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# Universal Banking and Bank Failures Between the Wars

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# ABSTRACT

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Although there is little doubt that banks between the wars were the victims of deflation, deflation alone cannot explain the cross-national distribution of banking crisis. In addition, one must take into consideration cross-country variations in banking structures--the degree to which banks were specialized. The paper argues that universal banking systems were more dependent on the support of the central bank for their existence than specialized banking systems were. Historically, the existence of a central bank willing to extend last-resort-lending facilities to commercial banks was a necessary (though not sufficient) condition for the emergence of universal banking systems. The withdrawal of this support during the monetary contraction of the 1920s, at a time when central banks around the world were concerned about curbing the inflationary spiral fueled by the war, made universal banking systems more vulnerable to an illiquidity crisis than specialized banking systems. The paper offers systematic evidence for 16 countries. The paper ends with a critical assessment of the reforms introduced in the aftermath of the crisis, arguing that the rationale for these reforms was not economic but political.

# Universal Banking and Bank Failures Between the Wars

Many economic historians, following Keynes, have laid the blame for interwar banking crises on the contractionary monetary policies of the late twenties, motivated by acquiescence to the gold standard (Temin 1989, 1994; Eichengreen 1992). Freezing bank assets, deflationary policies rendered banks illiquid. However, deflation was only the generic cause for bank breakdown; its impact was mediated by banking structures. Banking structures showed a different capacity to absorb deflation. In this paper, I investigate the role of universal banking. I supply evidence that universal banking systems were more likely to fail in the 1920s and 1930s than specialized banking systems. I also offer an historical rationale for this fact. Universal banking systems were more dependent on the support of the central bank for their existence than specialized banking systems were. Historically, the existence of a central bank willing to extend last-resort-lending facilities to commercial banks was a necessary (though not sufficient) condition for the emergence of universal banking systems. The withdrawal of this support during the monetary contraction of the 1920s, at a time when central banks around the world were concerned about curbing the inflationary spiral fueled by the war, made universal banking systems more vulnerable to an illiquidity crisis than specialized banking systems.[1]

Specialization is the opposite of universality: in specialized banking systems, the issuing of security is carried out by investment banks whereas deposits are collected by deposit banks; in universal banking systems, the same banks combine both types of operations. Investment and deposit banks

[1] The argument that universal banking is a source of illiquidity is not new--it was the lesson that governments drew from the Great Depression; nor is it without living advocates (Bernanke and James 1992; Jonker and van Zanden 1995).

differ in terms of risk-aversion to long-term immobilization. Investment bankers, who float new equity, will, when things go well, recoup their initial investment in no more than three months, very much like deposit bankers, whose activity, historically, was to discount three-month paper. Investment bankers alone, however, bear the risk of a failure--if the equity meets insufficient demand; thus they must be ready to assume a certain level of illiquidity.

Some American historians have shown that U.S. banks with security affiliates in the 1920s-1930s had a lower failure propensity than others (Carosso 1970: 242; Benston 1990; White 1986:40). However, this evidence cannot be used to argue that universal banking systems were more (or at least equally) stable than specialized banking systems. Evidence drawn from banks belonging to one banking system does not generalize to other national systems for three reasons. First, it is unclear how universal banks with affiliates in the United States stood in comparison with, say, German large banks; their investment base may have been too narrow to have an impact on their overall performance. Second, the U.S. banking system of the 1920s was also characterized by unit-(single agency) banking, a form of banking that has been also diagnosed as a cause for banking instability (Bernanke and James 1992, p. 54; Bordo 1985, p. 187). Since the U.S. banks with affiliates were large banks, and given that beyond a politically critical mass of bank failures, the U.S. government (like any other government) was bound to suspend payments, the findings may merely demonstrate that unit banking in the United States was a more massive and rapid cause of failure than universal banking--it says little about the relative failure propensity of universal and specialized banking systems. Only a comparative study controlling for other potential causes of banking failure can expect to isolate the role of universal banking. Last, universalism is more than a bank attribute; it is also, as I argue here, a systemic attribute--central banks entertain a closer



relation with banks in universal than in specialized banking systems. The analysis, therefore, must not be confined to one country, but must be cross-national.

The argument and evidence presented here should not be read to mean that universal banking is a form of banking that is less efficient, because less stable, than specialized banking. Many studies have convincingly shown, theoretically and empirically, that universal banking provides a solution to the problem of information asymmetry between lenders and borrowers that is superior to that provided by specialized banking (Tilly 1986; Calomiris 1995). Although models of information asymmetry have also been used to underline the inefficiencies of universal banking (Edwards and Fischer 1993), my intention is limited to showing that in the specific context of the 1920s, at a time when central banks across nations were pursuing deliberately tight monetary policies, systems of universal banking were less resilient than systems of specialized banking.

The present claim that universal banking systems were prone to illiquidity between the wars is compatible with, yet not reducible to, the lesson that almost all governments drew from the banking crises. The reforms that were adopted to deal with instability, however, were excessive or self-defeating. Rather than enlarging the deposit base of universal banks, of which the narrowness was in part responsible, as I will show, for the universal orientation of these banks, legislators instead penalized these banks for failing by legislating measures that had the effect of transferring part of these banks' market shares to their state, savings, and local rivals. The rationale for these reforms was not economic but political.

The first part covers the prewar era. A short description of the Belgian experience serves as preface to, and paradigm for, the later emergence of universal banking, characterized by a special relationship between central and

universal banking. The second part of the paper looks at the severance of this relationship between the wars and presents evidence of the effect of various banking structures for banking stability. The paper ends with an assessment of the validity of the reforms introduced in the aftermath of the crisis. The conclusion draws lessons for the present.

## A Forerunner: Belgian Universal Banking

The idea that central banking is a requisite for the stabilization of a universal banking system is not new. It was first made by B. S. Chlepner (1926, 1943) in his study of the first case of successful universal banking in modern history--Belgian banking in the first half of the nineteenth century. In 1830, Chlepner wrote, "Belgian banking was still in its infancy...the use of the check was almost unknown. Coins were the only circulating medium" (1943:6). By 1835, the two largest Belgian banks, the Société Générale and the Banque de Belgique, were universal banks, financing about one half of their industrial loans and participations in industry with capital and the other half with notes and deposits. The fifteen years that preceded the creation of the central bank in 1850 were described by Chlepner as unstable: the two competing banks overextended themselves in industry during boom phases, burdening their assets with unsuscribed emissions during subsequent slump phases, in turn, causing bank runs, illiquidity, temporary suspension, government financial aid, and recapitalization. The news of the 1848 Revolution in Paris and its attending financial crisis forced the government to declare the notes of the two banks legal tender and, two years later, to separate note-issuing from industrial credit by creating a central bank with note-issuing monopoly and rediscounting facilities (Chlepner 1926: 317). Rediscounting allowed the central bank to solve the mixed banks' recurring



liquidity problems; "the commercial banks were able to expand their discounts far beyond their deposits" (Chlepner 1943:35).

Chlepner's account not only gives us an insight into the stabilization of the Belgian banking system, but also in its formation. His study points to three requisites of universal banking. First, on the assets side, Belgian banks faced a shortage of commercial paper; rapid industrialization made lending to industry in greater demand than the financing of trade through bill discounting, traditionally handled by Dutch banks. Second, on the liabilities side, the banks faced a liquidity constraint: little cash could be tapped through either note-issuing or deposit-collecting, due to the public preference for coins and cash payments. Third, the liquidity constraint was offset after 1850 by a central bank engaging in the rediscounting of potentially long-term paper. These three requisites (demand for industrial loans, liquidity constraint, liquidity guarantee) are the three ingredients that one finds at the root of all universal banking systems that would emerge in the second half of the century.

## The Market for Deposits in the Second Half of the Nineteenth Century

Three changes occurred during the second half of the century that were key to the development of universal banking. First, industrialization spread to the rest of the continent, North America and Australasia, fostering demand for industrial lending. Second, the spread of industrialization led to a relative enlargement of the saving public and to a shift of the public's preferences from cash to checks (or credit transfers) for transaction purposes. Demand for deposit accounts, long and short, grew so much that it became thinkable for private bankers to finance lending with deposits taken from numerous individuals with whom they had no prior or other dealings. The second part of the nineteenth century thus saw in most countries a rush toward deposit

banking. Third, following the Belgian example, many of the countries which, until then, had been without a note-issuing monopoly, chartered one (Germany in 1875, Austria-Hungary in 1878, Italy in 1893, Switzerland in 1907[2]), whereas the Swedish central bank, which had lost its monopoly in the course of the century, recovered it in 1904. As in the Belgian case, the centralization of note issuing forced banks to concentrate on deposit collection for normal financing, while making available rediscounting at the central bank for abnormal needs.

Alexander Gerschenkron attempted to account for the emergence of universal banking on the continent by focusing on the first change alone--industrialization. He professed to have found a correlation between growth spurts and the creation of universal banks, a claim that has not very well withstood later historical scrutiny.[3] The claim that late industrialization was responsible for the emergence of universal banking proved incomplete because it overlooked (or assumed as endogenous to the process of industrialization) the other two requisites for universal banking--liquidity constraint and liquidity guarantee. Further weakening Gerschenkron's claim is the fact that industrialization was more or less happening simultaneously among the so-called "late-industrializers," that is, all countries but Britain and Belgium, the early industrializers, and perhaps the Netherlands and Russia, the very late industrializers, on account of their lateness to industrialize, making it difficult to use that variable to account for the differences in banking structures that obtained between most European countries. The other two conditions, in contrast, were not as well distributed, and the cross-national distribution of

[2] The law chartering the Swiss central bank was passed in 1905 but the bank did not open its doors until 1907.

[3] See Gerschenkron 1962. For critical reviews, see Cameron 1967 and more recently, the book by Sylla and Toniolo 1991. Note, however, that Polsi (1996:127) argues that the paucity of demand for short-term credit explains Italian banks' long-term investments.



these two variables together account for why universal banking failed to generalize.

This section considers the deposit revolution. The next section will address the issue of liquidity guarantee. Banks saw in deposit-collection a way of overcoming prior liquidity constraints. In Britain and France, for example, the deposit revolution made access to the central bank discount window redundant for most of the banks most of the time. Banks also saw in deposit-collection a way of improving profitability. Depositors typically earned less than bank shareholders; by increasing the share of deposits relative to capital, banks could raise earning on capital. Leading in this new type of banking were the clearing banks in England and Wales, the Crédit Lyonnais in France, the Deutsche Bank in Germany, the Privat Bank in Denmark, and the Stockholms Enskilda Bank in Sweden. But the benefits of the deposit revolution were not equally cashed in by all banks across the continent. Whereas in traditionally centralized countries such as Britain, France, Belgium, the Netherlands, and also New Zealand, the deposit market was open for capture by the newly-created joint-stock banks through the development of countrywide branching networks, in other countries, usually countries of lesser centralization, such as Germany, Austria-Hungary, Italy, Denmark or Norway, the market for deposits was already cornered by local savings banks. Savings banks existed everywhere, thanks mostly to their fiscal privileges (they were non-profit organizations) and the fact that their deposits enjoyed government guarantee. But whereas in centralized countries their activities were closely regulated by central governments, making them bystanders in the joint-stock banks' race for deposits, in decentralized countries, they were the *chasses gardées* of the local governments, which usually enjoyed enough regulatory power at the local level, or political power

at the central level, or both, to defend the local deposit market against inroads by the joint-stock banks.[4]

Local savings banks were not the only source of segmentation of the deposit market. Another source were the credit cooperatives and all kinds of mortgage associations, all locally-entrenched organizations, which, together with the savings banks, constituted the private non-profit sector. Still another source of market fragmentation, very important in federal states (British dominions excepted), were the local commercial banks, which were chartered by the local governments--the Kantonal and local banks in Switzerland and the State Banks in the United States. The Swiss cantons and the American states had the power to keep these banks in business through subsidies or regulatory means. Last in time, but not least in volume, the central government was another source of market fragmentation. In the most centralized countries, Britain, France, Belgium, and New Zealand, postal giro and savings became an alternative form of funding the public debt.

The various sources of fragmentation of the deposit market are summarized in Table 1. The market for deposits is divided into four sectors: (1) profit (joint-stock banks chartered by the central government and non-incorporated commercial banks), (2) non-profit (private savings, credit cooperatives, mortgage associations), (3) state (postal giro, postal savings, and other state savings banks or cooperatives), and (4) local (locally-chartered commercial banks in federal states). Combining all forms of segmentation of the deposit market together (nonprofit, state, and local) allows us to separate countries into two groups: countries with a degree of fragmentation below 50 percent (Canada, Britain, Japan, Spain, France, Australia, Sweden, Belgium, New Zealand, and the Netherlands) and

[4] For instance, Polsi (1996:120) argues that savings banks were a source of funds for Italian municipalities.



countries with a degree of market fragmentation above 50 percent (Norway, Denmark, Austria-Hungary, the United States, Switzerland, Germany, and Italy). The first group includes the countries with no or little universal banking, Belgium and Sweden being the exceptions. The countries of universal banking are mostly found in the second group, with the exception of the United States.

[ Table 1 ]

The logic for this observable correlation between the degree of fragmentation of the deposit market and the occurrence of universal banking, I contend, is similar to the one we encountered in 1930 Belgium: the commercial banks faced a liquidity constraint, although a constraint which was not caused by the public preference for coins and cash payments as in Belgium but by market fragmentation. Indeed, contrast the cases of France and Germany. In France, as Jean Bouvier (1968) showed, the Crédit Lyonnais and the other private banks moved along a secular trajectory from investment banking, in which they had catered exclusively to new and concentrated industries, toward modern deposit banking, in which they would mostly cater to small depositors. Able to capture the market of individuals' deposits unhindered, these banks became deposit banks, leaving the business of investment banking to institutions especially created for that purpose--investment banks and the stock market. They abandoned the field of investment banking altogether in order to match the maturity of their assets with that of their newly-gained short liabilities.[5] The outcome was specialized banking. In Germany, in contrast, where nonprofit banks were entitled to corner the market for smaller depositors, the large commercial banks were forced to

[5] See Bouvier (1968), and Lévy-Leboyer (1976:451).

cater to a wider clientele of large, industrial depositors, with whom they found both their most profitable lending opportunities and their most abundant sources of deposits (Riesser 1911). Unable to fully capture the field of deposit banking, and yet bent on being as large as their foreign competitors, the Berlin banks were forced to rely on their own resources to a greater extent than French deposit banks. Their liabilities showed a greater share of "own resources" relative to individual deposits (this ratio will indeed prove useful to measure universal banking). The greater cost of "own resources"--shares earned more than deposits--was an additional reason to stick to investment banking, a more profitable, because riskier, line of business. Generalizing beyond the French and German cases, one can say that, unlike joint-stock banks in centralized capital markets, joint-stock banks in fragmented markets could not completely vacate the field of investment banking.

Country studies offer partial confirmation that the fragmentation of the deposit market prevented large banks from specializing into deposit banking. Giuseppe Conti (1993:311) endorses M. Pantaleoni's (1977) argument that the narrowness of circulation combined with the competition from savings banks were the cause of universal banking in Italy. Dieter Ziegler (1991:11) sees the effective competition for liquid resources put up by the savings banks and cooperative banks as a partial cause for the German banks' involvement in riskier ventures. However, I have also found in the literature the opposite argument, according to which savings bank competition stunted the commercial banks' growth, and thus their capacity to become universal. The point is made with respect to Norway (Knutsen 1991 [p. 5 and 33 in original paper], and Egge 1983:291) and the United States (Calomiris 1995: 269). According to this second line of argument, universalism is a function of bank size.

Was universalism a positive or negative function of bank size? One way of settling the scores is to resort to a systematic comparison. We need a



measure of universality and a measure of bank size across countries. Universality, or rather its opposite, specialization, may be proxied by the equity-to-deposit ratio (EQUITY-DEPOSIT). It is the ratio of a bank's least liquid resources (capital plus reserves) to the most liquid ones (individual deposits, savings, and notes, when any).[6] The idea behind the measure is straightforward: commercial banks that are specialized in short-term lending usually have little need for long-term equity, but do finance most of their activity with cheaper short-term deposits, savings (and notes for banks enjoying note-issuing rights), without risk of illiquidity. In contrast, commercial banks with long-term positions in industry must employ dear long-term resources, lest they turn illiquid when the economy cools off. Ideally, it would have been preferable to sort assets by degree of maturity. Banks, however, grouped assets with little respect for maturity and in ways that were not comparable across banks and countries. The data for the year 1913, shown in Table 3 (appendix), track the overall sense of the historians: at one extreme, the specialized Anglo-Saxon banks (UK, Canada, and the USA), at the other the universal type (Germany, Italy, Austria-Hungary). Spain is an outlier, for reasons to be explained in a later section--commercial banks were late to engage in deposit banking.

Bank size may be proxied by a ratio featuring the number of commercial banks as numerator and the number of commercial banks and commercial bank branches as denominator. A higher ratio means a higher occurrence of single-agency (unit) banking. I call this variable UNIT, because systems of

[6] The denominator excludes creditor current accounts (except in the cases of Britain, the U.S. and Italy, where it was impossible to separate them out), which exist for transaction purposes and are usually unremunerated. Interbank deposits (which usually constitute a relatively insignificant proportion of total liabilities) are excluded whenever possible. The ratio is calculated on either a sample of the largest deposit-taking banks, or on the entire population thereof. A detailed list of the banks and liabilities included in the calculation of each national aggregate, along with balance sheet sources, is too long for inclusion here. It can be found in Verdier (1996) or from the author directly.

unit-banking, such as Norway and the United States, score the highest. In contrast, a lower ratio reflects a greater occurrence of branch banking. The earliest date for which this ratio could be computed was 1929 for 12 countries.[7] Data for both variables are recorded in Table 3.

Graph 1 offers a graphic display of the observed relation between universal banking and unit banking. The relation between universalism and unit banking is clearly positive. The United States is an outlier, and so would probably be Norway if we had data on Norwegian bank branches; the United State and Norway are two countries in which branching was not the mere effect of the competition between aggressive large banks and subsidized local nonprofit banks, but was directly mandated by the law. With the exception of these two cases, national banking systems with well-branched out banks were less universal than banking systems in which banks were constrained in their expansion by locally-entrenched competition.

[ Graph 1 ]

Factors other than the mere fragmentation of the deposit market had a role to play in the shaping of banking structures as well. Gerschenkron correctly argued that the demand for industrial banking was higher in Germany than in France. There is also the fact that Paris, like London, but unlike Berlin or Frankfurt, was an international financial center, providing French banks with access to the foreign government-debt market, a market supplied with relatively safe and short assets, such as foreign governments' unconsolidated debt. The fact is that all these variable were more or less endogenous; slow industrial growth, the existence of a large, unsegmented

[7] Although earlier data would have been more accurate, there is no reason to believe that the 1929 rank ordering of countries was much different.



deposit base, and easy access to international investment were mutually reinforcing traits in France, Britain, and the Netherlands, whereas fast industrial growth, high market segmentation, and moderate global involvement were mutually reinforcing traits in Germany, Austria-Hungary, Italy, Scandinavia, and the United States. Rather than seeking to unravel the causal relations between this set of variables, I will be content with noting that there is a prima facie relation between market segmentation and banking structure--banks operating in fragmented deposit markets had a propensity to become (or remain) universal. This was only a propensity, however, for a third prerequisite had to be satisfied for universal banking to exist--central banking.

Universal Banks' Need for Liquidity

Fragmentation of the deposit market restricted the banks' capacity to expand their liabilities. Universal banking was a solution to this problem, for universal banking could accommodate itself of a moderate amount of individuals' deposits. Universal banking, however, raised problems of another kind--illiquidity. Illiquidity manifested itself in two forms: as a constraint on profitability and as a risk. I develop each aspect successively.

Illiquidity for a bank implies the immobilization of resources into assets that are neither self-liquidating nor readily disposable. A bill is a self-liquidating asset, in that, at some determined point in time, it turns into cash, which the bank can reinvest into any other asset. A traded stock is a disposable asset, in that it can be cashed in at any time. Some assets, like treasury bills, are so-well traded that they do become de facto means of payments in lieu of cash. Since a lot of profit in commercial banking takes the form of fees (as opposed to interests, dividends, and asset appreciation), profitability

is a function of turnover, which, in turn, requires that the bank generates a constant source of cash to reinvest.

The literature on universal banks suggests that they have the tendency to become illiquid. Their assets, mostly advances to industrial companies, are not self-liquidating, but are regularly rolled over (Riesser 1911, Barret-Whale 1968). The possibility of securitizing these assets is limited, usually because of the limitations of the equity market.[8] Nineteenth century stock markets, even the most developed ones, mostly worked for government bonds, railroad and other government-guaranteed bonds, and the largest, best known industrial companies. Even today the contribution of the equity market to the financing of new investment is marginal.[9] Finally, for historical reasons, the countries with the best-developed markets for public debt were to be found in the centralized countries--Britain, France, the Netherlands--not so much in the other countries, thereby limiting in these other countries the development of an interbank market in which universal banks could have refinanced themselves. The historical solution to the liquidity constraint has been the chartering of a central bank which liberally rediscounts most of the paper that the banks present to it, including industrial paper.

The second problem that universal banks run against is the illiquidity risk. A bank is illiquid when the maturity of its due liabilities is shorter than the maturity of its callable assets. Note incidentally that the distinction between illiquidity and insolvency, though tight in theory, loses its simplicity in practice. In theory, a bank is insolvent when liabilities exceed assets. In practice, the two concepts are difficult to separate and their use polemical. For instance, assets that can no longer be realized at book value owing to a

[8] On Germany, see Tilly (1966:120). In Italy, the prewar stock market collapsed in 1907. On the narrowness of the Austrian industrial equity market, see Rudolph (1976:77).
[9] See OECD data in Colin Mayer (1990).



market downturn have a market value below their book value. If the downturn is temporary and the asset is expected to regain its prior value, the bank is said to be temporarily illiquid and deemed worth of support. If the downturn is expected to last, however, the bank is said to be insolvent and unworthy of government support. Such a determination is qualitative and ridden with uncertainty; it is a business bet, not an objective assessment. I will therefore use the word illiquidity liberally, with little concern for accounting accuracy.

To see why universal banking is a source of illiquidity, consider the two balance sheets of two imaginary universal banks in Figure 1. Bank "A"'s balance sheet is clear: half of its assets are liquid, the other half is illiquid. Each type of asset is "almost" proportionally financed by liquid and illiquid liabilities--"almost" because all banks take advantage of the information and collective action costs faced by their creditors to engage into maturity transformation. In contrast, bank "B"'s balance sheet is unclear: only a fifth of its assets are illiquid and a fifth are liquid. The other three-fifths are neither liquid nor illiquid (nor in-between)--they could be either depending on whether the financial market is buoyant or stagnant. If buoyant, the bank can easily liquidate these assets; if stagnant, it can't sell but at an unacceptable loss. In other words, the degree of liquidity of the assets in the gray area is a positive function of the business cycle. The reverse is true on the liability side. Again, one-fifth of the liabilities are illiquid (capital), one-fifth liquid (acceptances, checks dues), and three-fifths illiquid or liquid depending on whether lenders are optimistic or pessimistic about the economic outlook. The prospect of a buoyant market makes lenders willing to keep their money in the bank, whereas the prospect of a downturn incites them to liquidate their deposits. The degree of liquidity of the liabilities in the gray area is a nega-

tive function of the business cycle. In sum, variations in the business cycle force the liquidity of assets and liabilities in opposite directions.

[ Figure 1 here ]

If we now ask which of our two universal banks "A" and "B" should specialize, then it is clear that "A" need not specialize. In the worst situation, it will have to reimburse (almost) all depositors by calling on all its debtors. The solvency of "A", thus, is not affected by changes in the business cycle. Bank "A," however, is a mere rhetorical figure, with no match in reality. Real universal banks are of the "B" type, a type whose solvency, in contrast, is affected by the business cycle. When the economy is booming and the financial markets are flushed, "B" finds itself with lots of liquid assets being financed by lots of stable (illiquid) liabilities--it is potentially losing money, for not making an optimal use of its liabilities (like "D"). In contrast, when a crisis is pending and the financial market chills, then that same bank is now insolvent; four-fifth of its liabilities are liquid whereas four-fifth of its assets are frozen (like "C").

Bank "B" cannot easily guard against the risk of insolvency trough prudential behavior because no one can forecast the degree to which the next crisis will melt liabilities and freeze assets; it depends on the intensity of the crisis. A small chill may merely realign assets and liabilities along the fifty-fifty line, making "B" like "A"; a bigger chill will cause insolvency. Further, once started, the panic develops its own dynamic. "B" does not know what a priori could be a safe ratio, and neither does the investing public, with the result that "B" is shunned by risk-averse depositors.

The situation was made worse with the product diversification in which banks engaged toward the end of the century. To attract new business, banks developed new instruments with variable liquidity. The discounting of commercial paper, we saw earlier, was progressively replaced by advances on



current accounts, substituting for a rigid 90-day loan one that was flexible and that could effortlessly be prolonged. New as well, advances against stock exchange securities could be temporary or indefinitely renewed, depending on the health of the stock market. Individual deposits with all kinds of terms could all be withdrawn at a moment's notice against a penalty of which the amount reflected the length of the otherwise-due advance notice. The new instruments--current accounts, advances, and deposits--were elastic and subject to the vicissitudes of the business cycle.

There was no once-and-for-all solution to this quandary that bankers could individually provide. The only practical solution was regulatory: the existence of a non-market mechanism that tided banks over in periods of financial emergency by maintaining the liquidity of their assets. By keeping bank assets liquid, a lender of last resort would keep deposits stable, as depositors' fear of insolvency would diminish. Runs on banks would not materialize.

## The Central Bank as Liquidity Guarantor

In sum, universal banking systems were more likely to run into liquidity difficulties than specialized banking. Their assets were insufficiently liquid, constraining turnover in normal times and risking suspension in times of crisis. The two problems afforded a common solution in the creation of a central bank willing to accommodate the banks' requests for rediscounting under almost any circumstances. The best known evidence is that provided by German witnesses before the U.S. National Monetary Commission in 1908. They testified that the Reichsbank policy was to discount all commercial bills, whether related to the needs of trade or not, that were presented to it, even if the bank's cash reserve were to fall below the statutory minimum

in a period of panic (Bopp 1953:26-28). "Bills were as good as cash," with the result that German bank cash reserves were much smaller than English-bank reserves (McGouldrick 1984:335).[10] "The German banks, Charles Tilly writes, did not have to live with the fear of illiquidity which combining commercial and investment banking activity might otherwise--e.g., under the British set of arrangements--have dictated" (Tilly 1986:145).

The Reichsbank had a public service approach much different from the Bank of England's profit-motive, so well illustrated by Dieter Ziegler.[11] The Bank of England was most disinclined to extend a liquidity guarantee to other banks, making it instead a matter of personal discretion. The bank was obviously reluctant to finance the competition of the clearing banks.[12] The Bank of France evinced competitive traits in ways similar to the Bank of England. The Bank of France was run by the members of the private and haute banque; never did a representative of the deposit banks become a director. The bank viewed the Crédit Mobilier (allegedly the first French universal bank, although in practice it remained an investment bank) as a competitor, deemed universal banking doomed, and from 1870 until 1938 competed with the banques de dépôts for prime commercial paper.[13] Of course both the Bank of England and the Bank of France rescued failing banks whenever such failure would threaten the stability of the banking system. Competition was as much a profit-maximizing strategy as a way of maintaining systemwide liquidity. By restricting discounting to prime paper in France, the Bank of France would force deposit-taking banks to remain liquid as only a very small part of their assets could elicit rediscounting at the central bank in times of crisis. Similarly, by not making last-resort lending

[10] See Bopp (1953, p. 6), Goodhart (1988, p. 107), and Barret Whale (1968, p. 128).
[11] See Dieter Ziegler (1990).
[12] See Ziegler (1990); Tilly (1989, p. 198);, De Cecco (1974).
[13] On the Crédit Mobilier, see Paulet 1995.



systematic, the Bank of England strengthened the solvency of the British banking system, since, being unable to count on the guarantee of the central bank when in need of it, the clearing banks were forced to become self-reliant.[14]

The contrast between Germany, on the one hand, and France and Britain, on the other hand, raises the question of moral hazard in systems of universal banking. Unable to turn down demands for liquidity, central banks in universal banking systems are obvious candidates for abuse on the part of the commercial banks they supervise. Knowing that they will always be helped, the latter are led, by rationality or under the urgency of interbank competition, to invest in risky assets, thereby leading to a perverse spiralling effect. This seems to have bee the Italian experience. The Bank of Italy was a bank with a very liberal discounting record. In his study of the 1907 crisis, Franco Bonelli argues that the Banca d'Italia discounted all the paper presented to it by the Società Bancaria Italiana, even that of residual quality (1971:32). The Bank of Italy also had a liberal rescuing record, beginning in fact under its de facto predecessor, the Banca Nazionale, and applying well beyond the banks, to entire sectors of industry (Polsi: 1996, 123 and 131; Cohen 1977: 83). This policy, added to the financing of the government debt, had negative consequences for currency stability.

The rationale for why the Reichsbank was able to minimize moral hazard remains to be elucidated. One is led to presume that the Reichsbank and the Berlin banks had a special relationship, built on mutual dependence and maintained through private networks. It was noted by contemporaries that pretty little gold fled Germany when the exchange with the sterling was not

[14] The argument about Britain is also found in Tilly 1989:198.

favorable to the mark in 1897, 1907, and 1911.[15] As early as 1899, A. Sayous (1899:149), a French observer, ascribed this benevolent attitude on the part of the banks to the threat of personal retaliation. Sayous observed that this capacity to protect the metallic stock "*par les froncements de sourcils de M. le Directeur*" was unthinkable in France, where, as already mentioned, the joint-stock banks were not admitted to the *Directoire* of the Bank of France. It was also unthinkable in Britain, where the Bank of England enjoyed no supervisory powers over its rivals, and where its moral leadership did not extend beyond the "inner circle of the City" (the accepting and discount houses).[16] Even in Italy, where the central bank was created to supervise the commercial banks, the fact that the Banca Commerciale and the Credito Italiano were partially German-dominated, Douglas Forsyth (1991:185) argues, was a permanent source of conflict between the Bank of Italy and the two largest, Milan-based commercial banks.

## The Timing of the Liquidity Guarantee

I have argued so far that the existence of a liquidity guarantor, or, perhaps, a special relationship between the central bank and the largest banks under its supervision, was a prerequisite for the survival of universal banking. It follows that universal banking is unlikely to have occurred in systems of free banking, which were void of central bank, and in systems of central

[15] The practice was already reported by a French observer (Sayous 1899, fn. 1, p. 149) in an article published in 1899. It happened again in the fall of 1907 and during the Moroccan crisis of 1911 (Barret Whale 1968, p. 132). The Frankfurter Zeitung wrote in reference to the 1907 occurrence: "...it must have been either mistaken patriotism or fear of antagonizing the Reichsbank whcih for so long a time kept our bankers from exporting gold, and which really created a depreciation, however short lived, of our monetary standard in the international money markets" (National Monetary Commission 1910, p. 31).

[16] See De Cecco 1974 and Hirsch 1977, pp. 241-57.



banking in which the central bank and the commercial banks were competing for business. I develop each point successively.

Most systems of free banking had no universal banking. This is true of Canada, Australia, and New Zealand, which did not charter a central bank until the 1930s. The United States, which acquired the rough equivalent of a central bank in 1914 in the form of the Federal Reserve System, had no experience of universal banking until then. The U.S. Federal Reserve System allowed private banks to reduce asset liquidity and acquire security affiliates.[17]

Switzerland had no central bank until 1907, and, although the Swiss Großbanken were universal, the banking system as a whole was not viable, but subject to recurring crises and a permanently depressed exchange.[18] The chartering of a central bank stabilized Swiss universal banking. Despite its initial desire to make the Swiss franc a strong currency, the bank soon gave up on using the discount rate as a means of stabilizing the franc, trying instead to satisfy the commercial banks' needs for liquidity.[19]

In other countries, the existence of a central bank was no guarantee that the commercial banks could count on the central bank to assume the role of liquidity guarantor. The two sets of institutions could instead be locked up into a fierce competition, thereby ruining the prospects for universal banking. We saw an instance of such a competition in the French and British cases. These two cases, however, are weak cases for the argument that competition caused specialized banking. Able to tap deposits unhampered, and carefully avoiding industrial assets, British and French commercial banks had no need for their respective central bank discounting facilities. Britain, in addition,

[17] Cleveland and Huertas 1985, pp. 59-71.

[18] Guex 1993, pp. 20-38. Conant 1927, pp. 302-12. Goodhart 1988, pp. 111-14.

[19] This point is argued by Marguerat (1995:246).

was the home of Bagehot and central banking theory; our understanding of the role of central banks as stabilizer derives from his exploration of the English experience.[20]

Norway is a more instructive case. Industrialization and market segmentation joined to create a demand for universal banking. Moreover, a central bank already existed. Yet the competition between this bank and the commercial banks was so intense that it prevented the central bank from extending a liquidity guarantee to its competitors, thereby precluding the development of universal banking altogether. Competition escalated into an open conflict in the 1890s, during which a number of Norwegian provincial banks established their own central bank, soon to become the largest bank in the country. A regulatory battle ensued, lasting until after 1907. Norwegian banking was still specialized until 1914, with Norwegian banks offering commercial services, while investment banking was supplied by foreigners. It is only during the war that Norwegian banks began to get involved in industrial finance.[21]

The Swedish case can be viewed as an attenuated version of the Norwegian case. The central bank of Sweden, the Riksbank, was the oldest of its kind--it was founded in 1656. The Riksbank became the bank of the agrarian periphery when the Diet, which administered it, fell into agrarian hands in 1864. The Crown government, more favorable to commerce and industry, instead, became the champion for private (later, joint-stock) banks, the so-

[20] Bagehot 1991.
[21] On Norway, see Knutsen 1991, p. 5; Lange 1991, p. 3; Nordvik 1993; Hodne 1975, p. 327; and Egge 1983, p. 278. Lange (1991:4) accounts for the lateness of universal banking in Norway in terms highly similar to Gerschenkron's account of the Russian case. Lange argues that until the 1870s, Norwegian public banks virtually monopolized the credit market for business customers, preempting merchant banks. Gerschenkron (1962: 22) similarly argued that Russian banks were deposit banks during the phase of state-led industrialization and turned universal after 1907, as the state reduced its intervention in industry.



called "Enskilda" banks. The outcome was a carefully balanced capital market. The Riksbank lost its monopoly over note-issuing in 1830, which it exorcized in competition with the Enskilda banks, championed by the government. It was the government, not the central bank, that engaged in lending of last resort in times of crisis.[22] Moreover, the joint stock banks' activities were from 1877 on subjected to government inspection to make them safe for shareholders and depositors.[23] The resulting banking structure was not universal yet. In 1898, a truce was struck, according to which the Riksbank received note-issuing monopoly in return for a promise to withdraw from direct banking business and rediscount all bills endorsed by banks at preferential rates. That deal, institutionalized in 1904, consolidated an embryonic trend among private banks toward universalism.[24]

Like Scandinavian countries, Spain had an early central bank (the Bank of Spain was created in 1782 and granted sole right of issue in 1874) yet a late liquidity guarantor (1921). Despite this, one finds it commonly argued that Spanish commercial banks, in the decade preceding World War I, were universal banks (Martin-Aceña 1995, pp. 504-5). However, a look at the balance sheets of the most important banks in Madrid, Barcelona, and the Basque country suggests that universal may be not be the most appropriate way of characterizing these banks' activities--their capital/deposit ratio in 1913 was of the order of 5, several standard deviations above the average, and well above any other national experience, including that of Belgium in the 1830s.[25] The joint-stock banks of Spain were the slowest in Europe to move into the field of deposit banking. The banking scene in 1914 Spain was

[22] Goodhart 1988, p. 128.
[23] Larsson 1991, p. 82.
[24] On Sweden, see Gasslander 1962, p. 285; Nygren 1983; Sandberg 1978; and Lundström 1991, p. 187.
[25] See Table 3 in appendix.

very similar to that in 1860 Continental Europe (Belgium and the Netherlands excepted), when crédits mobiliers were launched in every country, Spain included. Yet, although everywhere else in Europe crédits mobiliers turned into either specialized deposit or universal banks, in Spain they remained what they were at the outset--investment banks until World War I. This backwardness may be imputed to the belated development of the deposit habit in conjunction with the rather competitive stand of the national Bank--it held 58 per cent of all bank deposits in 1900, deposits which, added to notes, gave the Bank control over 82 percent of all short-term bank liabilities (Martin-Aceña 1995, pp. 522-3). The Spanish government was too much in need of the Bank of Spain to finance its swelling debt (caused by political instability and then the war with the United States) to afford to strip it from its monopolistic privileges in the field of commercial banking, nor pressure it into accommodating competition. As a result, private bankers were crowded out from the field of deposit banking altogether. The Spanish banking system was specialized in an odd way, with the Bank of Spain monopolizing deposit banking and joint stock banks purveying investment banking. This monopoly, however, would be questioned overtime, as the state would put its finance in order during World War I and in the 1920s. Commercial banks could then develop their deposit business and turn into universal banks.

Let me recapitulate the argument. Universal banking reflected the conjunction of three factors. The first was industrialization and a demand for industrial investment, which equity markets, private fortunes, and corporate profits were unable to supply. With the exceptions of Britain, Belgium, the Netherlands, and Russia, this condition was pretty much met in all countries by the second-half of the nineteenth century. The second requisite was a liquidity constraint, or, more precisely, given the receding role of notes in the financing of banking, a segmented deposit market, in which local and state



banks were already well-entrenched. The second requisite was met in the late part of the century in most countries, except for some of the most politically centralized ones (Britain, France, and perhaps Sweden and the Netherlands), and the British dominions (Canada, Australia, New Zealand). The third requisite was the existence of a liquidity guarantor, that is, a note-issuing monopoly willing to play the role of a bankers' bank. The third requisite was not met in countries of free banking (the British dominions, the United States until 1914, Switzerland until 1907) and in countries where the government was unwilling or unable to force an existing note-issuing monopoly to abandon its competitive stand toward the rest of the banking system (Spain, Norway, Sweden until the end of the century). Universal banking thrived in all other countries: Germany, Austria-Hungary, Italy, Denmark, Sweden past 1900, Switzerland past 1907, and the United States past 1914).

I must conclude this section on the origins of universal banking with a review of the Dutch case, on which the present analytical framework affords little grasp. On the one hand, Dutch joint-stock banks were overcapitalized, had little or no branches outside of the three largest cities, and, although extremely conservative in the choice of their assets throughout the century, made a decisive move towards mixed banking from 1900 until 1924, in response to the country's belated industrial spurt.[26] On the other hand, the Dutch capital market looked like its British and French equivalents; it was well supplied, had a well-developed stock market, featured a capital-export surplus, and was dominated from 1814 until 1914 by a central bank which an historian described as "a private corporation competing on a par with the commercial banks."[27] In sum, the first requisite (demand for industrial credit) was met after 1900; the second requisite (liquidity constraint) elicits

[26] Jonker 1991b, pp. 1-5; Vanthemsche 1991, pp. 107-8.
[27] Jonker 1991a, p. 5.

contradictory signals, with banks being overcapitalized and branchless on the one hand, but liquidity being abundant on the other; the third requisite (liquidity guarantee) was apparently not met, but, as in the French and British cases, could have easily been so had the government insisted. The quick failure that the Dutch venture in universal banking met--it was virtually over by the late-1920s--merely confirms the difficulty there is in coding the Dutch case. It may be that the stock market drained the available liquidity into government and foreign investments, forcing the banks to maintain high levels of capitalization, and forcing industrial investors in the early part of this century to call on banks for long-term capital. I have not found anything in the existing literature that would allow me to confirm or disconfirm this hypothesis.[28]

The Weakening of the Liquidity Guarantee

World War I modified two parameters: it restricted the liquidity guarantee that central banks could extend to commercial banks, while it intensified the fragmentation of the deposit market. I tackle the liquidity guarantee first.

When a central bank extends a liquidity guarantee to its banking system, it runs the risk, in a time of crisis, of having to print more money than suitable for the defense of the exchange. With the possible exception of Italy,

[28] Of all the reasons offered by Dutch historians to account for the high capitalization of Dutch banks up until 1913, none withstands closer scrutiny. The over-development of the savings banks and the stock market (Eisfeld, 1916; Kymmel 1996, p. 122; Jonker 1995: 190) may explain why commercial banks attracted relatively few individuals' deposits and why they had only big clients, but not why they were overcapitalized and less profitable than they could have been. The low demand for industrial credits before 1900 (De Jonge 1968, p. 301) may explain why banks lent short, not why they borrowed long. One is left with invoking Dutch bankers' "conservatism" or "lack of enterprise" (Kymmel 1996, p. 33; Jonker 1995: 191), an hypothesis with limited comparative value.



this potential contradiction between liquidity and parity never materialized until World War I. There was no inflation under the prewar gold standard; even a country like Spain, which was off the standard, experienced minimal price inflation (Tortella 1994, p. 870). A one-shot intervention of the central bank in favor of a panic-struck banking system, even though it might stretch the monetary mass a bit, was insufficient to reset inflationary expectations upward; everyone expected the central bank to retire the excess cash once the crisis was over.

World War I modified inflationary expectations. From the suspension of the gold standard in 1914 until the first postwar recession of 1921, inflation was widespread and uninterrupted. Inflation helped treasuries finance the war until 1918 and refinance the public debt afterward.[29] By 1920, countries were saddled with a monetary mass that had grown out of proportion with national production, a public that expected more inflation, and a government debt that was harder and costlier to sell. Governments opted for a restoration of the gold standard as a commitment device to puncture the inflationary bubble and restore confidence in their credit and currency. Countries engaged in sustained deflationary policies, central banks raising rediscount rates and governments balancing their budgets.

Deflationary policies limited central banks' freedom to engage in last-resort lending upon which commercial banks could count, as the slightest slip from orthodoxy was typically interpreted in currency markets as a sign of weakening resolve, each time with a consequent strain on foreign exchange reserves. On April 7, 1924, for instance, the Reichsbank introduced the "Kreditstopp," capping the amount of paper that could be rediscounted at the bank and thus limiting the bank's capacity to act as lender of last resort (Feld-

[29] Interest rates were kept low to allow national treasuries throughout the world to refinance their debt at low costs.

man 1993, p. 847; Balderston 1991, p. 567). The Norwegian government, which sought both to abide by the gold standard and to rescue failing banks in 1923, had to create a special agency independent from the central bank to carry out rescues (Nordvik 1993, p. 446). The Dutch central bank also passed the buck to the government in the early twenties (Jonker 1991a, p. 11).

In sum, the war begot a much tougher liquidity environment for banks in general, and, in light of their special dependence on a liquidity guarantee, universal banks in particular.

## The Scramble for Deposits

World War I had a second consequence on banking structures: it further fragmented the deposit market. The war intensified the competition for deposits between center and peripheral banks, including, for the first time, state banks. The competition for deposits was joined, indeed, by the debt-ridden states. Most states, belligerent especially, emerged out of the war with a bloated public debt in need of refinancing.[30] In some cases, government budgets kept showing deficits until the mid-1920s, further adding to the debt. Although all treasuries were able to place the debt on the national bond market, some governments, we saw earlier, had established their own banking network through the introduction of postal savings and/or the nationalization of savings banks. The fact that states would want to expand their banking networks should come as no surprise; overtime, central states structured capital markets in such a way as to ease the financing of the

[30] The only countries with a public debt in 1919 comparable to their prewar low were Switzerland and three Scandinavian countries. Spain also halved its extraordinarily large prewar public debt during the war (United Nations 1948).



public debt.[31] The deposit revolution of the late-19th century gave states an opportunity to rely less on bonds and more on deposits, unfairly competing with private banks, since deposits benefited from state guarantee and the rates paid were subsidized.[32] Of course, as shown in Table 1, not all governments enjoyed the power to start their own banking system. This depended, with some important exceptions, on the degree of political centralization already achieved. Hence, Britain pioneered postal savings in 1862. France, which had already centralized deposits in savings banks in 1837, followed suit with postal savings in 1882 and *banques populaires* (a kind of mutual credit society) in 1917. More systematically, by 1920, the state banks' share of the deposit market (central bank excluded) was about 40 in New Zealand, 22 in Belgium, 19 percent in France, 17 in Britain, 13 in the Netherlands, 2 in Canada, 1 in Sweden, Finland, and nil or almost in Germany, Denmark, Norway, Switzerland, Spain, and the United States. Two important exceptions to this pattern were Italy and Austria, in which the state controlled 24 and 15 percent respectively.[33]

While, in countries with a centralized state, commercial banks were mostly in competition with the state banks,[34] in Germanic and Scandinavian countries, the competition came from the nonprofit, non-state sector. In those countries, the war and interwar years saw the continuation of the prewar trend toward the deregulation of savings banks, which were eventually allowed to compete directly with commercial banks. The reason was inflation, which, by shifting demand away from long-term deposits to sight deposits, threatened the savings banks with atrophy. Between 1913 and

[31] See North and Weingast 1989; Hoffman and Norberg 1994.
[32] For instance, in 1913 France, the banks were paying 1.5 percent on deposit accounts on the average and the Caisses d'Epargne 2.75 percent (Gueslin 1992, p. 76)
[33] Sources are the same as those used in Table 1.
[34] See for instance Darres (1933) on France.

1920, the share of the deposits market held by the savings banks dropped by a third in Sweden and Norway, by half in Denmark and Italy, by two-thirds in Germany, and by five-sixths in Austria. In these last two countries, hyper-inflation further curtailed the savings banks' market share to an all times low of 18 percent in 1924 in Germany and statistical insignificance in Austria in 1923.

The savings banks were not allowed to fail, however, as they held vast amounts of central and local state debt--the more so that inflation weakened the public demand for bonds. In Norway, in the twenties, failing savings banks were automatically rescued and their deposits guaranteed by the central bank (Larsson 1991, p. 97). In Germany, local interests, unwilling to foot the bill themselves, successfully lobbied legislators to allow savings banks to diversify out of savings and mortgages, depreciated by inflation, into short-term business (Hardach 1995, 276). The war helped the savings banks secure access to the securities market, by placing Reich war bonds, by syndicating municipal loans, and by buying and selling all types of securities, except foreign (Feldman 1991, p. 69). In addition, having already won in 1908 the right to engage in current-account lending--the essence of commercial banking--up to a predetermined limit, the savings banks had the limit lifted in 1924 (Deeg 1992 p. 98).

The policy of keeping savings banks afloat and strengthening their competitive position through deregulation hurt the commercial banks in the second half of the twenties, during the period of deflation. Deflation shifted demand from short-term to long-term instruments. While the savings banks were able to rebuild their prewar savings, the commercial banks suffered from the fall in current account activity. Savings banks benefited from state guarantee; commercial banks did not. In countries like Norway, Sweden, Denmark, and Italy, the savings banks had more than regained the terrain lost



to commercial banks during the war. Even in Germany and Austria, where hyperinflation had annihilated savings, the savings banks had by 1930 managed to reclaim two-thirds of their 1913 market share--they would recoup the last third in the wake of the crisis of the commercial banks in the thirties.

In Germany, the commercial banks responded to the comeback of the savings banks aggressively. They launched a political campaign to request the central government to tax savings banks' current-account business the same as commercial banks'. Having failed, they signed a cartel agreement in 1928 with the central associations of the savings and mutual credit societies (also hurt by the savings banks' diversification), according to which savings banks agreed to stay away from large industrial loans in exchange for the commercial banks dropping their opposition. Emulating their Scandinavian counterparts, the Berlin Großbanken introduced savings accounts to compete with savings banks for long-term deposits (Deeg 1992, pp. 98-101).

It was unlikely, in conditions of unabated fragmentation, that universal banks would curtail their role in industrial finance. Even if they had wanted to, deflation sunk stock markets anyway, making it impossible for the banks to unload their equity holding or transform frozen advances into securities.[35] Only in the wake of the crisis of the 1930s would states allow the banks to unburden themselves of their unsalable assets.

In federal states (dominions excepted), the competition was not between private and state banks, nor between profit and nonprofit banks, but between center and local commercial banks. In Switzerland, the main competition was between the *Großbanken* and the *Kantonalbanken*, the rest (local, savings, and mortgage banks) playing a secondary role. Although commer-

[35] Forsyth (1991: 201) argues that Italian securities markets remained weak in the 1920s. Weber (1995: 345) argues that the Vienna stock exchange boomed in 1923 and crashed in the Spring of 1934, never to recover again afterward.

cial, the 28 Swiss cantonal banks, like German and Scandinavian savings banks, benefited from deposits state guarantee and tax immunity (Hartmann 1947, p. 50, 53). Hence, as for savings banks, the war inflation shrunk the aggregate market share of the cantonal banks, whereas the twenties' deflation enlarged it. The 8 Großbanken, in contrast, benefited from inflation, but saw their market share rolled back by deflation: with a market share about equal to that of their rivals in the twenties, the Großbanken had lost 20 points in percent market shares (calculated in total assets) to the cantonal banks by 1935; they would not manage to catch up until the 1960s (Ritzmann 1973).

In the United States, competition embroiled center (mostly New York, but also Philadelphia, Chicago, Columbus, and San Francisco) and non-center banks. The larger banks sought to circumvent restriction on branch banking through the absorption of smaller banks. State banks resisted concentration, promoting instead State-run deposits insurance schemes (White 1983, p. 207-22).

The interwar years were years of scrambling for liquidity. Three banking groups--state, peripheral (nonprofit and small commercial), and money center--were competing for deposits which were rendered volatile by the ups and downs in inflationary expectations. The universal banks were in an especially difficult position, facing greater competition from savings banks and other universal banks, while enjoying limited access to central bank resources and being unable to unburden their industrial investments on depressed equity markets.

Universal Banking and Illiquidity: Test

The hypothesis to be tested is that universal banking systems exhibited greater levels of instability than specialized banking systems between the



wars. It was not difficult to find events illustrating the prediction. The banking systems of Sweden, Denmark, the Netherlands, and Spain registered failures in the twenties. Those of Austria, Germany, Norway, Belgium, and Italy, all universal banking countries, were gravely affected by the 1931 crisis. In contrast, British, Canadian, Australian, New Zealandese, and French banking systems suffered least. In France, not only were all failing banks local and regional banks with heavy commitments in industry, but their failure actually strengthened the big deposits banks, to the branches of which local depositors transferred their assets (Laufenburger 1940, pp. 237-40; Born 1983, p. 271). The country with the lowest occurrence of universal banking, Canada, reported one bank failure for the entire interwar period, in 1923 (Drummond 1991, p. 233; White 1984, p. 132).[36]

Moving from anecdotal illustration to scientific evidence, however, is no easy task, raising three types of difficulties: (1) measurement of banking instability; (2) controlling for other sources of banking instability; and (3) working with limited number of observations.

**Measurement**. How to measure banking instability (the dependent variable)? No direct measure of instability is available, due to the diverse fate met by banks in distress: they can either be allowed to fail, or be rescued, usually by the state or the central bank, sometimes by a consortium of large banks acting under official leadership; or they can be absorbed by another private bank. Data on failures, rescues, or mergers are partial and qualitative, and mergers may happen for reasons other than illiquidity.

Banking instability was proxied by the average annual volatility of the ratio of commercial bank deposits to currency held by the public over the

[36] Note a dissident voice with respect to the Canadian case: Kryzanowski and Roberts (1993) argue that Canadian banks in the 1930s were insolvent at market values and remained in business only due to the federal government's implicit endorsement of the "Too-Big-To-Fail" approach.

period 1919-1936 (DEPOSIT-CURRENCY VOLATILITY). The deposit-currency ratio was pioneered by Friedman and Schwartz in their study of U.S. monetary history (1963, p. 52). They used it to proxy the public's confidence in the banking system. A drop in the ratio reflects a run on the banks. The use of the deposit-currency ratio as proxy for banking instability presents two caveats, however. First, the ratio is a proxy for "panic," not for a "hidden" banking crisis, in which distress is hidden from the public. Second, the ratio also picks up events of quite a different nature from public's confidence in the banks, such as the extent of branch banking, the tax strain, etc.[37] These other determinants, however, have fixed or slow-moving, long-term effects, which can be safely filtered out by focusing on short-term changes in the ratio. For each year and each country, I first calculated the percentage change in the deposit-currency ratio using the formula

$$\frac{\frac{D_t}{C_t} - \frac{D_{t-1}}{C_{t-1}}}{\frac{D_{t-1}}{C_{t-1}}},$$

with $D_t$, deposits in commercial banks at year $t$, and $C_t$, notes in circulation at year $t$. I then calculated for each country the standard deviation of these annual changes over the period 1919-1936.

Universal banking, next, or rather its opposite, specialization, is proxied by the equity-to-deposit ratio (EQUITY-DEPOSIT) which I already presented above. I used the 1913 value of EQUITY-DEPOSIT because the war inflationary shock merely emptied the ratio from all informational content. Equity being denominated in constant currency, war inflation automatically lowered the ratio. Banks subject to inflation should have revalued their long-term

[37] On this, see van der Wee and Tavernier 1975, p. 376; Bernanke and James 1992, p. 50).



assets accordingly and open equivalent reserves. In practice, banks did little of that, preferring instead to keep their assets undervalued, thereby building up "hidden" reserves. Although inflation upset market shares and balance sheets, it did not modify banking structures: if a banking system was universal in 1913, it stood a good chance of being universal in 1930. Conversely, if a bank was specialized in 1913, it stood a great chance of still being specialized after the war.

**Control variables.** The model controls for deflationary pressure and unit banking. Deflation was the generic cause for bank breakdown. Several years of deflation led economic actors to expect more deflation, postpone investment accordingly, prompting thereby a deflationary spiral. Deflation raised the real interest rate on debt. As banks' borrowers temporarily defaulted on repayments, banks faced the prospect of capital losses if they realized the collateral taken against the loans. Banks preferred to tide clients over transitory cash shortages. So doing, banks endangered their own liquidity, limiting their capacity to face a depositors' run, thus inviting such a run.

Deflation per se, however, may not be a proper control variable for deflationary pressure. Price level variations accommodate both external shocks and central bank's (and government's) decisions with respect to monetary policy. The sign of the expected correlation between deflation and bank distress is indeterminate. On the one hand, deflation is a direct cause for banking distress--more deflation should cause more distress. On the other hand, deflation is a policy which, being endogenously determined in a game involving firms, banks, and government, reflects firms' and banks' capacity to absorb deflation. If that capacity is low, the government might hesitate to

force too much deflation on its economy.[38] It is therefore quite conceivable that governments with weak banking systems pursued less deflation than governments with strong banking systems, thereby opening the possibility for a negative relation between deflation and banking failure. For instance, Germany and Austria experienced lower than average deflation, yet higher than average banking failure.

The sign of the deflation control is of no concern here, provided that it be exogenous to the model. To that effect, it seems desirable to control for the deflationary pressure generated by the inflationary bubble of the war and immediate postwar years only (WARDEFL). The rise of the consumer price index between 1913 and 1920 provides us with an estimate of the challenge facing central banks in 1920. I chose 1920, because it is the last year of the war and postwar boom. Each central bank faced three options. First, the bank could decide to return at the prewar parity; for that, it had to suppress war inflation by pursuing a deflationary policy of an intensity equivalent to the price differential between 1913 and 1920. Second, the bank could alternatively opt for a lower parity, sanctioning a depreciation of its national currency; for that, it had to deflate up to less than the price differential--the exact amount is given by

$$\text{WARDEFL} = \frac{P_{1920} - P_{1913}}{P_{1913}} - \frac{PG_T - PG_{1913}}{PG_{1913}} = \frac{P_{1920} - PG_T}{100},$$

with $P_{1913}$ and $P_{1920}$, the consumer price index respectively in 1920 and 1913 respectively, $PG_{1913}$ and $PG_T$, the price of gold expressed in the national currency respectively in 1913 and during the years the national currency was

[38] The argument was made by Marcello De Cecco: "[Deflation] ... is a policy option only really open to societies where the financial system does not have a stake in inflation. It must be a financial system not locked into illiquid loans to industry, which severe deflation might transform into insolvent ones." (De Cecco 1988, pp. 88-89).



linked to gold between the wars, and $P_{1913} = PG_{1913} = 100$. WARDEFL measures the deflationary pressure placed by the gold standard on each national economy in countries where the central bank strove to re-link its currency to gold at a fixed parity. The third and last option was for the central bank to stay out of the gold standard indefinitely, an option of little interest here, since pursued in none of the cases included in the present sample.

The second control variable is unit banking--a well-recognized cause of banking failure. Unit banking, we already saw, is a system in which banks do not establish branches outside of the area where they are headquartered, either because they are not allowed to do so by law or because they face tough competition. Unit banks are subject to so-called "nonsystematic" risk, which is particular to an industry (labor strike, declining sector, etc.). Individuals in general protect against industry risk through portfolio diversification. Banks can achieve portfolio diversification by opening branches in multiple regions, offering a different industrial mix. Unit banking is proxied by UNIT (see Graph 1 above).

There are two potential caveats linked to the use of UNIT as control variable. First, the objection may be raised in theory that unit banking is no more vulnerable than branch banking to systematic risk and that the Great Depression was a textbook case of systemic risk. In practice, however, unit banks may be the first to fail because the crisis, though systematic, hits some sectors faster than others. If this were the case, then, given the importance of timing for banking crises--indeed, past a certain number of failures, the government is bound to jump in and bar further deterioration--it would be sensible to expect unit banking to have been a substantial cause of the recorded distress.

A more serious difficulty is the already-evidenced colinearity between the control variable (UNIT) and the independent variable (EQUITY-

DEPOSIT). Although legally barred from branching out in only two countries, Norway and the United States, joint-stock banks had difficulties penetrating peripheral markets in all segmented markets. We saw that segmentation, in addition to causing unit banking, is one of the three requisites of universal banking. Universalism, therefore, implies unity, although the reverse is not true--the relation is heteroscedastic (see Graph 1 above). Placing the two variables on the right-hand side of an OLS equation may plague the results with multicolinearity. A way around this problem is to distinguish between two categories of unit banking: (1) unit banking that is established by law (Norway and the United States), which is presumably independent from universal banking, and (2) unit banking that is endogenous to universal banking (all other occurrences of unit banking). One need merely control for the legal cases of unit banking, by way of a dummy variable (UNITDUM).

**Small number of cases**. The test is cross-sectional, not longitudinal, essentially because the independent variable (universality) and one of the control variables (unit banking) are structural variables. Further limiting the number of cases is the rather small number of countries for which the dataset could be established: 12. Small N studies are subject to a variety of statistical problems, including the possibility that parameter estimates are strongly affected by outliers. I compensate for this limitation by performing a set of diagnostics: visual inspection of partial regression plots and calculation of the DFITS statistics.[39]

**Results**. Table 2 lists OLS estimates of the interwar illiquidity model. The variable EQUITY-DEPOSIT is signed correctly and reaches a comfort-

[39] The partial regression plot is, according to Bollen and Jackman (1990: 260) "the multivariate analog of the bivariate scattergram." Each plot generates a coefficient and a fit that are equal to the coefficient and fit of the dependent variable against the chosen right-hand-side variable, controlling for the other right-hand-side variables. The DFITS statistics measures the degree to which each case has a deviant residual and/or pulls the regression line toward itself; see Bollen and Jackman 1990.



able level of significance. The control for unit banking (UNITDUM) is also signed correctly and reaches a standard level of significance. The control for deflationary pressure (WARDEFL) takes an indeterminate sign, in light of the size of the standard error.

[ Table 2 ]

I analyzed regression 1 for potential influential outliers. The DFITS statistics revealed three potential outliers: two mild ones, the United Kingdom and Austria, and a very strong one, Belgium.[40] Although I have no explanation for Belgium being an outlier, I re-estimated the model without that case (regression 2). Removing Belgium improves the results across the board. The overall explanatory power of the revised model is superior to the initial one, with a new R-squared of 0.75 (instead of 0.63 in regression 1). The fit for EQUITY-DEPOSIT and UNITDUM is slightly better, while WARDEFL now reaches standard level of significance. We may note in passing the unexpected negative sign of the WARDEFL variable.[41]

A sensitivity analysis conducted on regression 2 isolates the United Kingdom alone as a potentially influential case.[42] However, visual inspection

[40] The DFITS statistics for Belgium in regression 1 is -3.306, which is well above the high cutoff of 2 (the square root of $p$, with $p$ being the number of variables plus one), let alone the low cutoff of 1.07 (2*square root of $p/n$, with $n$ the number of cases), suggested by Bollen and Jackman 1990. The DFITS values for the United Kingdom and Austria are 1.20 and 1.09 respectively, barely above the low cutoff. No other case has a DFITS statistics whose absolute value is superior to the 1.07 cutoff.

[41] The sign is no artifact of the construction of the variable. Two additional measures, using respectively consumer price variation during the 1920-1932 period and average budget balance over the same period, displayed a consistently negative, though not consistently significant, relation between banking failure and deflation (be it caused by decreasing price or a growing budget surplus). Although I suscribe to Marcello de Cecco's opinion on this (see footnote 38), providing evidence in support of that opinion would take us afar.

[42] The DFITS statistics for the United Kingdom in regression 2 is 1.701, above the 1.109 low cutoff, but below the 2 high cutoff. All other cases have DFITS that are inferior to the low cutoff.

of the partial regression plots reproduced in Graph 2 shows the UK case to be a mild, if at all, outlier. Regression 2 seems robust overall. The relation between universalism (EQUITY-DEPOSIT) and banking instability (DEPOSIT-CURRENCY) is particularly strong.

[ Graph 2 ]

The Solutions to the Crisis

From the banking instability of the twenties and thirties, governments rightly drew the lesson that universal banking systems had fared worse than specialized ones. An annual report from the League of Nations read: "The experience of the first post-war crisis and that of 1931 demonstrated the undesirability of commercial banks performing "mixed" functions in the existing banking structure" (League of Nations 1939, p. 93). However, the general response to the crisis, varying in intensity across countries according to the gravity of the crisis, was muddled.

A simple solution to the problem of bank illiquidity was to desegregate deposit markets. The segmentation of the deposit market was a cause for the liquidity constraint, in turn a cause of universal banking systems. As Adam Smith very simply argued, the division of labor is limited by the extent of the market. Its repeal, especially at a time when industrial spurts were things of the past, would have allowed the joint-stock banks of Germany, Austria, Italy, and Denmark to complete their momentarily-stalled trajectory toward specialized deposit banking, a system which had proven better able to withstand deflation than the system of universal banking. Whether this strategy



would have worked in practice, we shall never know, as none of the countries that suffered banking failures embraced it.

A second-best solution to the problem bank liquidity, the one that was adopted, was the generalization of the liquidity guarantee to all banks, balanced by stiff liquidity rules to guard banks against moral hazard. The interwar period convinced all governments that bank runs were to be avoided at all costs. The state stepped in the shoes of the lender of last resort, extending an informal (formal in the United States) guarantee to depositors of all stripes, while relegating central banks to the daily management of monetary aggregates and the exchange. Moreover, the pursuit of reflationary policies in many countries after 1931, and in all countries during and after World War II, automatically relieved the banking system from its liquidity shortage.[43] But to prevent banks from investing state-guaranteed deposits into risky assets, governments tried to tear banks away from universality through artificial requirements of liquidity rules, reserve requirements, and the separation of deposits from investment banking. Commercial banks were banned from dealing in securities partly (Denmark, Finland, Norway) or altogether (Italy, Belgium, the United States, Sweden); banned also from real estate and mortgage business (Scandinavia, Italy). Saddling banks with cash reserves and liquidity ratios had the similar effect of restricting long-term placements. A battery of legal minima affecting capital[44] and the proportion of yearly net profits to be carried to reserves[45] were also created to guard depositors against insolvency. State regulatory bodies were generally created to enforce

[43] On the importance of inflationary macroeconomic policies for postwar banking sectors, see the contributions in Forsyth and Notermans (1997), especially that by Kregel (1997).
[44] Capital and reserves were to represent at least 20 percent of total liabilities in Germany and Sweden (League of Nations 1939, p. 95).
[45] 20 percent in Norway, 15 percent in Sweden (League of Nations 1939, p. 96).

these rules.[46]

The regulatory solution had a potential drawback. Forcing banks out of the security field would force banks to shrink their activity if they were not allowed to expand into liquid banking. In many countries, especially countries of universal banking, that market was already cornered by a plethora of institutions enjoying various privileges--saving banks, cooperatives, or postal savings and giros. More importantly, the political mood was not favorable to the creation of a level playing field between the banks and these privileged institutions--quite the opposite. The banking crises of the thirties were in part responsible for the public's renewed attraction for the state and nonprofit sectors, worried depositors seeking state guarantee. A series of measures hostile to large deposits banks turned what should have been no more than a momentary reflex into a banking habit. Peripheral interests (agrarians, small business, sometimes in alliance with working class organizations) took advantage of the political weakness of the large commercial banks--they served as generic scapegoat for the Great Depression--to reinforce prewar trends toward the strengthening of savings banks in semi-centralized countries, the reinforcement of local commercial banks in unit banking systems, and the emergence of the state sector in centralized countries.

The strengthening of the deposit banks' rival institutions just got worse after World War II. To curb the inflation generated by Keynesian policies, central banks used the new bank regulations as monetary policy tools. Because they were originally designed to make deposits safe, savings banks, state banks, and credit societies in most countries were exempt from these

[46] Other commonly legislated measures include the capping of loans that could be consented to the same client, and occupational incompatibilities to limit conflicts of interests between banking and non-banking activities (League of Nations 1939, pp. 94, 100).



regulations. The effect of monetary policy was to further cut into the commercial banks' market shares. For forty years, from the onset of deflation in the 1920s until the onset of deregulation in the 1960s, the commercial banks' market shares kept decreasing in about every OECD country.[47]

In sum, the reformers of the 1930s managed the feat of inverting the historical trend. They achieved bank specialization, not by de-fragmenting the market for liquidity, as history had done, but by deepening its fragmentation. They were able to realize this anachronistic outcome through brute regulatory force, probably at the cost of inefficiency. With respect to the United States, Eugene White (1983:227; 1986:52) argues that the reformers did not make joint-stock banks safer, but forced them either to shrink or to engage in risky short-term lending to maintain prior volume. The rationale for these reforms was primarily political.

## Conclusion

This paper argued and tried to show systematically that universal banking systems were less stable than specialized banking systems between the wars because one key requisite for the stability of universal banking, an external supplier of liquidity, was missing. Universal banking, historically, was a response to a liquidity shortage, caused by a surge in the demand for industrial finance in the context of a fragmented deposit market. Mixing long and short liabilities, universal banks, however, run into liquidity constraints and were vulnerable to cyclical downturns, two problems which required, for

[47] On the United States, Britain, and Germany, see Kregel 1997. On Australia, see Merret 1985:161. On France, Patat and Lutfalla 1986:122. On Belgium, Timmermans 1969: 705 and van Molle 1995: 91. The countries that were the least affected by this problem were Germany and the Netherlands; on Germany, see Kregel 1997; on the Netherlands, see Wilson 1962: 233. For postwar data on banks' market shares, see Verdier 1997.

universal banking to take root, the existence of a liquidity guarantor, that is, a central bank supplying liberal rediscounting policy and systematic last-resort lending. In the deflationary context of the 1920s and 1930s, however, central banks could no longer afford to play that role, with the effect of disproportionally hurting banks and their clienteles in universal banking systems. Although reformers in the 1930s correctly drew the lesson that universal banking systems had fared worse than specialized ones, the reforms they enacted were wrong-headed. Rather than create a single market for deposits, a measure which would have reinforced the market share held by large commercial banks in countries in which so many of these banks had failed, legislators instead penalized the commercial banks for failing by legislating measures that had the effect of transferring part of the banks' market shares to their state, savings, and local rivals.

Universality is fashionable again (Deeg and Lütz 1996; Lewis 1996). Presumed scope economies have made horizontal diversification into a wide range of financial services a desirable goal. The European Union, with its Second Bank Directive of 1989, made universal banking legal in every member country in 1992 (Paulet 1996). The repeal of the separation between commercial and investment banking is being debated in Washington. The regulatory frameworks built in the thirties are being dismantled. The state is retrenching, and governments are anxious to see private banks take a greater interest in investment finance. Are we to witness a revival of universal banking? Based on my limited understanding of history, I do not think so. If anything, the deregulation of financial markets, which has been going on since the 1960s, is happening simultaneously with a de-segmentation of financial markets, within and between nations--a trend that is favorable to specialization. The current interest of deposit banks for the security business can be interpreted as the transitory repositioning of banks which, for many years,



lost regular banking business to rival institutions without gaining access to the capital market. The situation at this century-end is similar to that at last century-end, when private bankers founded the large joint-stock banks to take advantage of the deposit revolution. Today's national bankers are founding the global banks of the next century, and globalization spurs specialization. As Adam Smith put it, the division of labor is only limited by the extent of the market.[48]

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[48] The exact quote is: "As it is the power of exchanging that gives the occasion to the division of labour, so the extent of this division must always be limited by the extent of that power, or, in other words, by the extent of the market" (Smith 1976, p. 21).

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**TABLE 1:** Deposit Market Shares of the Four Banking Sectors, 1913

| | profit center banks[a] % | nonprofit private banks[b] % | state banks[c] % | profit local banks[d] % |
|---|---|---|---|---|
| Canada | 92 | 3 | 5 | 0 |
| United Kingdom | 80 | 6 | 14 | 0 |
| Japan | 68 | 17 | 15 | 0 |
| Spain | 67 | 33 | 0 | 0 |
| France | 66 | 8 | 26 | 0 |
| Australia | 65 | 33 | 2 | 0 |
| Sweden | 63 | 35 | 2 | 0 |
| Belgium | 59 | 1 | 40 | 0 |
| New Zealand | 58 | 4 | 38 | 0 |
| Netherlands | 54 | 22 | 23 | 0 |
| Norway | 49 | 51 | 0 | 0 |
| Denmark | 49 | 51 | 0 | 0 |
| Austria-Hungary[f] | 37 | 58 | 5 | 0 |
| United States[e] | 33 | 25 | 0 | 42 |
| Switzerland | 29 | 24 | 0 | 46 |
| Germany | 28 | 71 | 1 | 0 |
| Italy | 27 | 40 | 33 | 0 |

[a] commercial banks regulated by the central government.

[b] savings banks, mutual credit societies, mortgage banks.

[c] postal savings; savings banks in France and Belgium.

[d] commercial banks regulated by local governments (State banks in 1913 US; local and cantonal banks in Switzerland).

[e] 1914.

[f] Austria and the Czech Lands.

*Sources*: Australia: Butlin, Hall and White, 1971, 114, 503, 525; Austria-Hungary: Mitchell 1992, 774, 781; Belgium: Société des nations 1931, 116, Mitchell 1992, 781, 784; Britain: Société des nations 1931, 260;Canada: Socété des nations 1931, 329; Denmark: Société des nations 1931, 125; France: Mitchell 1992, 774, 782; Germany: Deutsche Bundesbank 1976, 57, 63, 65; Italy: Mitchell 1992, 774, 782, Société des nations 1931, 187; Japan: Tamaki 1995; the Netherlands: Nederlandsche Bank 1987, 34, 48, 52; New Zealand: Société des nations 1931, 447; Norway: Société des nations 1931, 199, Mitchell 1992, 782; Spain: Martin-Aceña 1995, 522, Mitchell 1992, 782; Sweden: Société des nations 1931, 275, Mitchell 1992, 783; Switzerland: Société des nations 1931, 288; the United States: Société des nations 1931, 346, Mitchell 1983, 775, 785.



**TABLE 2 :** OLS Estimation of the Universal Banking Model.

Dependent Variable: Deposit-Currency Volatility

| | expected sign | regression 1 | regression 2 |
|---|---|---|---|
| constant | +/- | 0.13 | 0.14 |
| | | (11.24)*** | (11.65)*** |
| ln(EQUITY-DEPOSIT) | + | 0.04 | 0.04 |
| | | (3.64)*** | (3.81)*** |
| UNITDUM | + | 0.05 | 0.06 |
| | | (2.13)* | (2.72)** |
| WARDEFL | +/- | -0.001 | -0.02 |
| | | (-0.85) | (-2.27)** |
| $R^2$ | | 0.63 | 0.75 |
| Adj. $R^2$ | | 0.52 | 0.67 |
| F-Value | | F(3,10)=5.66 | F(3,9)=8.99 |
| s. e. r. | | 0.02958 | 0.02563 |
| N | | 14[a] | 13[b] |

*Notes*: Values of *t*-statistics in parentheses.

[a] Australia, Austria, Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, United Kingdom, the United States.

[b] Australia, Austria, Canada, France, Germany, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, the United States.

*Sources*. Data Appendix.

* $p < 0.10$, two-tailed test.

** $p<0.05$, two-tailed test.

*** $p<0.01$, two-tailed test.

Sources: Table 3.



**TABLE 3:** Dataset

| | UNIT | UNITDUM | EQUITY-DEPOSIT | WARDEFL | DEPOSIT-CURRENCY VOLATILITY |
|---|---|---|---|---|---|
| | | 1929 | 1913 | | 1919-1936 |
| Australia | 0.006 | 0 | 0.35 | 0.58 | 0.069[b] |
| Austria | | 0 | 2.00[a] | -0.24 | 0.190[c] |
| Belgium | 0.06 | 0 | 0.72 | -3.24 | 0.100[d] |
| Canada | 0.003 | 0 | 0.19 | 0.98 | 0.047[e] |
| Denmark | | 0 | | 1.61 | 0.095[f] |
| France | 0.09 | 0 | 0.43 | -1.05 | 0.125 |
| Germany | 0.18 | 0 | 0.73 | 1.28 | 0.131[g] |
| Italy | 0.29 | 0 | 0.88 | 1.01 | 0.078[h] |
| Netherlands | 0.21 | 0 | 1.58 | 0.94 | 0.142 |
| New Zealand | 0.01 | 0 | | | 0.119 |
| Norway | | 1 | 0.25 | 2.00 | 0.094 |
| Spain | | 0 | 5.00 | | 0.122[i] |
| Sweden | 0.03 | 0 | 0.45 | 1.69 | 0.057 |
| Switzerland | 0.24 | 0 | 0.56 | 1.24 | 0.110[j] |
| UK | 0.002 | 0 | 0.10 | 1.48 | 0.050 |
| US | 0.47 | 1 | 0.25 | 0.94 | 0.129 |

[a] Austria and the Czech Lands

[b] missing years: 1933, 1936

[c] missing years: 1920, 1931-2

[d] missing years: 1920, 1934-5

[e] missing years: 1936

[f] missing years: 1936

[g] missing years: 1921-4, 1936

[h] missing years: 1934-6

[i] missing years: 1923-4, 1936

[j] missing years: 1928-9

*Note*: The numerator of the UNIT-banking ratio 1929 is the number of commercial banks. The denominator is the number of commercial banks and commercial bank branches. A higher ratio means a higher occurrence of unit banking. In contrast, a lower ratio reflects a greater occurrence of branch banking. The EQUITY-DEPOSIT ratio 1913: the numerator includes capital, reserves, and notes whenever appropriate. The denominator includes individual deposits and savings accounts. The denominator excludes creditor current accounts (except in the cases of Britain, the U.S. and Italy, where it was impossible to separate them out), which exist for transaction purposes and are usually unremunerated. Interbank deposits (which usually constitute a relatively insignificant proportion of total liabilities) are excluded whenever possible. The ratio is calculated on either a sample of the largest deposit-taking banks, or on the entire population thereof. WARDEFL is, for each country, the difference between the percentage change in consumer prices over the 1913-1920 period and the percentage change in the price of gold between 1913 and the new fixed parity adopted in the 1920s. The DEPOSIT-CURRENCY VOLATILITY ratio 1919-1936 is the standard deviation of the ratio of commercial bank deposits to currency held by the public calculated on December 31 of each year.

*Sources*: UNIT: for France: Gueslin 1992, p. 86; for other countries: Société des nations 1931, Table II, p. 13. EQUITY-DEPOSIT: Verdier (1996). WARDEFL: data on consumer prices are from Maddison 1991, Table E.3, pp. 300-303; data on exchange rates are from Feinstein, Temin, and Toniolo 1995, Table 1.2, p. 24. DEPOSIT-CURRENCY VOLATILITY: data on currency held by the public are from Mitchell 1982, 1983, 1992; data on deposits held by the public are, for Australia: Butlin, Hall, and White, 1971, Table 1; for Britain: Sheppard 1971, Table (A) 1.2; for Canada: Urquhart and Buckley 1965, Series J185-188; for Denmark: Johansen 1985, Table 6.7; for Germany: Deutsche Bundesbank 1976, Table (D2) 1.03; for Italy: Confalonieri 1994, Table 12; for Norway: Statistik Sentralbyra 1967, Table 3; and for other countries: Mitchell 1982, 1983, 1992.

**Graph 1: Imaginary Balance Sheets**

Bank A [perfect information]

| Assets | | Liabilities | |
|---|---|---|---|
| 1/2 | illiquid | illiquid | 1/2 |
| 1/2 | liquid | liquid | 1/2 |

Bank B [imperfect information]

| Assets | | Liabilities | |
|---|---|---|---|
| 1/5 | illiquid | illiquid | 1/5 |
| 3/5 | liquidity determined by business cycle | | 3/5 |
| 1/5 | liquid | liquid | 1/5 |

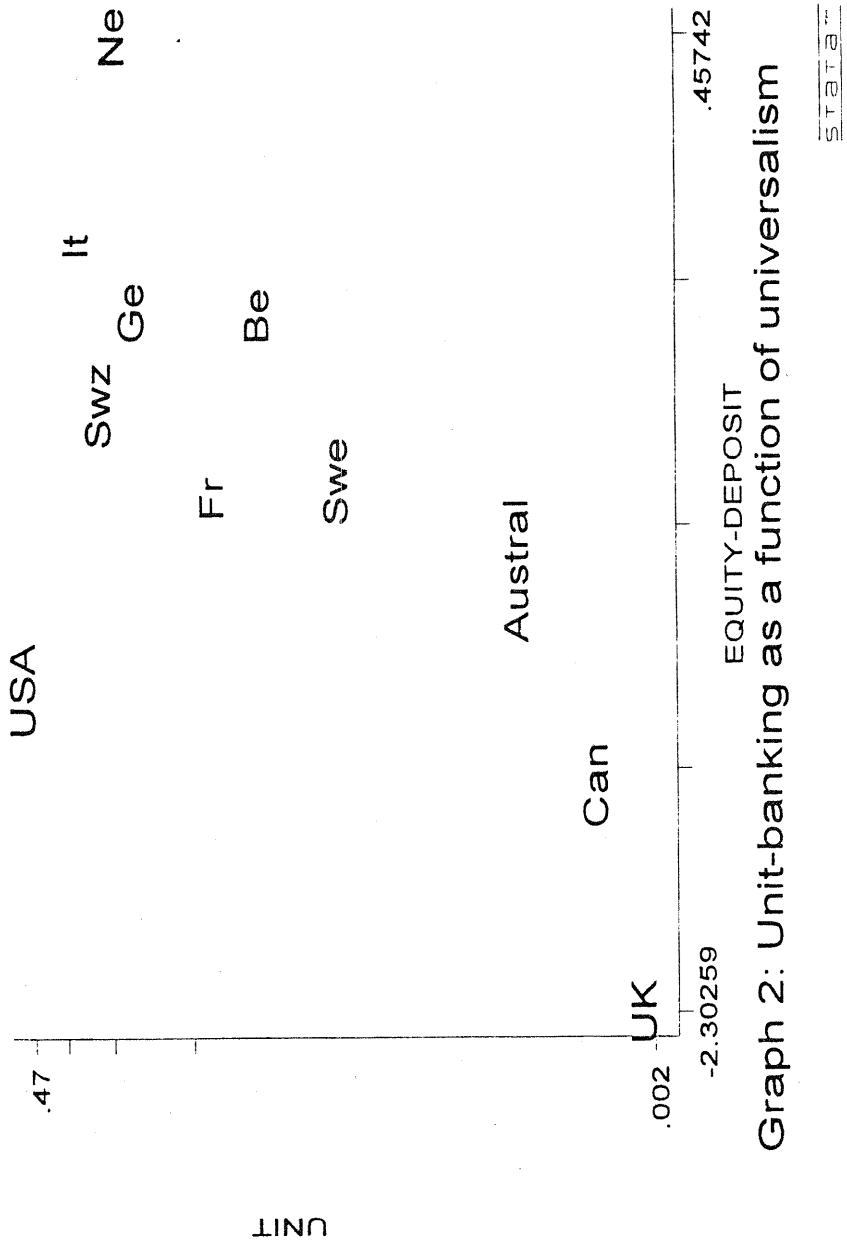
Bank C [illiquid]

| Assets | | Liabilities | |
|---|---|---|---|
| 4/5 | illiquid | illiquid | 1/5 |
| | | | 4/5 |
| 1/5 | liquid | liquid | |

Bank D [unprofitable]

| Assets | | Liabilities | |
|---|---|---|---|
| 1/5 | illiquid | illiquid | |
| 4/5 | | | 4/5 |
| | liquid | liquid | 1/5 |






Graph 2: Unit-banking as a function of universalism

Graph 3: Partial Regression Plots for Regression 2, Table 2