

Bank Herding and Incentive Systems as Catalysts for the Financial Crisis

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Why do good bankers sometimes respond with the same disastrous strategies? Rooted in regulatory economics and behavioral finance, the paper offers a taxonomy of effects that narrows the scope of the banks' decision making into a funnel-shape and thus, prepares the ground for a financial crisis. The basic message of the paper is that inconsistent decision rules, rigid bank regulations, stakeholder-focused incentive structures within banks and uncritical adoption of innovations may force banks into decisions that are micro-functional, but macro-dysfunctional. Behavioral aspects play a key role in the suggested remedies on the regulatory side (macroprudential regulation, supervision of incentives) and on the banking side (proper reward systems and structured decision making) to re-establish prudent banking.

Introduction

There is a growing interest in the literature on herding behavior (Hirshleifer and Teoh, 2003), contagion (Kodres and Pritsker, 2002; and Uchida and Nakagawa, 2007) and bubble phenomena (Shiller, 2002) of financial intermediaries and markets. In banking literature, herding is often evoked as an anomaly, as a cause of economic behavior if other explanations fail for banking crises (Reisen, 1999), bank runs (Samartín, 2003), credit crunches (Pecchenino, 1998), currency crises (Lam, 2002), foreign currency lending (Tzanninis, 2005) and with regards to the recent regulatory change, i.e., the Basel II Accord (Borio *et al.*, 2001). There is also a related stream of literature that concerns itself with issues in banking regulation, financial market efficiency and growth (Levine, 2005; Haiss and Fink, 2006; and Hirshleifer, 2008), however without taking herding effects into account. Rajan (2006) and Llewellyn (2002) provide notable exceptions.

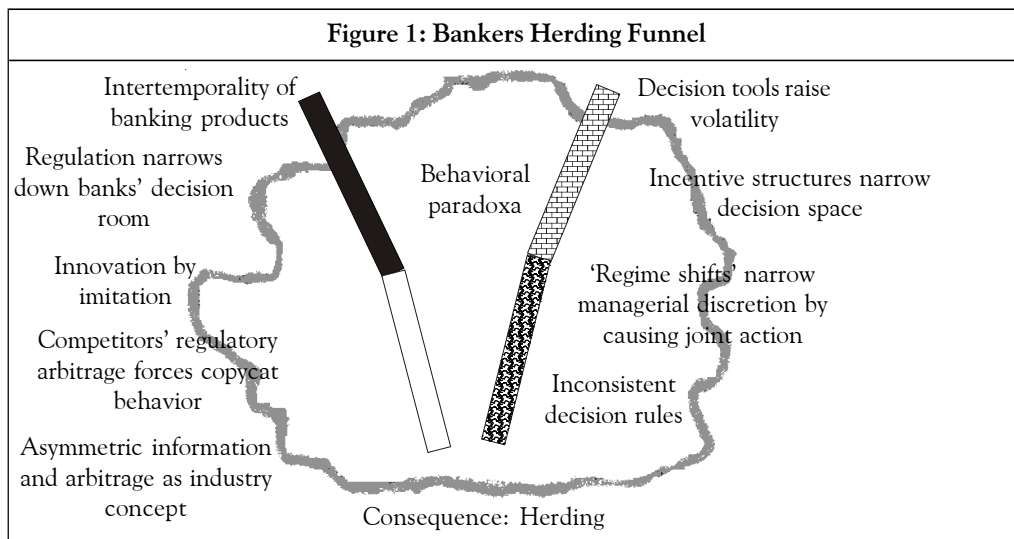
Building on Fink and Haiss (1999, 2002, 2003), and Haiss (2009), the goal of this paper is twofold. For one, to provide a more coherent overview of herding in financial services by integrating capital market and banking issues, and by establishing a crossover from rational to behavioral herding. This will add to the general understanding of financial services phenomena. For two, to show that regulation and the very industry-specific aspects of the banking sector can become natural causes for herding under specific circumstances, and that herding as unintended macro-side effect should receive explicit treatment in regulatory change overs. Kane's (1981) framework of "regulatory dialectic" is applied to explain the impact of regulation on the interaction between collective bank behavior and the economy. As a well-functioning financial sector plays a major role for financial intermediaries, and others engaged in the financial sector architecture and

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beyond. Conceptually, the paper contributes by (1) defining a coherent model (termed “bank herding funnel”) and by (2) offering remedies for regulators and bank managers to mitigate the herding triggers that surfaced in the current global financial crisis.

With regard to methodology, several options are at hand, e.g., constructing a theoretical model, event studies, laboratory tests, field evidence from questionnaires or interviews, and grounded theory building. Various studies construct theoretical models to depict actual behavior, e.g., Diamond and Dybvig (1983)—modeling bank runs as “sunspot phenomena”; Mondschean and Pecchenino (1995)—modeling the effects of bank managers’ beliefs about other banks’ behavior; and Acharya and Yorulmazer (2008)—providing theoretical evidence that the likelihood of information contagion induces profit-maximizing bank owners to herd with other banks. While providing fresh insight into certain aspects, such models have to reduce reality to selected variables. Event studies, e.g., by Ait-Sahalia *et al.* (2009); (analyzing bank responses to policy initiatives during the global financial crisis) provide rich evidence on case-study-like single events. Several authors also tested herd behavior in a laboratory financial market, e.g., Cipriani and Guarino (2005)—on noise trading and Drehmann *et al.* (2005)—investigating herding and contrarian behavior in internet financial markets. While greatly contributing to the general understanding, how representative these laboratory experiments are of the behavior of bank professionals operating in actual financial markets is open for debate (Cipriani and Guarino, 2009). Testing herding directly with data from actual financial markets, e.g., via questionnaires or interviews is difficult. This would require to detect whether agents choose the same action independently of their private information (Cipriani and Guarino, 2009). This paper therefore chooses an approach related to grounded theory, i.e., the elaboration of constructs and propositions from market observation (Glaser and Strauss, 1967). The primary objective is to expand upon an explanation of herding phenomena by identifying the key issues and then categorizing the relationships of those elements. Following Eisenhardt’s (1989) and Hirshleifer’s (2008) theory-building approach, available empirical evidence on bank herding since the 1980s is reviewed, key driving elements are derived and the “bank herding funnel” is proposed as explanatory framework (Figure 1).

In the following it is argued that a combination of certain regulatory and governance issues (like tight actor-based capital adequacy rules, putting banks at disadvantage versus other market participants), the embedded market micro structure of banks (for example information asymmetries and innovation by imitation), and environmental shifts (like the move from bank-driven/originate-and-hold to capital market-driven/originate-and-distribute financial systems in Europe) force banks into herding behavior. Under such conditions, the banks’ ‘decision room’ containing the remaining repertoire to act becomes funnel-shaped and the banks herd into the same direction. Recent regulatory change seems to have increased incentives to herd (Rajan, 2006). It is further argued that bank regulation should also include macroprudential considerations and that the prudential net may have to be cast wider than only around banks. For banks the conclusion is drawn that cutting



out or suppressing the 'conflict stage' in a banks' asset and liability decisions provides optimal breeding conditions for herding. As long as banks are sound and prudently managed, there is a certain pluralism in reaching credit and investment decisions. Banks therefore should build in conflict stages into the organization.

The global financial crisis exemplifies that when competitive pressure becomes too strong, banks just run the way all the others are running. Under certain conditions, bankers have no alternative than herding. For example, it may be economically rational for the individual bank to evade capital requirements by offloading assets via credit derivatives and securitization, if a major competitor starts to do so. Systemic risk and failure cost, however, may rise, and the individual bank may even be aware of this, but still has incentives to follow those who do it. Common incentive systems (stock-capitalization driven bonus systems, short-term profit oriented "management by objective" scorecards etc.) reinforce that it is more acceptable to err with the crowd than to swim against the tide for the individual banker. Although bank regulation certainly is necessary to provide the public good of financial stability, too tight regulations may cause more cost by inducing herding behavior than what can be gained by more stability. In fact, economic risk does not disappear because of regulation, it is only shifted elsewhere, as banks herd in regulatory arbitrage.

The remainder of the paper is structured as follows. It defines herding and summarizes empirical evidence on bank herding. Types of herding and its triggers and drivers are also discussed. It focuses on causes and consequences of bank herding, including the banking-business inherent propensity to herd and the role of innovation. Based on Kane's (1981) regulatory dialectic model the following section explains the crucial role of regulation. Next, the role of bank-internal tools and decision rules are discussed. In the final section the conclusion is drawn that bank regulators should include macroprudential issues, i.e., consider whether, why and how regulation is broadening or narrowing the decision space

of banks and where business may be shifted if the decision room of banks becomes too narrow. Herding behavior can be changed only by altering the constraints and incentive structure set for bank managers. Banks should build in conflict mechanisms in their management processes, for example dialectical inquiry or devils advocate-approaches, and actively manage their reward systems to prevent herding.

Herding in Financial Services

In the most general form, 'herding' can be defined as mutual imitation leading to a convergence in action space (Welch, 2000; and Hirshleifer and Teoh, 2003) or as behavior patterns that are clustered or correlated across individuals by interaction (Devenov and Welch, 1996; and Kim and Pantzalis, 2003), where the incentive to adopt a behavior increases with the number of previous adopters ("following the market"; Welch, 2000). It is not just profit-maximizing investors, increasingly with similar information sets, who react similarly to a joint causal factor at more or less the same time. Herding is more than unrelated, parallel action, as it requires a coordination mechanism (Devenov and Welch, 1996), for example real or illusionary social pressure (Pelzmann, 2006); leaders and a rising mass of followers (i.e., that there are threshold effects where the behavior by a critical number of individuals leads to a tipping in favor of one behavior (Hirshleifer and Teoh, 2003, p. 52); visible signals to herd on, e.g. in information cascades; and incentives to follow the heard, be they high initially or increasing with the size of the herd. At the heart of the concept is the notion of social learning, of individuals (investors, credit officers, bank management) being influenced from observing others' signals (Vives, 1996; and Teraji, 2003). These signals can be either individual actions (for example received by observing competing colleagues from other project finance units offers' finance a specific project you have to evaluate) or a widely spread 'signal' rule to coordinate (for example a benchmark-related movement) or to offload assets to Special Purpose Vehicles (SPV) via securitization (e.g., asset backed securities).

Definition and Types of Herding

Herding behavior is fragile, in that it may break easily with the arrival of some trigger (for example, new information); idiosyncratic, in that "random events combined with the choices of the first few players determine the type of behavior on which individuals herd" (Bikhchandani and Sharma, 2000, p. 6); is dynamic in that a small change in one parameter can quickly change the systems' behavior (Dockner and Gaunersdorfer, 1995), for example if the price increase does not stimulate supply sufficiently to counteract the price rise (Siebert, 2002); comes in waves in that delay is followed by a sudden simultaneous action and path dependent, as the outcome depends on the order of activities (Hirshleifer and Teoh, 2003, p. 32). Due to its inherent nonlinearity, herding may be best modelled by nonlinear dynamic systems (Dockner and Gaunersdorfer, 1995).

There are two polar views of herding, termed the 'rational' and the 'behavioral' view (Chang *et al.*, 2000; and Oehler, 1998). The rational view centres on externalities, profit/utility maximizing decision making being distorted by information difficulties, principal-agent incentive issues or preferences for conformity. The behavioral view holds that decision-makers are 'satisficing', economizing on information processing or information acquisition costs by using 'heuristics' and that their rationality may be bound by external or internal constraints, including investor psychology. These also include anomalies like bubbles, fads, noise-trading, sentiment, momentum strategies and trading rules (DeBondt and Thaler, 1989; Shleifer and Summers, 1990; and Shiller, 2003).

Based on the dichotomy of social learning, rational expectations and information asymmetries (Vives, 1996; and Effinger and Polborn, 2001) refer to 'herding' as the phenomenon that people follow the example of other people in a sequential, cascade-like decision problem without making use of their private information. Dealing with herding on a strictly rational, one-on-one unidimensional level where the order in which individuals act is exogenously given provides many useful insights to specific issues (for example in stock trading, see Bikhchandani and Sharma, 2000). However, the assumption that agents follow rigid sequential procedures in which individuals take decisions one after the other in order to maximize profit/utility is far from capturing the functioning of markets in which agents can interact simultaneously or sequentially or leading or lagging, are merely satisficing and of bounded rationality. Agents observe behavior of others and know that the system is prone to shocks (Vives, 1996). Due to a failure to internalize the consequences of the actions of others, individual actions that, when taken in isolation may appear reasonable, but collectively those actions may add up to undesirable outcomes (Borio *et al.*, 2001, p. 9; and Rajan, 2006). While the distinction between rational and behavioral herding is helpful for conceptualizations, their effects are intertwined and it is frequently difficult to discern between the two in herding behavior observed in real markets. Thus it is important to consider both.

Rational Herding

There are several potential reasons for rational herd behavior in banking and financial markets. The most important of these are (imperfect) information cascades, principal/agent concern for reputation, compensation structures and other payoff externalities as discussed in the following. Related banking issues are emphasized.

Information Cascades

This type of herding can arise when there is uncertainty about the accuracy (or the lack of) of the information possessed by market participants (Bikhchandani *et al.*, 1998; and Bikhchandani and Sharma, 2000). In that case market participants can gain useful information from observing previous market participants' decisions, to the point where they rationally ignore their own private information signals or when they free-ride informationally (Crook, 2003; and Hirshleifer and Teoh, 2003). When investors lack information on prospective business projects, they may be keen to observe other investors'

behavior in order to infer knowledge from others' actions. When there are costs to collect and analyze information, creditors may be more inclined to follow others' behavior (Das *et al.*, 2000). Gathering and processing information on the fundamentals of emerging markets may be perceived as more difficult and expensive as learning about other investors' decisions (Komulainen, 2001, p. 7). This bandwagon effect has been observed in international capital markets as a reason for large capital flows and contagion effects (Calvo and Mendoza, 2000).

Herding theory suggests accordingly, that prior investment analysts' choices are an important influence on the next recommendation (Welch, 2000). Bankers similarly may mimic the behavior of an initial group of investors in the false belief that this group knows something, for example small US banks following the large ones in lending to less developed countries (Jain and Gupta, 1987). Thus, investment decisions of early individuals are reflected in the subsequent price of investment. Actors, for example depositors withdrawing money from a bank with a long line of customers waiting to recover their deposits, 'socially' learn from other actors (i.e., the ones in front and behind them). Market participants may focus on readily available sources in the belief that every one else is also focusing on these (Rajan, 2006). Waschiczek (2003) argues that increasing public signals from media and loan brokers may have formed an information cascade that led Austrian borrowers to herd for foreign currency loans. Agents may 'herd' on a wrong action following misleading external signals while disregarding potentially more valuable private information in an asymmetric information world (Bikhchandani and Sharma, 2000). Investors may also demand 'lemon premiums' from firms issuing stocks, based upon the assumption that firms only have incentives to issue equity when the stocks of their firms are overvalued (Park, 1999). Such information asymmetries are common between borrowers and lenders (Borio *et al.*, 2001), but may influence banks' portfolio decisions to a varying degree (Park, 1999). Other banks may start to behave accordingly. Random events combined with the choices of the first few market participants thus may determine the type of behavior on which the followers herd.

Reputation

This type of herding can arise when there is uncertainty on the employers' or other principals' side about the investment managers' or credit officers ability to pick the right stock or debtor (Scharfstein and Stein, 1990). Managers may mimic the actions of other managers, completely ignoring private information, as Keynes' (1936) observed by arguing that "it is better for reputation to fail conventionally than to succeed unconventionally" (Devenov and Welch, 1996, p. 40). Thus an unprofitable decision is not as bad for reputation when others make the same mistake (Scharfstein and Stein, 1990, p. 466). Reputational herding has mainly been analyzed with regard to investment analysts (Kargin, 2003), investment managers (Scharfstein and Stein, 1990), and investment newsletters (Graham, 1999). Borio *et al.* (2001) argue that reward structures that limit blame in the case of collective, as opposed to individual failure, is the most common factor behind bank herding behavior. If failures are widespread, there may be a strong tendency not to blame

individual managers for the failure of the bank. Rajan (1994) showed that once the first New England bank set aside loan-loss-reserves, other banks that were similarly reluctant to recognize bad loans earlier followed quickly. That is, when enough bankers publicly write down their loans, low-quality bankers can follow the herd and write down their poor loans also without being detected, being able to trade off long-term for short-term earnings by making bad loans.

While an environment of contagious optimism makes more and more proposals appear bankable, the only way bankers can adhere to lending policies significantly more stringent than those of their competitors is to effectively exit significant areas of banking (Greenspan, 2002)—an option not available for credit officers who want to stay in business. “Even less attention is paid to potential problems as the cautious voices appear curiously quaint and have little quantitative support because all the recent news and factors are favorable. Voices of caution find it difficult to find a case for restraint because the quantitative indicators do not support caution until too late in the lending expansion” (Greenspan, 2002).

Compensation

Investment managers are usually compensated relative to the return performance of other competing managers who follow broadly similar investment strategies rather than on absolute performance (Rajan, 2006). This may distort the investors’ performance and lead to herd behavior, as the investor (i.e., agent) has an incentive to imitate the benchmark investor in that the optimal investment portfolio moves closer to the benchmark (Devenov and Welch, 1996). According to Rajan (2006), managers typically will be wary of being too different from their peers, as they insure themselves against relative under performance when they herd. Under-performing the benchmark would cause the agent to try even harder to match. For the individual employer (principal), writing such relative performance contracts may be beneficial under conditions of moral hazard (to encourage the agent to gather information) or adverse selection (to separate good portfolio managers from bad). According to Borio *et al.* (2001), formal compensation schedules that emphasize relative performance can exacerbate the tendency for herding. With commercial bank managers remuneration systems becoming increasingly performance-based, banks become more susceptible to herding (Kirkpatrick, 2009).

Payoff Externalities

At the core of this type of herding are bank runs (e.g., Bhattacharya and Thakor, 1998; or more recently Samartín, 2003) and the refusal of creditors to renegotiate loans (Hirshleifer and Teoh, 2003) that take place when the idea of withdrawals spills over. Depositors running on banks when they observe other depositors doing so is a common textbook anecdote, and several studies (e.g., the seminal work by Diamond and Dybvig, 1983) provide evidence. The refusal of one bank may make other creditors more sceptical in case a distressed firm seeks to renegotiate its debt. Similarly visible may be sharp changes in trading volume and hence liquidity of stock exchanges, causing further traders

to switch to the deeper market (Devenov and Welch, 1996). In other situations, investors may find it worthwhile to acquire further information (for example research reports) only if other investors do. When investors herd on information acquisition, their expected utility from gathering information can increase in the number of other investors who gather the same information (Hirshleifer *et al.*, 1994). The observation of payoffs from the repeated actions of other firms may similarly lead to boom and bust patterns in the adoption of financial innovations.

Behavioral Herding

Shefrin (2000), Shleifer (2000) and Shiller (2003) document that there are indeed several ‘investor psychology’ and ‘investor sociology’ phenomena which cannot be explained by purely ‘rational’ (utility maximizing) behavior that involve some type of herding. Such phenomena include: (1) dependence of behavior upon the observed behavior of others, or the results of their behavior; (2) convergence by actors such as firms or individuals upon mistaken actions based upon little investigation and little justifying information; (3) the tendency for actors to delay decisions and then suddenly rush to act simultaneously; (4) imitation as sub-rational mechanism that induces an individual to be influenced by another to behave the same way; (5) contagion in the emotions of individuals interacting as groups (Hirshleifer and Teoh, 2003).

Herding may be particularly driven by certain types of interaction. According to the Abilene Paradox (Harvey, 1974), management as a group may take decisions that no single member of the board would take. Under pressure for group think, individual bank managers may never really evaluate others’ positions or express an alternative point of view (Janis, 1972). The concept of mimetic isomorphism—the achievement of conformity through imagination—was developed by DiMaggio and Powell (1983) to explain how organizations converge to the behavior of other organizations in the same market and may provide an alternative explanation. Berger and Udell (2003) hypothesize that ‘institutional memory’ problems may drive patterns of business lending by banks that are associated with a deterioration in the ability of a bank to recognize potential loan problems and an easing of credit standards over its loan cycle. They specifically refer to lending institutions tending to forget the lessons they learned from their problem loans as time passes since their last loan bust due to the deterioration in loan officer skills, personnel turnover and a reduction in the capacity of the bank’s internal monitoring system during boom times. As these are parallel processes across banks, they favor herding (Berger and Udell, 2003, p. 5).

Bubbles, contagion and market sentiment are often seen as resulting from human interaction in terms of feedback (e.g., Shiller, 2003). Through contagion, investors’ interest or attention for a certain stock may be more influenced by other investors than by systematic, fundamental analysis (Oehler, 1998, p. 986). Strong upward price or volume movements or broad media coverage may create success for some investors, thereby attracting public attention, promote word-of-mouth enthusiasm and drive up expectations (Shiller, 2000). ‘Positive feedback’ strategies can lead to wider price swings and thus

volatility, as was the case in the 1997/98 Asian crises with regard to the volatility of capital flows (Eichengreen *et al.*, 1998; and Reisen, 1999). Noise investors, i.e., those that do not have fundamental information, follow the activities and expectations of other investors (Oehler, 1998, p. 986). Bank lending behavior might be based on euphoric expectations during investment booms, be they real, expected or perceived due to ‘overoptimism’ (Minsky, 1977). The opposite, i.e., credit rationing, may be caused by ‘disaster myopia’, when the likelihood of some economic shock or downturn may increase as time passes since the last such episode (Guttentag and Herring, 1984).

Causes and Consequences of Bank Herding

While most of the financial services literature on herding concerns itself with capital market participants and products (e.g., Avery and Zemsky, 1998; Bikhchandani and Sharma, 2000; and Hirshleifer and Teoh, 2003), this paper adds the banking side. Table 1 summarizes empirical evidence on bank and capital market herding. Banks can herd in their (1) operative credit and investment decisions; (2) the factors and information they

Author (Year)	Herder	Finding	Type
Diamond and Dybvig (1983)	Depositors	Depositors start a run on banks when they see other depositors do so.	Payoff externality
Jain and Gupta (1987)	Banks	Weak evidence on herding in loans to less developed countries; small ones herded behind larger banks.	Reputation
Reve (1990)	Banks	“Sheep flock behavior” via market share strategy in the rapidly expanding Scandinavian credit market (+ 100% 1985-1990).	Behavioral/regulatory
Haveman (1993)	Savings and loan associations	Weak support that US thrifts imitate the behavior of their size peers. Strong support for the ‘pull of imitation’ of large and profitable banks that serve as role models for thrifts in decisions to venture into new product markets.	Behavioral/regulatory
Rajan (1994)	Banks	Herding in decision to write down assets; once the first bank sets aside loan-loss-reserves, others follow fast.	Cascade/reputation
Engwall (1994)	Banks	Upon deregulation, Scandinavian banks followed each other in high-growth strategies, taking on additional risks.	Behavioral/regulatory
Mondschean and Pecchenino (1995)	Banks and S&Ls	Herding in US—commercial real estate lending in the 1980s due to tax law (enabling/disabling accelerated depreciation), broadening product ranges for S&Ls and tightening capital ratios.	Reputation regulatory

Table 1 (Cont.)

Author (Year)	Herder	Finding	Type
Mondschean and Pecchenino (1995)	Foreign banks	Herding in recycling of sharply rising petrodollar volume into credits to Latin America due to oil shocks and fed monetary policy	reputation regulatory
Chang <i>et al.</i> (1997)	Banks	Branch openings follow other, existing branches	cascade
Shimizu and Ui (1998)	Banks	Contagious effects of expectations when a number of financial institutions collapsed in Japan towards the end of 1997.	cascade
Huang and Xu (1999)	Depositors and banks	Poorly informed depositors are likely to herd to overinvest in bank frenzies and to herd to panic in bank crashes.	cascade
Milbourn <i>et al.</i> (1999)	Banks	Banks' merger and acquisition (scale) and product (scope) strategies may be driven by herding.	reputation
Komulainen (2001)	International banks	Herding behavior by international lenders creates a mechanism for capital account reversals experienced in recent currency crises in emerging market economies.	cascade
Volberda <i>et al.</i> (2001)	Banks and Insurance companies	Mimetic behavior in shaping renewal in the services industry derived from banks "exploitation strategies" (improving efficiency of existing activities" rather than explorative [innovative] strategies).	cascade/ payoff externality behavioral
Rötheli (2001)	Major Swiss banks	Herd-type lending was partially determined by competitors' decisions and has potential to generate credit cycles.	cascade / reputation
Waschiczek (2003) and Tzanninis (2005)	Bank clients and banks	Boom in foreign currency borrowing and lending in Austria attributed to herding on media signals and loan brokers and collateralization, respectively.	cascade
Uchida and Nakagawa (2007)	Japanese banks	City banks in Japan had been following a cyclical pattern of herding in the domestic loan market in the late 1980s bubble.	Cascade / behavioral

look at in making those decisions; (3) the tools that apply for that purpose; (4) product market decisions, particularly via imitating innovations; (5) distribution network and market entry decisions; (6) their business models and strategic mode decisions like to grow through takeovers; (7) reporting decisions; and (8) investment advice they provide; among others. For example, banks may start to favor certain 'hot' industries or regions in

providing credit or turn down others—or retrench from these (Rajan, 1994; and Mondschean and Pecchenino, 1995); reach out into nontraditional customers, or to traditional customers with innovative products (Rajan, 2006); they may open branches and foreign offices where they see others flock in (Haiss, 1992; Chang *et al.*, 1997; and Robinson, 2008); they may imitate competitors' products (Persons and Warther, 1997), rush into Initial Public Offerings (IPOs); (Nelson, 2002) or into providing foreign currency loans (Tzanninis, 2005; and Haiss *et al.*, 2008); time new issues following the peers; they may grow by acquisition or venture into investment banking when they see others doing it, retrench from lending to certain markets as their competitors do (Kaminsky and Reinhart, 2000), or follow in investing and divesting in emerging markets (Komulainen, 2001).

Herding as Inherent to Banking Business

The initial interest in bank herding was derived from bank runs, credit crunches and currency crises. Diamond and Dybvig (1983) made a significant contribution by linking the very nature of banking business to the propensity to herd. Demand deposit contracts allow for the transformation of illiquid assets into more liquid liabilities and thus both provide a rationale for the existence of banks and for their vulnerability to runs (Samartín, 2003). Herding behavior produces a reason and mechanism for large capital outflows witnessed during historic currency crises (Komulainen, 2001; and Lam, 2002). Based on these initial observations, the application of herding concepts to banking has broadened considerably. Bankers, as any actors within certain industries, tend to develop common rules of behavior in interaction with one another, i.e., they construct their respective reality together by way of interaction. Typical examples of such joint moves are for example, in the 1980s most large US banks bought US\$ bonds issued by South American governments. They were all confident that “countries can't fail” and few of these banks were spared from the huge losses that resulted when they did. In (actual or perceived) recession, banks on the other hand usually restrict new loans (Borio *et al.*, 2001). Bankers themselves comment on such issues frequently (see Box 1).

If information about underlying values is absent or unusual, bankers are likely to become preoccupied with the views of others in the financial community (Crook, 2003). In extreme cases, the views of other market participants are taken seriously even when flatly contradicted by facts as may be readily available. Group pressure may rise by bringing certain moves and investments in fashion. From time to time, such mental aberrations are even dignified by being presented as ‘schools of thought’: from ‘momentum investing’, ‘cash-burn-rate’ to the ‘new economy’ (Crook, 2003) or the move in banks’ business models from the traditional “originate and hold loans” to “originate and sell” (the securitization variant) and to “originate, hold, and externally insure” (i.e., via the use of credit default swaps) (Llewellyn, 2009). The stronger the pressure of these changes, the more funnel-shaped becomes the banks’ decision space and repertoire to act over time. If bank managers develop norms to avoid conflict, the respective banks are likely to end up, for example, in the Abilene Paradox, in groupthink, or in cognitive dissonance (where bankers

Box 1: Herding in Bank Manager's Jargon

"Banks were driven by 'herd instinct' into reckless lending due to the highly competitive banking environment in which they operated over recent years. No financial institution could have 'remained a wallflower' watching rival lenders" pirouetting around the dancefloor. Had banks reined in their lending and been more prudent, shareholders would have demanded higher profits that were being made by rival institutions.

Sir George Quigley, former chairman of Ulster Bank, Ireland, in Carswell (2009).

"While the music is playing, you have to dance", reacted Chuck Prince, at the time CEO of Citibank, with respect to concerns about 'froth' in the leveraged loan market in mid 2007 (Kirkpatrick, 2009). See also Cihák *et al.* (2009) on "who disciplines bank managers".

"If all the players have the same tastes (reduce capital adequacy requirements) and have the same information (public ratings, approved risk-models using market prices) that the system will sooner or later send the herd off the cliff edge". Avinash Persaud, State Street Bank (Persaud, 2000).

"Foreign banks pile into the Vietnamese market, and owning a bank is like owning this season's fashionable hand bag—local banks command huge premia. There are not many good banks to buy, so the State Bank of Vietnam, the country's central bank, is deluged with a record 46 applications for new banking licences." Nguyen Van Giau, Governor of the National Bank of Vietnam (Robinson, 2008).

"Certainly the banks' requests to repay the government, all in the space of two weeks, look suspiciously like they were driven not so much by financial fundamentals as by the same herd instincts that got them into trouble in the first place". Laurel Canyon, in Pearlstein (2009).

Greenspan (2002), former Chairmen of the US Federal Reserve System, referred to reputational herding by arguing that "behavioral factors, the periodic shifts in risk attitudes among lenders and other asset holders...(and) a herdlike propensity to seek an increase in risk premiums cause risk discounts to erode as the level of optimism lowers the barriers to prudence. In that case, even those lenders less inclined to reach for more risk-laden proposals are driven to maintain their share of the rising credit flow, if not increase it" (Greenspan, 2002).

interpret information in a biased way, thereby reinforcing the prevailing belief; Festinger, 1957), as discussed above.

Copycat behavior may be individually rational, for example when each credit officer is attempting to avoid criticism by senior management for not reaching volume goals (or by shareholders for not meeting cost/income-ratios) and therefore follows what is conceived as "the general view of lending". A close parallel may be found in the behavior of dealers in the treasury and securities trading departments of banks and among investment analysts and newsletters (Bikhchandani and Sharma, 2000). Currency and investment managers tend to act alike because their compensations are based on how much they perform in comparison to another (Kindleberger, 1989; and BIS Committee on the Global Financial System, 1999, p. 16). Similarly, the success of the relative value arbitrage trading strategies pioneered by Long-Term Capital Management,¹ together with the high regard for its staff, bred emulators at other hedge funds and in banks' trading operations (BIS Committee on the Global Financial System, 1999, p. 11). The mimic effect may be reinforced by the highly mobile and therefore easily transferable and liquid

¹ This once 'role model' heralded hedge fund had to be bailed out in 1998. See Pantel and Haiss (2008).

character of banking products. Bonus-driven incentive systems which frame decision making processes away from sustainability towards short-term profits may further unify behavior across banks. Changes that occurred in the banks' profit incentives have modified the provision of liquidity to the financial system by banks (Kregel, 2007).

As long as banks are sound and prudently managed despite the rigid regulatory environment and resulting stakeholder incentives, there is a certain pluralism in reaching credit and investment decisions enshrined in the coexistence of organizational subunits with different and potentially competing strategies and mental models within the same bank. Under stress and in times of distress, however, banks too often conceal the magnitude of their financial woes; some continue to make loans in an effort to spur recovery, others fail to account for non-performing loans in their books. Banks therefore should build in conflict stages into the organization, for example by installing devils advocates (Schwenk, 1988) or critical thinking processes (Halpern, 1999).

Regime Shifts and the Adoption of Innovation

When market shifts occur (e.g., institutional or product innovation), there is a trade-off between the benefit of waiting and acting, creating 'clusters' around first movers (Mondschean and Pecchenino, 1995; Vives, 1996, p. 592; and Abiad and Mody, 2005). Major speculative bubbles are always supported by some plausible popular story, some new 'industry wisdom', a "new era theory" etc. that is regarded as having sanction from some authority (Shiller, 2002). In the face of major parameter shocks, herd-like behavior is well known among bankers (Walter, 1999). Banks individually optimal responses to regulatory change can lead to herd-like behavior (Pecchenino, 1998; and Rajan, 2006). Rapid growth of bank lending frequently derives from herding, credit standards are weakened in phases of euphoria, and some lending is based on speculative rises in asset prices (Llewellyn, 2002). Sifting through the evolution of many bank failures, we generally find that the seeds were sown long before the outburst. Typically, a regime shift will have been perceptible, the degree to which it increased uncertainty was not fully appreciated by strong stakeholders or market participants. The susceptibility to disaster myopia, i.e., the tendency to underestimate the likelihood of high-impact low-frequency events (Borio *et al.*, 2001, p. 9) increases whenever the respective market environment changes dramatically (Bazerman, 1986), as changes in the market microstructure have implications for convergence and the speed of learning (Vives, 1996). This phenomenon induces individual managers to neglect events which, though large, have only a small probability of occurring and do not readily come to mind as a relevant contingency in case the available decision space was narrowly framed before. For example, banks that were, or had recently been, state-owned or controlled were a factor in many cases of unsound bank practices and bank crises (Llewellyn, 2002).

Innovation in banking markets often is a 'borderline' way of circumventing regulation, e.g., through product substitution, by installing formally different production processes

(going as far as verbal credit contracts instead of printed ones to avoid credit taxes as is the case in Austria), by unbundling and repackaging portfolios' risks (for example via asset backed securities, credit derivatives and the like), by relabeling products (for example by turning loan contracts into the substitute format of privately placed bonds) and by various measures that exploit shortcomings in the measures of total risk appearing in the denominators of regulatory capital ratios. Business is thus transferred into less regulated fields and institutions (Furfine, 2001). One consequence is the trend to bypass the banking system, leaving the riskier segments of the market with the banks (Schuijjer, 1992; and Rajan, 2006). For example, if capital requirements or other regulatory taxes make it too expensive for banks to provide credit, that also implies that the core function of risk intermediation is lost and moves elsewhere. Depositors and investors are forced to incur risk they did not want to, and may not even be able to bear nor truly understand, as exactly this inability is the true cause for elaborate deposit insurance regulation and public bank supervision. Under the pretext of stabilizing the system by 'bringing in the market', common depositors (i.e., rather unsophisticated market participants) are forced into market segments with risk profiles they cannot grasp. Banks' business scope is jointly narrowed down, respectively the banks are in concert forced into fields they did not intend to actively participate to that extent, for example into highly complex products or solely into arms-length-lending (Rajan, 2006). While systemic stability may have improved on the surface through more sophisticated provision of credit, that same systemic risk comes in through the backdoor, because the banks are jointly driven into securities markets. Sometimes the outcome of regulation is praised as the victory of the market over 'inefficient' institutions, which, however, only became 'inefficient' (i.e., constrained) due to regulation. Such joint circumvention activity by market participants generates political pressure for re-regulation (Borio *et al.*, 2001).

The spread of securitization implies that the financial system, including banks, became more capital market oriented. The greater depth of financial balance sheets means that the potential for financial disturbances to seriously affect the macroeconomy has increased (Contact Group on Asset Prices, 2003). Banks can now sell much of the risk resulting from 'plan-vanilla' transactions they originate off their balance sheets, while typically retaining the 'first loss tranche'. A larger share of bank transactions now encompass transactions where explicit contracts are hard to specify, moving banks on to more illiquid transactions in aggregate terms (Rajan, 2006). As high-quality borrowers deserted banks for the commercial paper and capital market, banks credit portfolio became geared more towards borrowers with lower credit ratings that are more vulnerable to the business cycle (Greenspan, 2002). The ability and pressure to sell some of the risk off their books provides an incentive to banks to originate assets that are in high demand and thus feed the frenzy (Rajan, 2006). By moving securitized assets to legally separate and therefore not consolidated SPV, banks altered the risk/return-profile in a cost-effective way. As a consequence the asset portfolio that remains on the banks balance sheet usually is less diversified and shows greater loss volatility than the loans a bank has securitized. Banks not only achieve higher regulatory capital ratios in absolute terms, but also relative to the

riskiness of the remaining exposures. Securitization has also led to laxer screening of borrowers (Dell’Ariccia *et al.*, 2008).

Via securitization and SPV, banks can alter the profile of their book. Even though a bank retains most of the underlying risks through credit enhancements it provides to the Asset Backed Securities (ABS) issued by the SPV to finance the loan purchase, securitization makes the banks regulatory capital ratio look artificially high. Through asset-backed commercial paper programs, in which the SPV rather than the bank itself originates the securitized assets, and through credit derivatives (that permit banks to securitize the cash flows of commercial loans without hampering client relationships) banks can even accelerate that impact. As the asset portfolio that remains on the banks balance sheet usually is less diversified and shows greater loss volatility than the loans it has securitized, banks not only achieve higher regulatory capital ratios in absolute terms, but also relative to the riskiness of the remaining exposures. “In practice, capital arbitrage exploits the large divergences that can arise between a portfolio’s true economic risks and the Basel II Accord’s measure of risk” (Jackson *et al.*, 1999). According to estimates by Federal Reserve staff, securitization activities of the ten largest US bank holding companies amounted to about 25% of the institutions’ total risk-weighted loans in 1998 already. For some, it was twice that ratio, and securitization activity has been growing exponentially in Europe, too. Such movement of major players to follow the same rules and strategies goes beyond shopping around for tax loopholes, avoidance of red tape or other minor arbitrage of business rules. It is a major trigger towards herding-type behavior, as the decision space is narrowed by the identical rigid rules and rule-bending all have to follow.

Signaling and Regulatory Arbitrage

The state and other collective actors usually play a central role in shaping markets and industries via selection of different governance regimes, typically tightening regulation when risks rise (Fligstein, 1996). According to the law and finance view, the legal system is indeed the primary determinant of financial development and financial structure (La Porta *et al.*, 1998). These legal constraints lead to herding behavior, as they put severe bounds on banks’ action space. There is also a macroprudential side to financial regulation, critically determined by the collective behavior of individual financial market participants which can run counter to financial regulators’ goal set of securing stability, liquidity and efficiency (Hahn, 2001; and Contact Group on Asset Prices, 2003). It is therefore argued in the following, that regulators should also include the outcome of collective action to macroeconomic stability and efficiency into consideration.

Kane’s (1981) framework of regulatory dialectic embodies this interpretative vision of cyclical interaction between political and economic pressures in regulated markets. Political processes of regulation and economic processes of regulatee avoidance as opposing forces adapt continually to each other. Banks and other financial market participants will want to influence their regulators to favor their interests, at times even causing ‘regulatory

capture'. This alternating adaptation evolves as a series of lagged responses, repeating stages of regulatory avoidance and re-regulation, and at a differential adaptive capacity. Regulatee responses (in our case, by banks) usually come more quickly and regulatory responses come more slowly. Bank regulators usually close off selected contract opportunities either by direct prohibitions or by balance-sheet and interest-rate restrictions.

Such regulatory moves may be interpreted as a 100% tax charged on the income a bank would have earned without that regulation. If banking regulation can be seen as a form of taxation, circumventing those rules can be seen like tax evasion. Imposing standards on regulated entities that are tougher than demanded by the market encourages innovative ways of avoiding them (Jones, 2000, p. 38; and Borio *et al.*, 2001, p. 45). Stricter restrictions on the allowable activities of banks, for example, rather encourage than constrain excessive risk-taking behavior (Barth *et al.*, 1999, p. 5). In case of the 'regulatory tax' imposed by the Basel I rules, banks were quick to react by engaging in activities that exploited the divergence between the true economic risk and the measure of risks embodied in the Basel I regulatory capital requirements (Chami *et al.*, 2003). The increasing sophistication that banks bring to 'regulatory arbitrage' (repackaging their risks so as to evade capital requirements), all applying "industry standard knowledge" (i.e., risk measurement models and securitization techniques provided by the same consultants), for example, is a self-enforcing process. The burden of bank regulation increases the rewards for doing things differently *per se*. Regulation-induced innovation therefore is a predictable economic response to attempts to use legal force to change market conditions.

According to the signaling theory (Spence, 1973), any such movement on the side of the banks that becomes public will provide a signal to other banks or investors. Other lenders will be able to see these signals, profiting from the first bankers outlay on appraisal and monitoring at low cost. Everybody will try to take advantage of everybody else's efforts—the more banks rely on external ratings or make their internal client ratings public, the stronger the trigger to free riding. That sort of signaling activity is strongly self-sustaining. While a bubble is inflating, lending with "soft budget constraints" seems merely bold, and appropriately well-rewarded (Llewellyn, 2002; and Crook, 2003). A worsening credit quality is easily concealed for a while by rising prices of the subject financed or the respective collateral. The growth in lending triggers demand, reinforcing economic growth for some time, as was the case in the US subprime loan market. After a period of overborrowing, balance sheets may start to look stretched (Siebert, 2002). In fact, they may not have changed at all—what really may have happened is a regime shift in perceptions. Lenders faith is important both in inflating and in bursting the bubble. Bankers and other investors may think enough is enough, borrowers may try to restore financial ratios to something closer to normal (with the perception of normality having changed). Asset sales may rise, prices stop to rise, inflows of capital come under further pressure and may reverse, causing a stampede. Financial intermediaries not only can accentuate real fluctuations, they can also leave themselves exposed to certain risks that their own collective behavior makes more likely (Rajan, 2006).

“The way capital requirements are implemented make them relatively ineffective against risks that occur in tails, which may give institutions an added incentive to load up on these risks” (Rajan, 2006). Adverse selection—rational on the level of the individual bank which is under pressure to reduce cost—cumulated to an aggressive appetite for risk resulting in unsafe and unsound practices on the aggregate level and contributed to the global financial crisis. This move of many (if not all) major players to follow the same actor-based rules along the same ways and to circumvent them when possible is a major trigger towards herding behavior. The frame of action is narrowed by a rigid, actor-based legal framework. When seeking alternatives all behave as in a tunnel, everybody tries to rush to the light that seems to appear in some vague distance. Paradoxically the steps governments and regulators have taken to regulate financial markets, i.e., to make banking systems safer and more efficient can give banks the motive to behave recklessly, increase leverage and can become a cause of bank failures (Crook, 2003). Microprudential regulation has contributed substantially to collective moves and macroeconomic fluctuations which then feed back on individual financial institutions as adverse shocks wrongly seen by regulators as exogenous (Hahn, 2001, p. 7). At this point a first conclusion can be drawn that it is worthwhile to consider two shifts in the regulatory approach applied to banking: (1) From actor-based to product based or to regulate all actors in the financial market the same way when they offer one product identical to others. (2) To include macroprudential considerations in regulation. Otherwise, the banking market may rest “micro efficient but macro inefficient” in analogy to notions on stock markets (Samuelson, 1998). Additional measures might include, among others, requirements for the issuance of subordinated debt (such as uninsured certificates of deposit, in effect debt which will not be recovered if the bank fails), conditional provisioning (Goodhart and Persaud, 2008), and the implementation of structured early intervention resolution (Crook, 2003). Otherwise interesting new ways of rule evasion are sure to come.

Inconsistent Decision Rules

Risk is often collectively underestimated in booms and overestimated in recessions (Borio *et al.*, 2001). According to the Kindleberger (1989) financial instability-hypotheses, there is a tendency for ‘excessive’ accumulation of debt in boom times, when borrowers appear able to bear higher levels of expenditure and debt, to be corrected thereafter. Credit market imperfections, i.e., information asymmetry between lenders and borrowers, are translated by financial intermediaries to broad and persistent lending cycles, the so-called “financial accelerator effect” (Rajan, 1994). In periods of economic upswing, banks are more willing to extend credit to clients and tend to accumulate lower credit risk provisions on their exposures than would otherwise be reasonable, as they often become overly optimistic about their clients’ business prospects. If subsequently the economic situation deteriorates, the solvency of their clients also falls, and banks are suddenly confronted with increased risk provisioning requirements. These factors lead to a decline in banks profitability and capital base, automatically triggering more rigorous credit evaluation and a further squeeze in lending activities (Llewellyn, 2002, p. 153; Mérö, 2002,

p. 55; and Siebert, 2002). Asset prices, internal bank risk ratings, credit spreads and loan loss provisions all move procyclical (White, 2006).

Downturns in the business cycle can be characterized by more drastic than necessary credit squeezes due to banks herding overreaction and in their behavioral stance affect their level of earnings. Borio *et al.* (2001) empirically demonstrate this process on ten developed OECD countries for 1980-1999. They attribute procyclicality in addition to misperceptions of risk to “actions that, when taken in isolation, may appear reasonable, if not compelling, but that collectively add up to undesirable social outcomes.... This outcome may result from a failure to internalize the consequences of the actions of others” i.e., herding. Hahn (2001, p. 4) argues that upturns are the most critical part of the whole business cycle with regard to banking sector stability. As the potential for unexpected losses is likely to increase as a boom matures, banks may overstretch their credit risk exposure beyond reason (Hahn, 2001). This is even facilitated by the spread of mark-to-market ‘fair value’ accounting (where any change in the net present value of an asset or liability is immediately reflected) for loans held on the ‘banking book’ instead of historical accounting.

Borio *et al.* (2001) argue that methodologies of valuing collateral (the so called Loan-To-Value (LTV)) ratios that deliver collateral values that move closely with the cycle are likely to generate greater procyclicality. Ratings have a further pivotal role in the calculation of regulatory capital requirements. As banks usually apply a “point in the cycle” methodology in their loan rating systems, bank rating and credit loss provisions seem to be even more strongly procyclical than those of credit rating agencies that follow the “stable over the business cycle approach” (Borio *et al.*, 2001, p. 12; and Chami *et al.*, 2003, p. 13). Standard and Poor’s may adjust ratings with the phases of the cycle (more so for non-investment grade firms), but the range of the ratings usually does not fully mirror the amplitude of the company’s cyclical highs (Standard and Poor’s, 2003, p. 41). Moody’s acknowledges that recovery rates and default rates of corporate bonds are cyclical (Moody’s Investors Service, 2003).

If it is getting more difficult to apply an accounting approach to return and risk, i.e., to calculate the likely profitability of individual credit granting opportunities as described above, what can be done is to apply a portfolio approach to return and risk by packing credits into different groups, according to their risk profile, i.e., diversify, and use, for example, Risk-Adjusted Returns on Capital employed (RAROC) as measure. If primary (firm-level) sources of data don’t look promising, analysts typically rely on secondary data sources to estimate single measures by applying ‘objective’ measures (e.g., the variance of accounting returns or beta, the covariance of market returns) borrowed from theoretical research (e.g., the Sharpe (1964), Lintner (1965) and Black (1972) SLB-model, also referred to as Capital Asset Pricing Model (CAPM)). Whereas financial economic theory generally assumes a positive relationship between risk and return according to the efficient market hypothesis underlying CAPM and related models, several empirical studies found the paradox of a negative relationship. Explanations for such a negative relationship

between risk and return include, among others, that managers of firms in distress may actively seek risky, high-return projects to improve lagging performance (Bowman, 1984); that performance targets are framed by the average rate of return in a firm's primary industry since managers often appear to benchmark top performers and mobilize great efforts to avoid performance below targets, i.e., are chance constrained. This, according to the prospect theory, bankers and other managers have an asymmetric view of risk taking and risk avoidance, i.e., that performance below expectations may increase the need or desire to take risks.

As the application of those models 'comes in waves', i.e., is subject to its proliferation through academics, literature and consultants, the results may be self-fulfilling: if many people watch the same indicator all of a sudden, a slight upward movement in that indicator may result in a large number of investments following that slight movement—at least for a while, till the next factor to be watched and followed pops up. The combined effects of this and the conditions mentioned before again narrows the 'degrees of freedom' for banks decisions and the repertoire to act. As Persaud (2000) put it: "if all the players have the same tastes (reduce capital adequacy requirements) and have the same information (public ratings, approved risk-models using market prices) than the system will sooner or later send the herd off the cliff edge."

Several suggestions were put forward to mitigate these adverse effects of procyclicality. Hahn (2001) argues that banks should change their rating approach to seeing through-the-cycle or at least apply longer-term risk management schemes and also turn to dynamic provisioning. For regulators, the suggestion is put forward to raise the overall capital rule above the 8% minimum level during a boom (thereby signaling that systematic risk is on the rise) and by lowering the regulatory capital requirements during the following trough (Hahn, 2001). Under such a system of dynamic provisioning, capital charges rise as the market price of risk falls as measured by financial market prices (Goodhart and Persaud, 2008). The Spanish banks similarly had to build up higher loan loss reserves during the growth phase of the economic cycle and thus fared much better than e.g., British banks in the 2008 global financial market crisis. This discretionary use of the industry-wide risk sensitive capital ratio is suggested to be best conducted by independent central banks by Hahn (2001), which would give them dual powers in both changing interest rate levels and regulatory bank capital levels at the same. The Contact Group on Asset Prices (2003) similarly suggests dynamic provisioning (i.e., provisions that take account of the cyclical components of credit losses) and making sure that loans are collateralized to a reasonable extent through the cycle by adjusting LTV ratios. Persaud (2000) advocates that banks should be encouraged to set aside collateral for systemic risk or to buy liquidity options from central banks during good times. Goodhart (2005) advocates capital requirements that reflect more industry-specific effects to make them more procyclical, e.g., by relating capital adequacy requirements for mortgage lending to the level of house prices. Such a new competitive setting might lead to quite puzzling effects, so, further research on that notion is necessary.

Incentive Structures, Governance Architecture and Conflict Stage

While much of the economics and finance literature mainly focuses on macroeconomic reasons for bank failure and most of the herding literature concerns itself with capital market herding rather than banking, usually solely focused on rational herding, this paper proposes a broader model to decipher why banks at times respond unanimously with the same disastrous strategy. In line with grounded theory, empirical studies on bank herding and the banking literature is reviewed. To explain the narrowing of banks' frame of action and resulting banking failures, constructs and key driving elements are derived and the 'bank herding funnel' is proposed as explanatory framework.

It is argued that the very industry aspects of banking (e.g., intertemporality of products, innovation by imitation, asymmetric information, arbitrage as industry concept, common decision tools, inconsistent decision rules etc.) lay the ground for a high susceptibility to herd. Under certain conditions, banks 'decision space' containing the repertoire to act can become funnel-shaped and thus force banks into herding behavior. The identified conditions are: too rigid, actor-based regulation; stakeholder-focused constraints and incentive structures; and regime shifts. Following these signals, bankers as a group may take decisions which each individual member of the group would not take.

While the final outcome ("banks hunting in herds") is visible, the relevant parameters only have a low or moderate level of transparency (Ungson, 1998). We thus have to note with caution that the proposed model needs further refinement and empirical validation. Within each set of constraints, several variables are mentioned that need to be weighted and verified. Alternative ordering of the constraints may be considered, and possible interdependencies between incentives and constraints need to be clarified. Spillover effects from other financial market segments into banking may need to be addressed. Nevertheless, the scheme presented might illustrate why all the different factors have to be considered together. For research, this should provide a starting point for further conceptualizations and for analysis of interdependencies between different sets of incentives and constraints, impact of regulation and adverse outcomes.

For bank managers and regulators, two ideas stick out to make banks less susceptible to herding behavior. As a major remedy to the initial external herding trigger, it is recommended to alter the regulatory approach from actor-based to product-based. Regulation should concentrate on systemically important distinctions, such as maturity mismatches and leverage and not on outdated distinctions between banks and non-banks. This will also have an impact on stakeholders' incentive structures as it brings more fairness into competition between sectors of the financial markets. Accounting standards which target instruments, not institutions, might further level the playing field and remove pressures to circumvent actor-based rules by moving business out into other less regulated segments of financial markets. Counter-cyclical reserve requirements are also supportive in this context.

Conclusion

Incentive structures faced by bank managers are central to mitigate herding, as myopic and asymmetric reward structures in many banks were among the key drivers of the excess of the most recent financial boom (Butler, 2008). Regulators should give consideration to the impact of regulation on the incentives of compensation schemes within banks and the extent to which they induce prudential behavior. Incentive structures also need to become a supervisory issue. The banks themselves also need to sort out features of reward systems that provide triggers towards herding and procyclicality, e.g., incentives that are not in the long run in the interests of the banks themselves.

On the banking side, incentive structures are the key. To further weaken the bank-internal herding triggers, it is recommended that banks build conflict stages and processes to escalate competing views internally. The 'dialectical inquiry' technique, for example, introduces a subgroup structure into group interaction to increase the otherwise limited expression of conflict during decision making (Priem *et al.*, 1995). Schwenk (1988) proposes formalizing dissent in the decision process by installing 'devils advocates', i.e., representatives of alternative views, so that the testimony of the 'prevailing logic' is challenged. If, however, there is no willingness to risk rejection installed within banks and the actor-based governance structure prevails, we will see further herding behavior among banks. While in retrospect it is always easy to blame the banks for doing many things wrong, we also argue that what needs to be addressed is the creation of prudent incentive structures by the banking regulation. ❁

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