Towards a Theory of Interdependence in Global Banking Regulation

DEBORAH L. ALLEN* and IAN H. GIDDY*

1. Introduction: Regulation and the New World of Wholesale Banking

The economics of banking regulation has long been a theme of interest to monetary economists, as a result of the central role that financial institutions, especially banks, play in the economy. Reserve requirements and bank soundness have been accepted by many economists as prerequisites of stabilization policy and monetary stability. During the past two decades, however, some economists have drawn attention to the fact that banking, like other industries, can and should be subjected to industrial organization analysis, and that such analysis leads one to conclude that much of banking regulation is anti-competitive and that there exist more direct means of achieving monetary stability. More recently the necessity of reserve requirements for controlling the money supply has been questioned. Many banking economists maintain that the present degree of regulation exceeds that necessary for the preservation of a stable banking system.

This paper represents an attempt to employ an economic analysis of the future of international banking regulation to explain the dynamics of such regulation and the kind of regulation that is likely to emerge in an interdependent system. The paper shows that several assumptions about the scope of regulation that hold reasonably well for a national banking market, break down when banking becomes multinational. In particular, it is argued that the blurring of boundaries of banking jurisdictions, and the ease with which banking business can shift, lead to the conclusion that an increase in competition in banking can give rise to competition among bank regulators themselves. As a result of competition and mobility in the international banking system, the banking authorities of various countries can and do change regulations governing international banks, so that a well-defined interdependence between the systems and regulations in one country and those in all others will emerge. Knowing the form of this interdependence, and knowing the manner in which national regulators react to one another's actions, will allow one to specify the degree of banking regulation that is likely to result under alternative conditions. This in turn, may permit economists to judge whether or not the integration of banking markets will lead to socially optimal banking regulations. This paper thus presents the outlines of a positive theory of international banking regulation under highly competitive conditions. The tentative theory draws its inspiration from the evidence that banks and their clients now possess a wider choice of regulatory envi-

*University of California, Los Angeles

*Columbia University

nment as a result of an erosion of boundar-
ies of three kinds during the past decade.
The first is the breakdown of geographical
barriers to entry; those associated with
national boundaries. Custom, the administra-
tion of regulations and licenses, and economic
factors had long maintained domestic bank-
ing cartels even in the major countries. Now,
however, the aggressive entry of foreign banks
(particularly American and Japanese) has
given domestic wholesale banking clients a
distinctly wider range of choice. U.S. banks’
branches abroad grew from 577 in 1970 to
623 in 1976, while the foreign affiliates of the
world’s 50 largest banks (excluding American
ones) grew from 997 to 1,847 in the same
period.
The second feature of heightened competi-
tion is the erosion of product boundaries in
international financial markets. Many of
the most important innovations in international
finance have involved services, such as the
issuing of bonds, that were once tied to particu-
lar countries, or to particular groups of
banks. Now, in contrast, financial services
available in the Euromarkets allow customers
to choose between banks of different national-
ties and in different locations. Eurobonds
allow placements to be made simultaneously in
a variety of countries where they are not
subject to traditional regulations governing
bond issues. Parallel loans, in which two firms
lend to one another simultaneously in two
different countries, allow corporations to
obtain funds even in countries with constrain-
ing credit and capital controls. Other new
products, such as rollover credits, multicurren-
cy options loans, and currency combina-
tion bonds, have been developed to provide
flexible means of coping with fluctuating
interest rates and exchange rates as well as
with regulatory constraints. Where the scale
or complexity of financial needs necessitates
cooperation, international banks have created
consortia, syndications, and project financing
deals which readily provide larger loans,
longer maturities, to a wider range of corpora-
tions and governments.
The third aspect of heightened competi-
tion has been the decline in the dominance of
particular banks and countries in the use of
their currencies to denominate assets and
transactions. One no longer has to do business
in Germany or with German banks in order
do business in German marks. The removal
of constraints on capital movements and the
growth of Euromarkets in most of the major
currencies allow banks of almost any nation-
ality to conduct business outside the jurisdic-
tion of national banking authorities. Approxi-
mately two-thirds of all deposits in banks in
Britain are denominated in currencies other
than sterling.

2. International Competition in
Bank Regulation

This new, integrated world of international
banking suggests that some standard assump-
tions underlying discussions of bank regula-
tion must be questioned. A growing propor-
tion of the international wholesale banking
community has become indifferent to whether
their business is done with American or
German banks, in London or Singapore, as
long as deposits are taken and loans made at
competitive rates. The financial innovations
noted above have, and greatly facilitated by
the increasing cost effectiveness of electronic
banking. Thus the wider adoption of banking
by wire and banking by computer will bring
the choice of regulatory environment deeper
deeper into traditionally stable banking
markets, until barriers are deliberately
erected to prevent this happening. Under
present and prospective conditions, banks and
their clients will tend to take their business to
nationalities or regulators’ cartel replaces a regula-
tory marketplace, a different (and more restric-
tive) structure of regulation is likely to result.

The public interest implications of each
outcome are discussed in Section 5.

Although the notion of competition in
banking regulation has not, to our knowledge,
been investigated in a formal fashion in any
sphere, there does exist a small literature on
the interaction between different federal and
state bank regulators in the United States,
where banks can and do shift from one juris-
diction to another. The most thorough study
of U.S. bank regulatory independence is
that of Scott. His can be regarded as a
“preferred habitat” theory: the regulatory
environment chosen by any given bank depends on its peculiar characteristics, and the
equilibrium distribution of banking can be
determined only by knowing the features of
each regulatory system and their match with
each bank’s characteristics. Scott employs
his model in an informal explanation of switching
between the state and federal chartering
options during the early 1960s as a result of
changes initiated by the Currency Act of
1968. Should the laws or regulations in one regime change, switching
among regulatory options will occur until a
new equilibrium is reached, as long as it
profit them to do so:

..., banks will choose to convert to the most
profitable options if the costs of conversion are less
than the increases in present value generated by it.

The theory of international banking regula-
tion presented here is similar in concept but
differs in substance from that of Scott. Unlike
banks within the United States, international
banks do not switch prime regulators, although
they readily conduct a portion of their
business in low-regulation locations such as
offshore banking centers. Instead, their

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3Scott, op. cit., p. 31.
clients themselves can move to a different set of banks if banks from one country find themselves unduly burdened or constrained by regulation. In comparison to Scott's, the model described in the next section is a simple one: switching is regarded as costless, and regulation as varying along a single dimension (from lax but risky to severe but safe regulation) rather than as a complex set of limitations and conditions. Finally, banks' clients do not necessarily pick the lowest-cost regulatory environment; they also consider the riskiness of that banking system.

The assumption underlying the present theory is that regulators, in competing with another to attract banking business, are acting like firms: they are seeking to maximize some utility function. To quote Scott again: “the regulatory agencies can be viewed as firms producing different brands of regulation and engaged in a species of competition for market shares.”

The notion that regulators can be viewed simply as utility-maximizing economic agents has been developed as an “economic theory of regulation” by Stigler6 and Posner,7 among others. Regulation, according to this theory, is a service whose quantity is governed by supply and demand. The demand for regulation is largely a demand for a redistributive mechanism, and is a device used by political interest groups to increase their wealth at the expense of less effective groups. Tens of simple versions of this model have, however, cast doubt on its explanatory power. A model better suited to the present purpose is one in which bank regulators seek some compromise between maximum “market share” and minimum risk of the system rather than merely serving as a fulcrum for competing interest groups. This a view shared by Niskanen,8 who has provided a comprehensive “bureaucratic theory of regulation.” Regulatory agencies, in Niskanen’s view, seek regulations that increase their aggs and therefore their power, prestige and security. In the present context they do so by reconfiguring the pressure from elected politicians for a safe banking system, with the demands of banks and their customers for a secure but low-cost regulatory environment.

In the world of international banking, the authorities of different countries can alter the severity of the regulation governing their banks so as to lower their risk or increase their share of global banking, but their ability to do so is constrained both by the manner in which banking customers respond to change in regulations and by the willingness of other regulators to take offsetting actions. In addition, since mobility implies integration of banking systems, the regulations of other systems influence the riskiness of the home banking system. The model to be outlined in the next section explores these linkages and their implications for the level of bank regulation in different countries.

3. A Model of Bank Regulators as Competitors

A tentative model of international bank regulators’ behavior may now be set forth in a more explicit fashion. It is assumed that there is only one type of international banking business of interest—perhaps large-scale whole-
sale dollar depositing—and that the total volume of this business is fixed. (It may be defined as unity.) Banking business is free to move from one country to another. Bank regulators are free to choose any level of regulation, but they have only one policy instrument (say, reserve requirements) which affects both the soundness and the profitability of banks subject to that regulation. The authors have explored a number of formal models of bank regulatory interaction, and have concluded that a minimum of two structural relationships and two behavioral functions are required.

First, what determines the level of risk of a given country’s banking system? Risk should increase with the general level of political and economic instability of the country; the United States, for example, has proved attractive to many foreign depositors and banks because of a low perceived level of socioeconomic risk. Moreover, because domestic banking systems are intertwined with one another through the Euro-currency and foreign exchange markets, it appears reasonable that some measure of the average risk level in the rest of the world (such as a weighted average of the risk level in the remaining n-1 countries) should have a direct bearing on the home-country risk. When a medium-sized bank in Germany, the Bankhaus Herstatt, failed in 1974, the repercussions were felt in all major banking markets. Finally, risk will be inversely related to the level of banking regulation imposed in the country of interest.

The second structural feature of interest is the return that can be earned by bankers in a given country. To the extent that customers have a predilection towards banks located within their own country, the size or growth rate of the economy could have a positive influence on returns. The costs of operations, including experienced personnel, rent, taxes, utilities and the like, will tend to reduce returns; some countries will simply have a competitive advantage in the banking industry. And finally, the level of regulation should affect returns negatively by raising costs or reducing the range of options for portfolio investment by banks. Putting this relationship together with the first, it becomes evident that a country’s own regulation affects the volume of banking it attracts negatively via its adverse effect on returns and positively through its risk-reducing function. It is reasonable to assume that the relative strengths of these influences are such that an increase in regulation has a net negative effect on the country’s volume share, although that need not always be the case. The first behavioral function involves the action of international banks, which, in a competitive market, must reflect the risk-and-return preferences of their customers. Simply put, banks seek to locate where perceived relative return is high and perceived relative risk is low, compared to the levels of return and risk thought to exist elsewhere. The volume of banking business that a given country might expect to control, then, should be positively related to the return associated with it and the average perceived risk in the rest of the world, and negatively related to the average return elsewhere and to the risk perceived to exist abroad.

Bank regulators, the subject of the second behavioral relationship, are thought to have similar, but not identical, utility functions. In accordance with the theory discussed in the previous section, regulators all may be assumed to desire to maximize the volume of banking business conducted within their aggs and to achieve some desired level of risk (not necessarily equal to zero). Regulators desire low levels of risk because they are judged partly by the stability of their system. But in the interests of efficiency and competition, they realize the advantages of a relatively unconstrained business environment, one in
which some (non-zero) risk of bank failure exists. Volume, then, will enter positively into their utility functions, and risk may enter as a quadratic in the form of squared deviations from the desired level.

Bank regulators, having two targets but only one policy instrument, will be unable (according to Tinbergen’s Rule) both to maximize the volume of banking they control and to achieve their desired level of risk. They, therefore, face a tradeoff between the two goals. The tradeoff or constraint facing regulators may be likened to a production-possibility curve: at any level of regulation, the tradeoff will be given by the ratio of the effect of regulation on risk to its effect on volume. If this tradeoff ratio is constant, the curve will be linear; otherwise it will be nonlinear. The particular point chosen by any given regulator will depend on his personal risk-return preferences, i.e., his marginal rate of substitution between risk and return.

From the point of view of any one country’s bank regulators, therefore, as long as foreign regulators behave themselves (i.e., keep their level of regulation fixed), there is an identifiable optimal level of regulation—the one that maximizes the regulators’ utility. But this is not the end of the story. Other regulators will, of course, charge their regulation in response to the first regulator’s change. If nothing else, the reason is that the share of banking in each location shifts as a result of the first regulatory change, thus moving foreign regulators off their chosen points. How this reaction can be modelled, and what the outcome is likely to be, is the subject of the next section.

4. When Regulators Compete—And When They Collide

The model described above is one in which banks and their customers are free to shop about the globe for the location best suited to their preferences. They seek high returns and low risk, with the former slightly more preferred than the latter. And bank regulators are not insensitive to this mobility. They, in turn, are free to vary their regulation in order to attract banks, at the cost of raising the level of risk in their country. Bank regulators are also able to choose whether to compete with each other or to cooperate. What is implied for the pattern and level of regulation in each of these situations?

The case of competition among bank regulators may be thought of as a Cournot game. Each begins to change his level of regulation under the assumption that the other countries’ regulatory levels are fixed. Each country’s selection of regulatory level gives all other levels a level set by that country’s own function. At each point on the reaction function a regulator is equating his marginal rate of substitution (MRS) between risk and volume with what he perceives to be the feasible marginal rate of transformation (MRT) between the two. But he bitterly ignores the effect a change in his level has on the volume and risk conditions in the rest of the world and, thus, on regulation elsewhere and ultimately on his own risk and volume levels. And when the foreign regulators react, each ignores any possible response by other regulators, including the first one. Only when the point at which no further iterations will improve anybody’s utility has been reached, will there be an equilibrium. The competitive solution, then, is the intersection of the reaction functions of the various countries, indicating the perceived MRT is equal to the actual in each case.

Under these competitive processes the level of regulation set by any country would appear to depend on three main conditions. First, the MRSs must be equated to the common MRT. Therefore, any country having a stronger-than-average risk aversion relative to return preference would be expected to have a higher level of regulation. Second, any deviation of desired from actual risk depends partially upon the exogenously determined risk level, a function of political and economic stability. Thus, the higher is this measure of stability, the lower will risk be for any level of regulation and the lower can regulation afford to be. Similarly, if the acceptable level of risk is high, regulation may be lower than elsewhere, ceteris paribus. Finally, the level of regulation elsewhere influences the equilibrium level of regulation in a given country, both directly and indirectly. The most straightforward impact of regulation in the rest of the world on that in one country is positive; lower regulation abroad brings about lower regulation at home in an attempt to offset losses of volume share. But lower regulation elsewhere raises the risk level of the entire system; hence home-country regulation will increase, thus producing a positive influence on the home regulatory level. The net effect of competition among regulators, then, appears to be a general reduction in the overall level of regulation with the final level in each country depending on exogenously determined risk and the relative risk-return preferences of home and foreign regulators and of the banks themselves.

Regulators may find themselves unhappy with this situation, however, and decide to collude for the benefit of all. They will then agree together on some level of regulation for each country that achieves some kind of joint utility maximization. The final solution in this case would be some point on the Pareto frontier, derived by maximizing each country’s utility, for given levels of others’ utilities. While it cannot be predicted which point will constitute the solution, the characteristics of the frontier itself may be roughly sketched. Each country will, at any point on the frontier, set its regulation so as to make the greatest contribution to the total utility, accounting for the interdependence of the system. The competitive cutting of regulatory levels will not occur and the net effect of the move to cooperation should be to raise the overall level of regulation. The pattern of regulation, of course, will depend upon the point of the frontier (implying the countries to be most favored) selected by the regulators’ cartel. The overall level will be affected by this decision as well, since at one end of the spectrum may be a country with a tremendous desire for volume and no risk aversion, while another may seek to avoid risk altogether despite the volume losses.

Two special cases serve to illustrate the differences between the cooperative and competitive solutions. If two countries are identical except that one has a stronger lust for empire relative to its concern over risk, it will have a lower regulatory level than the second in the competitive case. In the cooperative situation this divergence will be offset somewhat by an increase in country one’s regulation to reflect the risk imposed on other countries by its reduction in regulation. The divergence may even be eliminated should the selected point on the Pareto frontier favor the second country sufficiently over the first.

A second special case is constructed by assuming that countries ignore risk completely but do value volume shares. If regulators are competing, this is the case of "competition in laxity" and regulation will be driven lower. Bankers will find themselves in a less burdensome but riskier international banking system, however, regulation will not be driven to zero since at some point risk aversion dominates return preference, even for bankers. At this point the reduction in regulations would be halted. In the cooperative case regulation is indeterminate. In the first case regulators will continue to reduce regulation to prevent banks from switching location to a lower cost country. In the cooperative situation this possible switching will be anticipated beforehand and the level will be set to equalize risk and return across countries to preclude switching. The level of regulation will again be higher than in the competitive case.
5. Summary and Conclusions

This paper has sought to provide the skeleton of a theory of how knowledge of the behavior of bankers and the behavior of regulators, as well as certain other characteristics of the banking world, can be used to predict the form and distribution of banking regulation likely to appear as the world’s financial systems become more integrated. Various countries offer inherently attractive or risky characteristics for banking. Bankers seek attractive locations, unburdened by regulatory costs but preferably with low risk. Bank regulators, too, are constrained to keep risks down as close to a desired level as possible, but they also seek to attract banks to their respective countries by having relatively lower regulation. The system of regulation that will emerge as regulators respond to the actions of bankers and of other regulators depends in large part on whether regulators compete to attract banking business, or collude in seeking a globally-desirable regulatory level.

International bank regulators of the future will therefore face several choices. They may, as in the “competition in laxity” model, each seek to reduce the level of regulation below that of others in an attempt to attract banks. They may instead seek cooperative solutions as far as possible, aiming to raise regulations to a uniformly high world-wide level with no fear of competition. Failing that, some monetary authorities may choose to avoid interdependence and its burdens by insulating their domestic banking systems from the international financial markets. Finally, bank regulators could each compete in seeking a level of regulation consistent both with the reduction of risk and the minimization of cost to banks and their clients.

The first outcome is possible but unlikely in view of the desire of banks themselves to avoid zero-regulation environments if they entail risk. Isolationism can only succeed in some countries, and then only at great administrative cost and at the expense of the gains from trade. The cooperative outcome is feasible, at least in some dimensions of regulation, such as the establishment of uniform reporting standards or scope of jurisdiction. Any such comprehensive attempt, however, will suffer from the classical instability of cartels: participants have a strong incentive to reneges. A reasonable prediction, therefore, is that the natural evolution of a competitive international banking system is one towards rivalry in minimizing attractive regulatory environments—and hence less, not more, burdensome regulation.

*Visiting Lecturer, University of Maryland. Thanks are due Richard Levin for data and criticism.

The ICC expressed its confidence in piggybacking in the two major decisions setting policy for TOFC service [11,12]. Railroad industry enthusiasm is typified by the glowing press releases of the Association of American Railroads, for example [1]. The trade journal rates one issue a year on piggybacking; these are virtually interchangeable in their key forecasts [7]. Economists expect piggybacking to fill a niche in surface freight transport in the future [8]. Fruendt reports [2], Meyer et al. [4], and Nelson [6].

During this period (1954-1974) was responsible for this failure.

ICC Regulation

The Interstate Commerce Commission (ICC) regulates virtually every aspect of the rail freight industry in the United States. Two of the most important are rates and structure. If regulation forced piggybacking rates too high to attract shippers, or if the structure of the industry gave railroads the wrong incentives for developing piggybacking, then at least some of the lack of growth of TOFC service can be attributed to the ICC.

The ICC has frequently been criticized by economists for setting rates at higher levels than is optimal. In the case of the “Big John” innovation, the ICC suspended the proposed rates for carrying grain in the new type cars because the rates were too low, i.e., because the rates, although above variable costs, were below “fully allocated” costs. The Big John case went to the courts after the ICC’s ruling; the courts did not agree with the ICC, and the proposed rates went into effect with the ICC’s approval three years after the initial filing of the rates [5].

Regulatory review and judicial