such as differences in Ideas, Strategy, Performance, Institutionalization, Governance, Regulating, and Infrastructure.

In historical studies like this one about 1857, there never is a single “cause,” no single factor ever causes a historical event. Always there are several factors in history. This is especially true if one examines not just this case but all the recurrent financial panics in US history. There are several explanatory factors in each panic. Charles Kindleberger and Robert Aliber listed the US panics from the early 1800s to 2000s (Kindleberger and Aliber 2011): Panic of 1857, Panic of 1873, Panic of 1893, Panic of 1896, “Panic of 1907, Panic of 1929, Panic of 1973, Panic of 1987, Panic of 1989, Panic of 2007, and Panic of 2011.

Bank panics are not simple economic events, nor are their explanations simple. But panics are recurrent. Because of their complexity and recurrence, we will examine again several of them—but in a cross-disciplinary framework.
References


Why Bank Panics Matter
Cross-Disciplinary Economic Theory
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