# FINANCIAL REGULATION:
# EMERGING FROM THE SHADOWS

Erasmus Research Institute of Management (ERIM)
Erasmus University Rotterdam
Internet: www.erim.eur.nl

**Inaugural Addresses Research in Management Series**

Reference number ERIM: EIA-2001-02-ORG

ISBN 90-5892-007-0

# FINANCIAL REGULATION:
# EMERGING FROM THE SHADOWS

***Inaugural Address***

Address given in shortened form at the occasion of accepting the appointment as Full Professor of "Institutional Design of Integrating Markets" at the Rotterdam School of Management / Faculteit Bedrijfskunde of Erasmus University Rotterdam on Friday, June 15, 2001

by

Prof. Dr. Harald A. Benink

*Mijnheer de Rector Magnificus,*
*Geacht College van Decanen,*
*Distinguished Colleagues,*
*Ladies and Gentlemen,*

It is with honour and pleasure that I accept the appointment as Full Professor of "Institutional Design of Integrating Markets" at the Rotterdam School of Management / Faculteit Bedrijfskunde of Erasmus University Rotterdam by giving this inaugural address entitled "Financial Regulation: Emerging from the Shadows".

The topic of "Financial Regulation", and in particular the regulation of the banking industry, is frequently discussed nowadays by academics, other researchers, bankers, and the bank regulators and supervisors themselves. During the past 20 years the banking sector in a large number of countries has experienced severe crises, usually leading to substantial financial injections by the national governments. Examples include the serious problems with the savings and loan associations and commercial banks in the U.S. in the 1980s, the severe banking crisis in Japan (which started about 10 years ago and is still going on), the near-collapse of the banking system in Norway, Sweden and Finland in the late 1980s, and the crisis in Asia in the late 1990s.[1] The crucial question is why after a long postwar period of stability banking problems became so widespread in the 1980s and 1990s.

As argued by the International Monetary Fund in a number of studies (IMF 1992a, 1992b, 1993a, 1993b and 2000), before the financial liberalization and deregulation of the 1980s cartelized banking markets, in concert with a host of regulations, served to restrict competition in the financial services industry. Banks and other financial institutions thus enjoyed a financial cushion in the form of excess profits. Government-led deregulation and liberalization, with the related market-driven financial innovation process, lowered barriers to new domestic and foreign entrants, eliminated interest rate regulations, and weakened restrictions on bank activities. Faced with a potential downsizing of their operations, many banks responded to this new, less friendly environment by increasing the riskiness of their portfolios.

---

[1] For an empirical study of the banking crises in the U.S. and the Nordic countries, see, e.g., Benink (1996).

This behavioral response of increased risk taking has been modelled in the theoretical literature, focusing on incentives and the moral hazard of bank stockholders.[2]

The *moral hazard* view (see, e.g., Marcus 1984 and Keeley 1990) argues that banks had increased incentives to take risk in the 1980s and 1990s for two main reasons: losses that impaired capital and reduced charter values due to greater competition. Lower capital reduces the exposure of stockholders and, thereby, their concern about probable losses resulting from increased risk taking. In addition to tangible capital, firms have charter values, which may be defined as the economic value deriving from the opportunity to do business in the future.

Keeley (1990) analyzes under a *fixed-rate* deposit insurance system the influence of increased competition on bank charter values, risk taking and capital ratios. Following Merton (1977) he views deposit insurance as a put option on the value of a bank's assets at a strike price equal to the promised maturity value of its debt. In the case of no banking regulation, banks seeking to maximize the value of their equity will maximize the value of the put by increasing asset risk and/or minimizing invested capital relative to assets. At the same time, however, regulation limits competition which endowes banks with market power and makes bank charters valuable. In this way the potential loss of a charter in the event of bankruptcy can counterbalance the incentive for excessive risk taking due to fixed-rate deposit insurance. Deregulation changes the subtle balance between these two effects. Because deregulation increases competition, bank charter values will decline and, consequently, banks reach earlier the point that increased risk taking becomes attractive: the expected gain to bank stockholders of the enhanced value of the deposit insurance put option exceeds the expected loss of the charter value.

Keeley's argument starts from the assumption of a fixed-rate (including a zero-rate) deposit insurance, which implies that increased risk taking does not lead to higher deposit insurance premiums that banks have to pay to the deposit insurance fund.

The Basel Committee on Banking Supervision has responded to the banking crises and the moral hazard effects by adopting new capital standards for banks in 1988 and, expectedly, in 2001. In the next paragraph we will discuss these efforts.

---

[2] Key referenecs are Dewatripont and Tirole (1994), Freixas and Rochet (1997), and Goodhart et al. (1998).

## THE NEW BASEL CAPITAL ACCORD

In this paragraph, which is based on Benink and Wihlborg (2001), we discuss the proposed New Basel Capital Accord. In January 2001 the Basel Committee on Banking Supervision proposed a new capital adequacy framework to respond to deficiencies in the 1988 Capital Accord on credit risk. In particular the risk classification determining capital requirements in the 1988 Accord was too broad making it possible for banks to shift assets to relatively high-risk categories. In the words of the Basel Committee when presenting an earlier version of the proposal in June 1999:

*The current risk weighting of asset results, at best, in a crude measure of economic risk, primarily because degrees of credit risk exposure are not sufficiently calibrated as to adequately differentiate between borrowers' differing default risks. Another related and increasing problem with the existing Accord is the ability of banks to arbitrage their regulatory capital requirement and exploit differences between true economic risk and risk measured under the Accord. Regulatory capital arbitrage can occur in several ways, for example, through some forms of securitization, and can lead to a shift in banks' portfolio concentrations to lower quality assets.*

The January 2001 proposal is intended to replace the existing system of credit risk weightings by a system that will either use external rating agencies' credit assessments for determining risk weights (the so-called "standardized" approach) or use, for sophisticated and/or internationally active banks, the internal credit risk assessments by banks themselves (the so-called "foundation" and "advanced" approaches). Given the opinions expressed by the international banking community, internal rather than external ratings will be the preferred option for determining regulatory capital requirements of large banks. In this paragraph we will discuss the likely incentive effects of the internal ratings-based approach.

### Incentive effects of internal ratings

An important factor in judging the new Basel proposal is the *incentive* effects of the proposed regulations. As phrased in a March 2000 statement of the U.S. Shadow Financial Regulatory Committee:

*Sound policy requires the right blend of regulation, supervision, and market discipline to provide the proper incentives for banks to avoid excessive risks and to protect taxpayers, who ultimately stand behind the government funds that insure the deposits of those institutions.*

The proposed regulations would have a positive incentive effect in terms of stimulating banks to improve their internal risk management systems: only sophisticated and/or internationally active banks could use their internal ratings systems as the basis for determining the amount of capital that is required by the supervisors. Risk weightings based on the internal ratings are more refined compared to the 1988 Capital Accord. However, the approach is still additive, i.e. summing up individual risks, since credit risk portfolio models using correlations between price movements of individual assets are not yet advanced enough. Consequently, the incentives and scope for regulatory capital arbitrage remain, although to a lesser extent.

Another, and potentially perverse, incentive effect of the current proposals is that banks might have incentives to design internal ratings systems that systematically underestimate the credit risk and, hence, lower the regulatory capital requirement, deliberately (i.e. consciously) or non-deliberately (i.e. unconsciously). A deliberate underestimation occurs when banks decide to manipulate the internal ratings systems, i.e. they are aware that the credit risk ratings they present to the supervisory authorities are lower than the true risk profiles. A non-deliberate underestimation of the credit risk occurs when banks are too optimistic about the quality of their loan portfolio, because they have not developed sufficient expertise in risk evaluation. Recent banking problems and crises in more than 90 countries since the early 1980s suggest that such an underestimation is conceivable.

Underestimation of credit risk is very difficult to prove due to the lack of sufficient data and the length of the economic cycle. Even if it is possible to prove for a supervisor that an individual bank faces severe problems because of underestimation of credit risk, it is very hard to design credible penalty systems, because the penalties are likely to lead to the bankruptcy of the bank that is to be penalized. Moreover, supervisors are facing an unequal battle with the banks. Since banks might have strong incentives to design internal ratings systems generating a lower capital requirement, they will be willing to hire the best people and pay the highest salaries.

Deliberate underestimation of credit risk is even more likely to occur in some banking markets where supervision is weak or “captured”. In such markets favorably treated banks would be able to charge a lower spread on their loans. The efforts of the IMF to establish rules of conduct for supervisory authorities, to provide training, and to publish evaluations of national supervisory authorities could play a valuable role in reducing the scope for favored treatment of banks. However, serious doubt remains whether supervisory authorities around the world are able and/or willing to detect and correct those banks presenting an overoptimistic credit risk profile based on their internal ratings.

Summarizing, the argument is that banks might have strong incentives to be overoptimistic when designing their internal ratings systems. Supervisors have

limited resources to counterbalance this behavior. The task of the supervisor is further complicated by the fact that there appears to be no international agreement about the actual design of internal ratings systems. Indeed, it was the Basel Committee itself that published in January 2000 an extensive study on the wide range of practice in internal ratings systems of banks around the world. The consequence is an *unlevel playing field* between internationally active banks: a loan to company X might face different internal risk assessments by various banks, leading to diverging regulatory capital requirements and, hence, differences in the risk premiums charged by various banks. Ironically, the 1988 Capital Accord provides more of a level playing field: all banks making a loan to company X face a capital requirement of 8%. What is needed as a mechanism for preventing the creation of an unlevel playing field is real market discipline.

**Real market discipline**

Market discipline can mitigate the potential underestimation of credit risk but the Basel Committee proposal does not provide a mechanism for such discipline. Although the proposal contains a "pillar 3" on market discipline, information disclosure and transparency, the approach is not sufficient. Information disclosure and transparency will only generate *real* market discipline if there is a group of investors having maximum incentives to use this information. Professional investors holding a bank's subordinated debt will have strong incentives to evaluate the overall riskiness of the bank.[3] Interestingly, many large and internationally active banks do already issue substantial amounts of subordinated debt, e.g. recent calculations published in March 2000 by the Federal Reserve Board indicate a level of higher than 2% of total assets for such banks in the U.S. Also, many large European banks have substantial amounts of subordinated debt.

The Basel Committee could implement rather easily a first phase of the subordinated debt proposal by (1) introducing a mandatory subordinated requirement as part of the regulatory capital requirement where the minimum percentage of subordinated debt to be issued is set in line with current levels of subordinated debt, (2) signalling strongly and ensuring international agreement that subordinated debt is credibly uninsured, i.e. even in case of a bail-out the holders of this debt will not be compensated for losses, and (3) monitoring closely the risk premium on subordinated debt of each individual bank, establishing whether the market's perception of increased riskiness is shared by a bank's

[3] The idea of using subordinated debt as an instrument of disciplining banks goes back to the 1980s, in particular to proposals made in the U.S. by the Federal Deposit Insurance Corporation (1983) and by Benston, Eisenbeis, Horvitz, Kane and Kaufman (1986). Recently, a rapidly growing literature is emerging, such as Federal Reserve Board (1999 and 2000), Federal Reserve Board and Department of the Treasury (2000), Calomiris (1999), Evanoff and Wall (2001), Sironi (2000a and 2000b), and Benink and Benston (2001).

internal ratings system, and integrating this information in the supervisory review process ("pillar II" of the Basel Committee proposal).

In the first phase of the subordinated debt proposal there would not yet be a system of automatic sanctions (such as prompt corrective action) when the risk premium goes up for a longer period of time. However, as part of the supervisory review process a supervisor might decide to increase the capital requirement of a particular bank. Since banks know that their supervisor is watching the yield spread on subordinated debt and might act on it, this will mitigate their incentives to underestimate the credit risk.

**Conclusion**

Although the recent Basel Committee proposal is an important improvement in terms of risk assessment and providing banks with incentives to improve their risk management systems, it also contains potentially perverse incentive effects for banks to underestimate the credit risk. What is needed is *supplementing* the current proposal by real market discipline in the form of mandatory and credibly uninsured subordinated debt. Through such a mechanism the perverse incentive effects are mitigated, reducing the risk of an unlevel playing field.

The preceding recommendations on subordinated debt have been made several times during the past few years by the Shadow Financial Regulatory Committees from Europe, Japan, Latin America, and the U.S.[4] In the next paragraph we will elaborate on the work of these Shadow Committees.

[4] See, in particular, Shadow Financial Regulatory Committees from Europe, Japan, and the U.S. (1999), European Shadow Financial Regulatory Committee (2000), U.S. Shadow Financial Regulatory Committee (2000 and 2001), and Latin-American Shadow Financial Regulatory Committee (2001).

## SHADOW FINANCIAL REGULATORY COMMITTEES

Inspired by the example of the U.S. Shadow Financial Regulatory Committee (SFRC), similar Shadow Committees were set up in Europe, Japan, and Latin America during the period 1998-2001. All four Shadow Committees consist of academics and other independent experts. At their regular meetings, they develop recommendations regarding fundamental issues and approaches, as well as topics of current interest, in the fields of banking and financial market regulation and supervision. Through their work, the Committees try to "shadow" the work of the relevant national or, as the case may be, supranational regulatory and supervisory authorities. That is, they observe, examine and critically assess the evolution and implementation of the strategies and policies of the regulatory and supervisory authorities.

In this paragraph, which is based on Benink and Schmidt (2000), we discuss the work of the European Shadow Financial Regulatory Committee (ESFRC). The Committee's work starts from the assumption that scrutiny and critical, but constructive comments by independent researchers working in relevant fields can make a positive contribution to the quality of the ongoing discourse in Europe regarding banking and financial regulation, to the quality of regulatory and supervisory policies and practices, and ultimately also to the stability and efficiency of national and supranational financial systems.

### Origin and composition of the ESFRC

The idea to set up a European Shadow Financial Regulatory Committee was strongly promoted by George Kaufman, co-chairman, and one of the initiators and most prominent spokesmen of the U.S. Shadow Financial Regulatory Committee. In terms of basic objectives and procedures the ESFRC follows the model of the U.S. SFRC quite closely. This has proven to be a great advantage, as it has meant that the ESFRC has not had to spend much time on discussions regarding these issues.

The ESFRC was founded at a meeting in Brussels in March 1998. The initial members were selected on the basis of a vaguely defined, but decidedly non-political criterion: a large number of European countries were targeted, and in each country one or two academics were approached who could be assumed to be experts in the field of financial regulation, and would presumably also be interested in taking part in a co-operative international effort over an extended

period of time. Currently, the ESFRC has 13 active members from 11 countries.[5] The range of countries which are represented is not confined to the EU, and it is most certainly not limited to the euro zone. One member is from Switzerland, and one is an American who, however, studied in the UK and has done research there for many years.

Another factor in the selection of members, besides ensuring the representation of a sufficiently broad range of countries, was the idea that each individual member should be in a position to contribute competence in a specific field such as monetary economics, financial economics or derivatives in addition to his or her knowledge of banking regulation and supervision. One member was on the board of a major international bank before becoming a university professor. While the majority of the members are economists, some are legal scholars who specialise in banking and financial market law. Thus, in terms of both the nationalities and the areas of professional specialisation that are represented, the members of the ESFRC are a heterogeneous group. They hold positions at universities, research institutes and think tanks. However, if a member worked in the financial sector, were a member of a legislative body, or were employed by a regulatory or supervisory agency, this would be seen as compromising the independence of the ESFRC, which forms the basis of its credibility.

At least from a European perspective, it appears that the U.S. SFRC advocates a very specific point of view regarding regulatory issues. Its statements very often embody a radically "liberal" position – in the sense of the word as it is generally used outside the U.S. – which implies a deep-seated scepticism concerning government-imposed regulation, and indeed concerning government intervention in the economy in general. Given the way the European Shadow Financial Regulatory Committee came into existence, it is appropriate to ask whether it shares the orientation of its U.S. counterpart, and if it does not, whether its members have some other common "regulatory philosophy". The answer to both parts of this question is clearly "No". Even though many individual ESFRC members have studied or been a (visiting) professor in one of the Anglo-Saxon countries for an extended period of time, and have certainly also been strongly influenced by this experience, the ESFRC has not adopted the fundamental point of view of the U.S. Committee. However, in terms of the fundamental approach to regulatory and supervisory issues, the various statements have a great deal in

---

[5] The members are: Harald Benink (chairman), Erasmus University, Rotterdam; Christian de Boissieu, University of Paris I (Sorbonne); Franco Bruni, Bocconi University, Milan; Jordi Canals, IESE, Barcelona; Richard Dale, University of Southampton; Hans Geiger, University of Zurich; Friedrich Kübler, Johann Wolfgang Goethe University, Frankfurt/Main, and Clifford Chance; Karel Lannoo, Centre for European Policy Studies, Brussels; Rosa Lastra, University of London; Reinhard H. Schmidt, Johann Wolfgang Goethe University, Frankfurt/Main; Benn Steil, Council on Foreign Relations, New York; Niels Thygesen, University of Copenhagen; and Clas Wihlborg, Copenhagen Business School and Gothenburg University.

common. In almost all ESFRC statements problems of financial regulation and supervision are viewed and discussed as *incentive* problems; and in each case the recommendations are intended primarily to bring a specific incentive problem more clearly into focus and to devise better, i.e. more incentive-compatible, solutions to the problem.

**Objectives of the ESFRC**

The ESFRC has defined three roles for itself: to observe, and comment critically upon, current regulatory policy and practice; to serve as a bridge between academia and "the real world"; and to provide a European forum for the discussion of regulatory and supervisory issues. The first of these three functions is the most important one. This "shadow function" does not imply an adversarial attitude, but it does oblige the ESFRC to maintain a certain distance between itself and the agencies whose activities it seeks to evaluate. However, while it is essential to maintain the critical distance required for objectivity, the Committee must at the same time make a sufficient effort to appreciate the problems which must be addressed by those who make regulatory and supervisory policy, and the constraints faced by financial regulators at the level of policy implementation. Under no circumstances should the Committee engage in gratuitous or glib criticism of regulators or adopt a patronizing attitude towards them.

At least in comparison to the situation in the United States, the exchange of information and ideas in Europe between practitioners in the field of financial regulation and supervision and researchers in relevant fields was very limited in scope until quite recently. At the same time, the financial sector and regulatory challenges and practices have changed dramatically, as have the views of academics on regulatory and supervisory issues. An exchange of ideas between academics and practitioners can help to identify regulatory problems that call for innovative solutions and highlight effective ways of addressing them. What does this imply for the tasks which the ESFRC has set for itself?

There are, of course, many academics who prefer to remain in their ivory towers instead of making the results of recent academic research – which is often quite sophisticated in terms of the theories and methodologies it employs – accessible to politicians and practitioners. This usually involves "advertising" the importance and relevance of these results, and thus the possibility that they will be criticized as erroneous, irrelevant or impossible to apply in practice. However, the ESFRC feels that its job is to do precisely this, i.e. to attempt to derive strategies for practical action from academic theories and at the same time to test those theories with respect to their relevance and practicability.

Issuing statements aimed at politicians, policymakers and practitioners with the expectation that they will be taken seriously is indeed a way of testing the theories which underlie the statements. Although a given statement might be well founded from a purely academic point of view, its authors will be forced to conclude that it was not as sound as they thought it was if it turns out that those to whom it was primarily addressed, i.e. the relevant group of practitioners, reject it as inappropriate or useless. A consistently negative reaction to the statements of a shadow committee would not only undermine the credibility of this committee, but would also make the relevant group of policymakers generally less willing to accept advice from the academic community.

The ESFRC is aware of how important it is to avoid this outcome. This it why it endeavours to take the problems faced by practitioners seriously. And if it is clear to them that the Committee understands their problems and realises how difficult it is to solve these problems in the real world, then this means that the first section of the bridge between academics and practitioners has already been built. Important insights produced by advances in economic theory, such as the recognition that explicit and implicit guarantees for financial institutions serve to increase risk, or the insight that adherence to the "principle" that some banks are too big to fail has adverse consequences, will only be accepted – and will only begin to shape regulatory policy and practice – if a serious effort is made to show how they can be implemented in the real world.

**Emerging from the shadows…**

It is clear that the Shadow Committees have positioned themselves "in the shadow" due to their self-imposed mission to "shadow" the official regulators and supervisors of financial institutions and markets. However, by trying to make practically-oriented recommendations, which are based on the insights of advanced academic literature but can also be implemented in the real world, the Shadow Committees try to emerge from their self-created shadows.

At the same time it is clear that policymakers still tend not to pay sufficient attention to insights provided by modern economic theory on issues such as incentives, moral hazard, and the potential benefits of enhancing market discipline. As noted before, the January 2001 Basel Committee proposal provides an interesting illustration of this point. Because of this limited use of insights provided by modern academic literature, official regulators and supervisors are putting themselves "in the shadow". A more systematic and consistent implementation of concepts of modern economics could help them to emerge from their own shadows.

## NEO-AUSTRIAN THEORY OF FINANCIAL MARKETS

Market discipline of financial institutions, such as implied by the subordinated debt proposal, is usually thought to be conceivable only if financial asset prices are informationally efficient. Given empirical evidence of frequent inefficiencies on financial markets, the question could arise whether, for instance, risk premiums on subordinated debt could still be used in the supervisory process of determining regulatory capital requirements.

In a paper published in *The Journal of Finance* of June 2001, Benink and Bossaerts present a Neo-Austrian theory of financial market processes, which considers the market to be continuously evolving from one inefficiency to another, never attaining the perfect, efficient equilibrium, yet strongly attracted towards it. The implication of such a view is that, notwithstanding the possibility that financial markets might be inefficient, financial asset prices can still be used as a reliable indicator.

### An alternative view

The neoclassical rational expectations view of financial markets is one of continuous equilibrium with informationally efficient prices. Empiricists have recently questioned the validity of this model, pointing to evidence of inefficiencies. Alternative views have been presented to better match the empirical evidence. One of these considers the market to be continuously evolving from one inefficiency to another, never attaining the perfect, efficient equilibrium, yet strongly attracted towards it. Creative investors track and exploit profit opportunities generated by continuous shocks in a never-ending cycle. The result would be a stable process with pronounced regularities.

Such a view follows from the Neo-Austrian theory of market processes, a recent rereading of the ideas of Friedrich Hayek (see, e.g., Hayek 1937, 1945, 1948, 1978, Littlechild 1982, Rizzo 1990, and Kirzner 1997). According to Neo-Austrian theory, a competitive market provides a systematic set of forces, put in motion by entrepreneurial alertness (i.e., eagerness to make money), which tend to reduce the extent of ignorance among market participants. The resulting knowledge is not perfect; neither is ignorance necessarily invincible. *Equilibrium (*read: market efficiency) *is never attained*, yet the market does exhibit powerful tendencies towards it. The fact that equilibrium is never attained is attributed to an erratically changing world where traders realize that their *knowledge is imperfect*. At the same time, the changes are never so extreme as to frustrate the emergence of powerful and pervasive *economic regularities*.

For the reader who is not familiar with Neo-Austrian thinking, let us be more specific. According to Hayek, the problem of economic choice and ultimately the analysis of economic behavior in neoclassical theory is oversimplified, because it has been reduced to optimal behavior under constraints that agents are supposed to be very familiar with. These constraints concern (1) preferences, (2) production and market technology, and (3) resources. In contrast, the Neo-Austrian view stresses that fundamental uncertainty and ignorance exist regarding these constraints. This uncertainty and ignorance is claimed to lead to disequilibrium, and disequilibrium itself generates further uncertainty and ignorance regarding the constraints. Disequilibrium thereby becomes self-enforcing and permanent.

However, alert participants in the market process, whom the Neo-Austrians define as "entrepreneurs", do try to get a (necessarily incomplete) picture of the nature of the disequilibrium in the marketplace, because disequilibrium generates profit opportunities. The actions of these entrepreneurs produce the very signals that are needed to reduce disequilibrium. However, due to continuous change in the constraints, equilibrium is never achieved.

The Neo-Austrian view lacks the mathematical rigor that has become characteristic of neoclassical economics. Certainly when applied to financial markets, the Neo-Austrian approach seems to be vague at first. Our analysis should be viewed as an attempt to come to an understanding of it in the standard probabilistic language of finance. Some may disagree with our translation. In that case, the reader should consider our analysis as providing an alternative view of the operation of financial markets, inspired by, but not necessarily adequately reflecting, Neo-Austrian economic thinking. As will be discussed shortly, the analysis carries a distinct message about the empirical analysis of inefficient financial markets, independent of its goal to translate Neo-Austrian theory into standard financial language.

**Stationarity and inefficiencies**

The most intriguing aspect of Neo-Austrian financial economics is its insistence on regularities, that is, on *order*, while at the same time *rejecting market efficiency*. We take the position that order must be translated into the probabilistic concept of *stationarity*. Loosely speaking, this means that once an event occurs, it is certain to recur at one point in the future, even if that point is unpredictable. Such events are regularities. But, if our translation of order into the notion of stationarity is correct, the Neo-Austrian view does present a puzzle when applied to financial markets. It is a simple implication of the ergodic theorem that stationarity enables one to consistently estimate all patterns in the data. This means that investors could uncover all inefficiencies, and exploit them, only to eventually lead the market towards an efficient equilibrium, something that Neo-Austrians claim will never be attained.

This puzzle is all the more forceful if one appreciates Neo-Austrians' insistence that the failure of markets to reach the classical equilibrium ought not to be attributed to costs of any nature (adjustment costs, information costs, trading costs, etc.). As mentioned before, the non-convergence has its origin in limitations of knowledge, however vague this expression may seem. By this Neo-Austrians do not mean that certain parameters of the price processes are unknown; stationarity would contradict that.

We propose the following resolution for the puzzle. A fully rational, risk-averse investor, having detected evidence against market efficiency, will not exploit this if he fails to understand the nature of the inefficiencies. To determine the latter, he wants reliable confidence statements about the inference he draws from the data. There are situations where these statements cannot be made, namely, when the assumptions behind classical statistics are violated. To obtain correct confidence intervals, more is needed than just stationarity. In other words, the return process may still lack the necessary conditions to attach precise probabilities to statements about the true nature of the inefficiencies.

Despite the stability (stationarity), rational, risk-averse investors are unable to exploit all inefficiencies because they cannot make reliable inferences. This would be the case if the memory of the return process is sufficiently long for statistics not to display their usual distributional properties needed to construct confidence intervals. In the JF paper we provide an example of an economy where this is the case.

Faced with a situation where inference is unreliable from a classical point of view (yet the market is clearly inefficient), our investor may as well use rules of thumb to exploit the inefficiency. This situation is precisely the one that Neo-Austrians specify as being typical of financial markets.

Our investor resorting to using rules of thumb corresponds to the Neo-Austrian view that agents are not ignorant, but that they appreciate that knowledge cannot be perfect. Successful trading rules may be myopic and simple, and could be devoid of comprehensive economic reasoning.[6] They are, however, examples of reasonable reactions of a rational investor who realizes that inference may at times be limited even if the return process is stationary.

---

[6] Charles Plott often likens traders to fish, which are generally extremely good swimmers without knowing any hydrodynamics. In fact, fish are not even interested in hydrodynamics, just like many traders often show a lack of interest in academc finance. We provide a foundation for this attitude of indifference.

**Conclusion**

Our analysis has implications beyond Neo-Austrian economics. It exemplifies how classical inference can be unreliable when financial markets are inefficient. This should caution empiricists from concluding that they can infer the *nature* of inefficiencies once they have found that they exist. Loosely speaking, if inefficiencies are of the Neo-Austrian kind, not much can be said beyond admitting that inefficiencies exist. Market intervention that is based on potentially erroneous inference is certainly ill advised. Friedrich Hayek's distaste for government intervention in market forces now becomes understandable. Intervention may make things worse, despite the apparent inefficiencies that already exist.

## CONCLUDING REMARKS

At the end of this inaugural address I would like to thank all that have contributed to my appointment as Full Professor of "Institutional Design of Integrating Markets" at the Rotterdam School of Management / Faculteit Bedrijfskunde of Erasmus University Rotterdam. Especially, I would like to thank the following persons:

*Distinguished Board of Erasmus University Rotterdam,*
I am grateful for the confidence and opportunity you have given me at a relatively young age to work as a professor at Erasmus University. I look forward to our continued co-operation, also with respect to the new international Bachelor / Machelor of Science in Business Administration.

*Distinguished Professor Verhaegen, Dear Paul,*
As Dean of the Rotterdam School of Management / Faculteit Bedrijfskunde you play an inspiring role in further enhancing the international reputation of the business school. I look forward to a continuation of our intensive co-operation. At the same time, I would like to thank you for the special role you have played in my professional career: in 1989 you persuaded me to move from Tilburg University to Maastricht University, while in 1999 you considered it time to make another move to Erasmus University Rotterdam.

*Distinguished Professor Sijben, Dear Jacques,*
In September 1983 we met for the first time when I was a second-year student at Tilburg University, attending your lectures in monetary economics. I am rather confident that your enthusiasm has inspired me to specialize in the fields of monetary economics and finance. I am also grateful for the role you have played as one of the two supervisors of my Ph.D. thesis.

*Distinguished Professor Wolff, Dear Christian,*
During the period of 10 years that I worked at Maastricht University, we developed a strong and personal relationship. Although we have now gone different ways, I would like to thank you for these years of intense cooperation. I am also grateful for the support you provided as supervisor of my Ph.D. thesis.

*Distinguished Professor Koedijk, Dear Kees,*
Both in Maastricht and Rotterdam we have been working together on various projects. I am grateful for the support you have given me and look forward to our future co-operation.

*Distinguished Professor Kaufman, Dear George,*
I am grateful for the confidence you have given me during the past decade. In the early 1990s, when I was still a Ph.D. student, I visited you in Chicago. Since then, we have been working together on several projects. I recollect with pleasure the conference on financial fragility we organized in Maastricht in 1994. I also recall that you stimulated me to set up a Shadow Financial Regulatory Committee in Europe.

*Distinguished Colleagues at the Rotterdam Schools of Management and Economics,*
During the past 18 months I have been working with many of you in order to build up the new international program Business Administration. I look forward to our continued co-operation and to a further integration of both schools.

*Distinguished Students Business Administration,*
Last September, about 200 of you, coming from 43 countries, started as students Business Administration. I look forward to our joint efforts to make the program even more international.

*Dear Parents,*
I am very grateful for the support that both of you have always given me. I am also very proud that, at a age of around 75, both of you can be here today.

Ik heb gezegd,
Thank you very much.

## REFERENCES


Basel Committee on Banking Supervision (1988), *International Convergence of Capital Measurement and Capital Standards, Basel.*

Basel Committee on Banking Supervision (1999), *A New Capital Adequacy Framework*, Basel.

Basel Committee on Banking Supervision (2000), *Range of Practice in Banks' Internal Ratings Systems*, Basel.

Basel Committee on Banking Supervision (2001), *The New Basel Capital Accord*, Basel.

Benink, H.A. (1996), *Financial Fragility*, Ph.D. Thesis, Maastricht University.

Benink, H.A. and G.J. Benston (2001), *The Future of Banking Regulation in Developed Countries: Lessons from and for Europe*, Paper, Erasmus University, Rotterdam and Emory University, Atlanta.

Benink, H.A. and P. Bossaerts (2001), "An Exploration of Neo-Austrian Theory Applied to Financial Markets", *The Journal of Finance*, Vol. LVI, pp. 1011-1027.

Benink, H.A. and R.H. Schmidt (2000), "Towards a Regulatory Agenda for Banking in Europe", in G.G. Kaufman (ed.), *Research in Financial Services: Private and Public Policy*, Vol. 12, pp. 25-51.

Benink, H.A. and C. Wihlborg (2001), *The New Basel Capital Accord: Making It Effective with Real Market Discipline*, Paper, Copenhagen Business School and Erasmus University Rotterdam.

Benston, G.J., R.A. Eisenbeis, P.M. Horvitz, E.J. Kane, and G.G. Kaufman (1986), *Perspectives on Safe and Sound Banking*, MIT Press, Cambridge, Massachusetts.

Calomiris, C.W. (1999), "Building an Incentive-Compatible Safety Net", *Journal of Banking and Finance*, Vol. 23, pp. 1499-1520.

Dewatripont, M. and J. Tirole (1994), *The Prudential Regulation of Banks*, MIT Press, Cambridge, Massachusetts.

European Shadow Financial Regulatory Committee (2000), *Internal Ratings Capital Standards and Subordinated Debt*, Statement No. 7, Brussels.

Evanoff, D.D. and L.D. Wall (2001), *Measures of the Riskiness of Banking Organizations: Subordinated Debt Yields, Risk-Based Capital and Examination Ratings*, Paper, Federal Reserve Banks of Chicago and Atlanta.

Federal Deposit Insurance Corporation (1983), *Deposit Insurance in a Changing Environment: A Study of the Current System of Deposit Insurance Pursuant to Section 712 of the Garn-St Germain Depository Institution Act of 1982*, Washington, DC.

Federal Reserve Board (1999), *Using Subordinated Debt as an Instrument of Market Discipline*, Staff Study No. 172, Washington, DC.

Federal Reserve Board (2000), *Improving Public Disclosure in Banking*, Staff Study No. 173, Washington, DC.

Federal Reserve Board and Department of the Treasury (2000), *The Feasibility and Desirability of Mandatory Subordinated Debt*, Washington, DC.

Freixas, X. and J.-C. Rochet (1997), *Microeconomics of Banking*, MIT Press, Cambridge, Massachusetts.

Goodhart, C.A.E., P. Hartmann, D.T. Llewellyn, L. Rojas-Suarez, and S.R. Weisbrod (1998), *Financial Regulation: Why, How and Where Now?*, Routledge, London.

Hayek, F.A. (1937), "Economics and Knowledge", *Economica*, Vol. 4, pp. 33–54.

Hayek, F.A. (1945), "The Use of Knowledge in Society", *American Economic Review*, Vol. 35, pp. 519–530.

Hayek, F.A. (1948), "The Meaning of Competition", in F.A. Hayek (ed.), *Individualism and Economic Order*, The University of Chicago Press, Chicago.

Hayek, F.A. (1978), "Competition as a Discovery Procedure", in F.A. Hayek (ed.), *New Studies in Philosophy, Politics, Economics and the History of Ideas*, Routledge & Kegan Paul, London/Henley.

International Monetary Fund (1992a), "Structural Changes and Related Policy Issues in Financial Markets", *World Economic and Financial Surveys*, Washington, DC.

International Monetary Fund (1992b), "Asset Price Deflation, Balance Sheet Adjustment, and Financial Fragility", *World Economic and Financial Surveys*, Washington, DC.

International Monetary Fund (1993a), "Deterioration of Bank Balance Sheets", *World Economic and Financial Surveys*, Washington, DC.

International Monetary Fund (1993b), "Booms and Bust in Asset Markets in the 1980s: Causes and Consequences", *World Economic and Financial Surveys*, Washington, DC.

International Monetary Fund (2000), "International Capital Markets: Developments, Prospects, and Key Policy Issues", *World Economic and Financial Surveys*, Washington, DC.

Keeley, M. (1990), "Deposit Insurance, Risk and Market Power in Banking", *American Economic Review*, Vol. 80, pp. 1183-1200.

Kirzner, I.M. (1997), "Entrepreneurial Discovery and the Competitive Market Process, An Austrian Approach", *Journal of Economic Literature*, Vol. 35, pp. 60–85.

Latin-American Shadow Financial Regulatory Committee (2001), *The New Basel Capital Accord and Financial Stability in Latin America*, Statement No. 2, Caracas.

Littlechild, S.C. (1982), "Equilibrium and the Market Process", in I.M. Kirzner (ed.), *Method, Process, and Austrian Economics (Essays in Honor of Ludwig von Mises)*, Lexington Books, Lexington/Toronto.

Marcus, A.J. (1984), "Deregulation and Bank Financial Policy", *Journal of Banking and Finance*, Vol. 8, pp. 557-565.

Rizzo, M.J. (1990), "Hayek's Four Tendencies toward Equilibrium, *Cultural Dynamics*, Vol. 3, pp. 12–31.

Shadow Financial Regulatory Committees from Europe, Japan, and the U.S. (1999), *Improving the Basel Committee's New Capital Adequacy Framework*, Joint Statement, New York.

Sironi, A. (2000a), *Testing for Market Discipline in the European Banking Industry: Evidence from Subordinated Debt Issues*, Paper, Bocconi University, Milan.

Sironi, A. (2000b), *An Analysis of European Banks SND Issues and Its Implications for the Design of a Mandatory Subordinated Debt Policy*, Paper, Bocconi University, Milan.

U.S. Shadow Financial Regulatory Committee (2000), *Reforming Bank Capital Regulation: A Proposal by the U.S. Shadow Financial Regulatory Committee*, Statement No. 160, Washington, DC.

U.S. Shadow Financial Regulatory Committee (2001), *The Basel Committee's Revised Capital Accord Proposal*, Statement No. 169, Washington, DC.

**Erasmus Research Institute of Management**
**Inaugural Addresses Research in Management Series**
www.erim.eur.nl

**Triple inaugural address for the Rotating Chair for Research in Organisation and Management**

Quality Management Research: Standing the Test of Time, Prof. Dr. B.G. Dale

Performance Related Pay - Another Management Fad?, Prof. Dr. R.Richardson

From Downsize to Enterprise: Management Buyouts and Restructuring Industry

Prof. Dr. D.M.Wright

Reference number Erim: EIA-2001-01-ORG
ISBN 90-5892-006-2
http://www.eur.nl/WebDOC/doc/iarm/erimia20010405124454.pdf