

Bossone, Biagio

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Working Paper No. 354

Should Banks Be Narrowed?

by
Biagio Bossone

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I. Why a study of narrow banking

The idea of narrowing the activity of deposit-issuing banks to the funding of fully safe assets, so as to rid depositors of the risk of issuer default, has been championed over time by eminent financial regulatory experts and well-known academics, including at least three Nobel Prize winners. In some industrialized countries, proposals to adopt narrow-banking regimes have been given very serious consideration by policymakers, especially in the aftermath of major banking crises. Surprisingly, such proposals have often received support from prominent bankers. Narrow-banking proposals have been recently considered for emerging countries, as well, while policy advisors within international financial institutions and governments have not been immune to the appeal of narrow banking as a way out of bank weaknesses in post-crisis countries.

No country has ever experimented with narrow banking so far, and thus no insights have been gained from experience. In the absence of unsupportive evidence, the idea remains attractive to many, perhaps owing to its direct call on common sense. It periodically resurfaces in economics and economic policy journals, as well as in debates on banking system reforms. With only one notable exception, to be recalled in the course of this study, narrow banking has never been challenged on rigorous theoretical grounds; it has not been evaluated against contemporary banking theories, nor has it been the object of attempts to estimate its potential effects on the economy.

By submitting a comprehensive reflection on the pros and cons of narrow banking, and the results from a simple empirical exercise, this study concludes against narrow banking and provides a yardstick against which to measure the consistency of narrow-banking proposals.

II. Scope of the study

A core factor to achieve monetary and financial stability in the economy is that banks, generally understood to be institutions involved in supplying monetary assets, are sound and shock resilient. Banking systems virtually everywhere, throughout history, have evolved into fractional reserve regimes specialized in creating private money by lending to individuals and businesses. However, as theory shows and history confirms, banks operating under a fractional reserve regime are vulnerable to runs from depositors. Contagion of depositor runs across banks, in turn, makes the banking system at large exposed to public panics and to risk of collapse.

Since private arrangements to cope with such risks suffer from free-rider and coordination failure problems, governments typically intervene through regulatory instruments and safety nets (such as prudential rules, deposit insurance, and lending-of-last-resort facilities), with the aim to reduce the likelihood of shocks to banks (and of systemic transmission of shocks) as well as to mitigate the financial cost of crises, once these occur.

Yet, the fundamental mismatch--which characterizes banking--between demand-deposit liabilities (often implicitly or explicitly insured by the government) on one side, and the illiquid, risky, and opaque loans used as collateral to those liabilities on the other, remains at the heart of potential crises. It keeps the implicit cost of the public safety nets high, and tends to be widened by the very presence of the safety nets.

As the public's demand for safe assets (such as short-term government paper) usually exceeds that for banks' demand deposits manifold, some view this as evidence of a large unsatisfied demand for risk-free assets that banks do not match because of the distortive effects of the safety nets, which tilt the bank preferences toward illiquid portfolios (Kareken 1985). By implication, absent government interference, a *laissez-faire* regime would induce banks to compete with each other in trying to satisfy the public's demand for *safe money* by fully matching their liquid liabilities with risk-free assets. Enabling the banks to cope with any future runs

on deposits would in fact eliminate the likelihood of runs themselves.

With this purpose in mind, more and more frequently in the scientific and financial policy literature proposals have been formulated to "break the Gordian knot between deposit taking and commercial lending" (Litan 1987, p. 145). This would be accomplished by introducing "narrow banking" regulations. *Narrow banks* are banks that specialize in deposit-taking and payment activities, they are prohibited, or restricted, from lending to the private sector, and invest all their deposit liabilities in assets of very high quality.¹ If public insurance further protects narrow-bank deposits from bank fraudulent behavior, narrow banking does indeed offer to the public a highly safe type of money in that it provides ready funds to meet deposit withdrawals, making narrow-bank deposits the equivalent of currency.

The advocates of narrow banking hold that safety nets and bank prudential regulations would have no reason to exist under narrow banking. The nonbank intermediaries could operate under securities firm regulations, they should be free to engage in all types of non-monetary financial activities using non-guaranteed funds, and should be allowed to fail. Under narrow banking, market discipline would be more effective in leading to prudent investment behavior while the financial system could be deregulated significantly, thereby achieving higher levels of efficiency.

There are no real-world examples of narrow-banking regimes that could be used to assess their actual costs and benefits. Therefore, evaluating narrow banking necessarily entails some kinds of mental experiment, which, in the best of circumstances, can only lead to conjectural conclusions. However, taking stock of the considerable wealth of informed views accumulated on the subject over the years, and assessing the potential consequences of narrow banking against the backdrop of contemporary banking theory, may at least help correctly identify the various aspects and implications of the proposals. It would also provide policy insights for developing countries, at a time when their financial integration in the world economy renders the development of stable and efficient domestic financial systems an objective of international concern.

This study offers an evaluation of the theory and policy of narrow banking. The study will answer such questions as: would narrow banking deliver greater financial stability, as it promises to do? At which costs would that happen, if at all? Is narrow banking recommendable for developing economies?

The study rejects the validity of narrow banking on conceptual and empirical grounds, concluding that it would deprive the economy of the key functions and benefits of conventional banking. The study also finds no convincing elements in support of the practicability of the narrow banking proposals.

The rest of the study is organized as follows. Section III reviews the existing literature on narrow banking. Section IV contrasts the narrow-banking concept with contemporary theories of banking, it evaluates the potential consequences of narrow banking on finance and the real economy, and derives empirical evidence on the costs of bank narrowness. Section V concludes the study by drawing policy implications.

III. Narrow banking proposals: Origins and contents²

A. Historical Antecedents

Narrow banking is the modern and more elaborated equivalent of the "100% reserve banking" principle, invoked by early economists to correct the inadequacy of money reserves against the stock of banknotes in circulation.³ Aside from the examples of the goldsmiths and first deposit banks of centuries ago, historical precedents of such principle can be traced to the early monetary system of the American colonies in the eighteenth century and to the National Banking Acts of the U.S. Government of 1863 and 1864. These all built on the notion that the primary forms of means of payment be backed with federal government securities (Phillips 1995).

Perhaps, it is Sir Robert Peel's decision at the Bank of England, in 1844, to revert to the 100% reserve regime and to divide the Bank of England into a lending department and an issuing department, which constitutes the very first antecedent of a narrow-banking regime.

The 100% reserve regime progressively came to be seen as a remedy to banking system instability problems, when new proposals were articulated to the effect that commercial banks be narrowed in scope, that is, restricted to accept only demand deposits and to invest funds only into safe assets.

Ideas to reform the banking system accordingly were debated in the U.S. since 1933, prompted by a series of memoranda to the Roosevelt administration from a group of economists of the University of Chicago, amongst whom the most prominent were Frank Knight, Henry Simons, and Lloyd Mints.⁴ At a time when a major overhaul of the banking industry was deemed necessary, what since became known as the "Chicago Plan" propounded the abolition of the fractional reserve regime, the adoption of a 100% reserve requirement on demand deposits, and the displacement of existing deposit banks by at least two distinct types of institutions: deposit banks holding 100% reserves, and investment trusts performing lending funded by securities. These measures would prevent new banking panics, restore full government control of the money supply process, and reduce economic fluctuations (Simons, 1934).

The first (and still the most comprehensive) study of the structure and implications of 100% reserve banking is Irving Fisher's (1935) "100% Money", written to show how such a regime would keep bank checking deposits fully liquid and prevent business cyclical instability. Fisher did not go much into the institutional issues of how best to segregate the deposit-taking and loan-making functions of a bank; he was more interested in the underlying economics, and assumed that each function be carried out by a distinct department within the same bank.⁵

The idea of 100% reserve banking would be revived years later by Maurice Allais (1948), who strongly criticized fractional banking,⁶ and was further articulated by Milton Friedman (1959) as a way to remedy the money supply instability and to reduce government regulatory intrusion into lending and investing activities. Friedman's proposal would make all the money stock in the system-- whether currency or deposits--a government liability issued under uniform arrangements. Drawing from the Chicago Plan, all banks would hold 100% reserves, in Federal Reserve notes or deposits, against all outstanding deposit liabilities payable on demand or transferable by check. In this way, the stocks of money and high-powered money would coincide, and the instability in the money supply originating from the randomness of the money multiplier would be removed, thereby suppressing the need for deposit insurance. Friedman would break the commercial banks in two separate types of institution: on one side, a pure depository that would have one dollar of central bank reserve for each dollar of demand deposits and the owners' capital available for lending; on the other, an investment trust that would acquire capital by selling shares or securities, and use capital to fund loans and to acquire investments. This second type of institution was not to engage in money creation or destruction, and would not require any special regulatory control. Friedman's proposal differed from the Chicago Plan in that it recommended interest to be paid on the 100% reserves.⁷

B. Modern Narrow Banking

Narrow banking proposals resurfaced in the U.S. in the 1980s, when tumultuous financial innovation and financial crisis episodes called for a reassessment of the extant banking regulatory regime. Before the issue became the object of more extensive policy analysis, some highly-reputed scholars voiced their support for 100% reserve banking, but without giving much emphasis to institutional aspects.⁸ Various proposals have been formulated since. (Recently, even the World Bank (2001) has suggested that narrow banking could be used in some countries as a response to crises). Proposals differ in terms of restrictions to be placed on bank asset portfolios and feature different institutional designs.

As regards the asset-portfolio dimension, proposals differ in the degree of restriction placed on the types of asset that narrow banks should be permitted to hold. Proposals vary from introducing a 100% reserve requirement that bound banks to fully back transaction accounts with marketable short-term Treasury debt (Tobin 1985, Kareken 1986, Spong 1991, Mishkin 1999, Thomas 2000), to requiring banks to invest (fully insured) deposits only in high-grade securities including government paper or government-guaranteed securities of various maturity (Litan 1987, Herring and Litan 1995), to allowing banks the use of insured checkable deposits for short-term lending to consumers and businesses (against securitized instruments), including securities issued by non-affiliated financial services companies (Pierce 1991).

Some proponents argue that if the demand for highly liquid, riskless transaction deposits exceeds the supply of government paper, then the class of collateral assets should be broadened to include a well diversified portfolio of traded short-term, high-grade corporate debt (Merton and Bodie 1993, Spong 1993). Such broadening, however, is controversial as it obviously reintroduces default risk into narrow banking (Litan cit.).⁹

Some advocates of the more restrictive versions of narrow banking also propose that narrow banks marked to market the debt held in their portfolio frequently (Kareken 1986, Mishkin 1999). This provision would force them to adjust the value of their liabilities to that of their assets, much as mutual funds do. As a result, while the nominal value of the transaction account balances outstanding would not be guaranteed, the taxpayers would not be called upon to rescue insolvent institutions.¹⁰

The narrow banking proposals vary also with respect to institutional factors. Noting that technology and bookkeeping techniques allow banks wanting to offer risky balances to evade such regulation by switching funds across different types of accounts at high speed and low costs, Kareken (1986) suggests that banks offering transaction balances be prevented from issuing other types of services,¹¹ although he remains agnostic as to whether this should be accomplished by splitting banks into distinct subsidiaries or by allowing two separate industries to emerge (one made up of narrow banks and the other, broader and more inclusive, made up of lending companies).

Others see the functional segregation of banking from nonbanking activities as the optimal regulatory response to the risks associated with financial deregulation and innovation, and with the increasing power of banks. Litan and Pierce, in the two studies cited above, propose that highly diversified (financial or non-financial) firms offering both insured depository services and lending services be transformed into financial holding companies that engage in different activities through separate subsidiaries. In particular, depository functions would be carried out by subsidiaries operating under narrow-banking restrictions, while other subsidiaries would have to be used to extend loans funded by uninsured liabilities and equity. Only narrow banks would have access to the payment system, and nonbank corporations would not be allowed to hold accounts at their affiliated narrow banks.

Functional segregation (which, by the way, neither Litan nor Pierce envision for smaller banks)¹² would prevent financial holding companies from using the resources of their depositories to bail out risky nonbank affiliates or to finance connected lending. It would also serve to limit the high concentration of economic power in the hands of a few large financial organizations. Functional segregation has been advocated by market specialists, as well, in that securitization and competition allow banks to be unbundled into their component functions, so that each can be performed by whichever players are most capable of delivering the best service at the best price.

Mishkin (1999) proposes regulation that would permit banks to issue *both* insured narrow-bank deposits collateralized by high-grade securities and uninsured deposits to finance private-sector lending. This solution would preserve banks' economies of scope between deposit issuance and bank lending, which would otherwise be lost under restrictive functional segregation rules. Furthermore, this solution would leave to the banks the decision to combine narrow banking and conventional banking activities, based only on profit considerations.¹³

Recent theoretical contributions have revisited the issue of narrow banking from the standpoint of informational efficiency. Peters and Thakor (1995) show that it is not feasible for a single bank to provide optimal incentives for depositors to monitor asset allocation from bank managers, and for bank managers to monitor borrowers. They thus prescribe to separate banks along functional lines whereby some narrow-bank types of institutions offer insured deposits against assets whose value are invariant to bank monitoring, while nonbanks issue uninsured liabilities to fund riskier assets.

In a different context, Craine (1995) studies an environment with two types of intermediaries, one investing in non-traded private-information assets and the other holding traded public-information assets, and calls "banks" those intermediaries that choose to issue insured transaction accounts. Craine shows that, when regulation restricts the issue of transaction accounts to private-information intermediaries, an inefficient equilibrium is achieved where these intermediaries have an incentive to over-invest in risky portfolios and earn rents on insured accounts. He further shows that, when regulation is relaxed and all intermediaries are given access to bank status (i.e., they are authorized to issue insured transaction accounts), a voluntary efficient separating equilibrium ensues whereby all public-information intermediaries issue insured accounts and do not extract rents from them, and all private-information intermediaries fund assets with private sources.

IV. Evaluation of narrow banking

The benefits of narrow banking seem straightforward and immediately evident. First, by locking bank assets in high-quality instruments, narrow-banking regulation would minimize banks' liquidity and credit risks. Second, as narrow banks would be precluded from supplying loans and collateralize deposits with high-quality assets, the confidence in the value of their claims used to make payments could not be weakened by changes in the value of loans. Third, with payment system access restricted to narrow banks, payments would be fully secure since payment system participants would be protected against liquidity, credit, and settlement risks, and any shock to nonbanks would be isolated, with no systemic fallout (Burnham 1990, Thomas 2000).¹⁴ Fourth, narrow banking improves the central bank's ability to control the money supply process.

As a result, capital requirements for narrow banks could be reduced substantially, the potential recourse to the taxpayer for depositor protection would become infrequent, and the inequitable too-large-to-fail bailout clause would be removed by making the failure of large narrow banks less likely. There would thus be a much lesser need for subjecting narrow banks to special regulation and supervision (Bruni 1995, Thomas 2000). Also, since narrow banks would be protected from nonbank activities, a broader range of activities and a wider ownership structure might be possible for their nonbank affiliates than under current banking regulations in many countries (Spong 1993).

Other important benefits are associated with narrow banking. Short of a (socially costly) deposit insurance mechanism, the availability of narrow-bank deposits would eliminate any discrimination between well-informed and uninformed depositors, and it would instead leave the investors free to choose among alternative asset risk/return configurations on the basis on non-subsidized terms, while it would protect all depositors, reduce moral hazard, and prevent expensive bank runs. As well, the delegation of lending decisions to uninsured and market-disciplined institutions would halt the inequitable practice, induced by deposit insurance, of granting equal access to funds to both weak and sound lenders.

Furthermore, a narrow-banking regime would afford greater shock resiliency to the whole financial system: a failure of the market to elicit enough sound behavior from nonbanks would still leave the economy's monetary sector unexposed to shocks. While the market would/should eventually punish (ex post) the untoward behavior from individual institutions or investors, both money and the payment system would be unaffected by such behavior.

On the developmental side, narrow banking is expected to spur the relevant financial system structural changes already underway in the advanced economies. Commercial banks having to switch to narrow-banking regulation could be expected to transfer their credit exposures to existing or newly-established finance companies, which typically operate with higher capital ratios and fund themselves with relatively larger volumes of long-term debt. Banks would remove loans from the portfolio of prospective narrow banks through securitization, packaging similar types of credit into new securities and selling them to a host of institutional investors. Furthermore, as commercial banks would progressively move out of the long-term stretch of the market, insurance companies, pension funds, and non-financial companies interested to assume bank-like functions would fill the gap and expand their lending activity.

As to the viability of the narrow banking model, its advocates cite the successful experience of the US money market mutual funds industry. The increasing demand for mutual funds products shows the potential attractiveness of narrow-bank deposits and transaction services.

Not the least important, at times of disorderly market conditions the industry has proven capable to weather depositor runs (McCulloch 1987, Kareken 1985, 1986, Phillips 1995).

But the downsides to narrow banking do not appear to be any less substantial than the advantages. Some of them in fact challenge the benefits just discussed. This section assesses narrow banking against contemporary theories of banking and shows that narrow-banking regulations would dissipate the benefits associated with the specialness of conventional banks. This section also evaluates the potential consequences of narrow banking on finance and the economy, and estimates the effects of narrow banking on the cost and availability of credit in the economy.

A. Narrow Banking vs. Banking: Insights from Theory¹⁵

Strong reservations to narrow banking emerge from contrasting its notion with recent theories of banking. In this subsection, the narrow-banking concept is evaluated against contemporary theories of banking as a mechanism for: liquidity generation, optimal contract design, efficient joint-production of deposit-taking and lending, and money creation.

Banks as Liquidity Generators

An important strand of research, following Diamond and Dybvig (1983), stress the role of banks as insurers against liquidity shocks. In a setting where all individuals are initially identical but learn only subsequently to have different intertemporal consumption preferences, banks are shown to generate liquidity to help individuals who discover to be "patient" consumers to satisfy their needs. They do so by transforming illiquid assets into liquid deposits. This is possible because the averaging out of the withdrawal demands from a large number of depositors allows banks to stabilize their deposit base and transfer deposit ownership without liquidating the assets. From this angle, the social benefit of banking derives from an improvement in risk-sharing, i.e., the increased flexibility of those who have an urgent need to withdraw their funds before the assets mature (Diamond and Dybvig 1986).

In fact, the benefit of banking cannot be fully appreciated if the asset and the liability side of the bank balance sheet are not considered connectedly. The benefit derives from the banks using their stable deposit base to finance production technologies that increase output over time. The output effect enables banks to provide a pattern of returns to depositors which is superior to what they could obtain by holding the illiquid assets and/or a perfectly (non interest bearing) asset such as cash.¹⁶

In such light, banks generate liquidity to depositors and simultaneously assure patient money to producing enterprises in a way that would not be feasible without the special intermediation of banks (a point hinted at by Gorton and Pennacchi 1990, but surprisingly not emphasized by Diamond and Dybvig themselves).

This crucial link between liquidity and production is explicitly recognized in Diamond and Rajan (1998, 1999), where banks are regarded as superior devices to tie human capital with real (illiquid) assets, and where the sequential service constraint ordering the way in which banks service withdrawal demands (up to when they become illiquid) work as an incentive for bankers to behave prudently. As Wallace (1996) elegantly demonstrates, narrow banking would break that link, thereby eliminating the social benefit of banking.

Merton and Bodie (1993) argue that asset and liquidity transformation services are performed whenever a collection of assets is repackaged and the resulting liabilities created have a smaller bid-ask spread than the original assets. They conclude that, in order to generate liquidity, banks need not invest in highly illiquid assets with large bid-ask spreads. Instead, they support the use of "next-nearest" asset for transformation, underpinning narrow banking, to support safe demand deposits.

The point remains, however, that production requires patient money and involves risks, while agents with money may not be as patient and risk-inclined to lend it to firms: banks do provide a mechanism to reconcile both sets of preferences by generating liquidity. Narrow banks are designed precisely not to do so.

Banks as Providers of Optimal Contracts for Transforming Liquidity and Maturity

Without specially designed contracts, uninformed parties would be reluctant to provide credit for fear of being exploited by better-informed parties. Depositors would not lend their funds to banks, and banks would not lend their funds to firms. But while bank loan agreements incorporate features that permit banks to protect the bank's interests, depositors are typically less informed than bank managers and face much higher costs of protection from acts against their interests. Demandable debt (i.e., the demand deposit contract) is for the depositors a particularly potent and economical means of avoiding bank exploitation. By requiring banks to make good on deposits at fixed nominal value on demand and with low transaction costs, depositors can easily withdraw their investment in a poorly managed bank and thus exert discipline on bank behavior (Calomiris and Kahn 1991, Diamond and Rajan 1998, 1999).

This property of deposits allows banks to expand the volume of resources that they can make available to their borrowers for illiquid investments. Although alternative forms of liabilities can be used to finance illiquid investment, they would not be as widely accepted as deposits by uninformed investors and would thereby reduce the funds for such investments and raise their cost. Equity is more costly than debt in a setting of asymmetric information about the value of a bank's assets, since uninformed equity holders are reluctant to agree to the issuance of new equity against unknown new assets and cause new issues to depress share values (Myers and Majluf 1984). On the other hand, in an environment of asymmetric information long-term debt is more costly than demandable debt to depositors as control on banks would involve longer lags and higher transaction costs. The use of demand deposits, therefore, occurs precisely because bank assets are of uncertain value and because depositors are less informed than bankers (Pozdena 1991).

Banks as Efficient Joint-Producers of Deposit-Taking and Lending

The provision of lending and deposit-taking services is more efficient if processed by the same institution (Kashyap, Rajan, and Stein, 1999). Deposits, like loan commitments, provide liquidity on demand. Since liquidity commitments need to be supported by a buffer stock of cash and safe securities, banks can economize on such stock by combining the two types of services (provided that deposit and loan withdrawals are not strongly mutually correlated). Banks can thus hold a smaller buffer than would be required by two intermediaries offering the same services separately. Such economies allow banks to offer liquidity services to their customers at lower prices than other intermediaries. Saidenberg and Strahan (1999) corroborate this theory with evidence showing that banks maintain a very important role as reliable suppliers of liquidity to the corporate sector, especially at times of securities market distress. Since at such time investors revert to bank deposits, banks do not have to run down their buffer stock of liquid assets to provide liquidity to borrower.

By separating deposit and lending services, narrow banking would suppress the synergetic effect and generate inefficiency in the

supply of liquidity to the private sector, with the level of inefficiency varying with the type of asset portfolio allowed to narrow banks.

Banks as Creators of Money

Even when banks are modeled as generators of liquidity, still they act as intermediaries who ultimately draw (accumulated) real resources from one side of the market, against the issue of liquid claims, and transfer them to the other side of the market, against the issue of longer-term claims. Intermediaries presuppose the existence of real resources, or of claims thereof, which can be deposited with them in exchange for promissory notes. Such promissory notes are therefore claims on some output already produced and accumulated in the economy.

But banks and bank money do more than that. As deposits represent debt claims on banks that the public accepts as money, banks can mobilize production factors by lending to producers newly issued debt claims. The new money is to be backed by the output coming out of the new production financed with it, and this can only happen ex post, once the output is produced and sold. Ultimately, the money is as good as the banks are able to select good borrowers.

Banks stand at the inception of the production cycle, as the theory of the monetary circuit holds (Bossone 2001a, 2001b), and conveniently create money and allocate it to the firms that need it to carry out their activity. This process is evident in the hypothetical case of an economy with only one bank and only one type of money, where all agents hold their deposit accounts with the same bank. Aside from inflationary and risk considerations, the bank would be able to create all the deposits it so wished (to the extent that depositors would continue to accept them), since the re-depositing automatically following payments would prevent the bank from running into illiquidity or insolvency.¹⁷ In a multi-bank environment, the money-creation power of banks needs to be supported by interbank (non reserve) credit arrangements (such as overdraft and netting facilities) to supplement the re-depositing mechanism. The cost of creating money thus depends on the (explicit and implicit) cost of interbank credit and the cost of holding higher-powered reserves against liabilities.

Narrow banking would suppress the money-creation feature of banking. As a result, credit to the economy would become scarcer and more costly. To see why, let's analyze how money would be supplied under narrow banking. If the nonbanks fund their assets with short-term non-deposit debt, overall lending to the economy can be maintained only if the investors are willing to replace bank deposits with nonbank debt in their portfolio. But, all else equal, this would require a higher remuneration of the nonbank debt, which would make lending costlier and reduce the liquidity in the system (since, by regulation, the nonbank debt cannot be used as money).

Alternatively, the nonbanks could borrow or purchase money from the central bank, against collateral or in exchange for securities, and on-lend it to the business sector. But the nonbanks' cost of lending would be larger than for conventional banks since the latter can fund their loans by creating deposits. Still, the central bank could lend uncollateralized reserves to the nonbanks, but this would come at a risk for the central bank. In this case, either the central bank would be capable to determine the optimal interest rate risk-premium for each borrower or it would misprice risk, with system-wide distortions. In the end, assuming away money-substitution phenomena, narrow banking bring the whole money creation process back to the central bank, therefore maximizing the central bank's control of the money supply, but it would do so at a considerable efficiency loss to the economy.¹⁸

Finally, since it relies heavily on reserve money, a narrow-banking regime is vulnerable to a serious potential failure: in the event of a net overall reserve shortage, the nonbanks would need eligible paper to raise reserves, but they might not be able to buy or to borrow the paper precisely because they don't have enough reserves! To be sure, the class of eligible securities could be broadened as to allow wider access to reserve money, but in most cases the units in the economy with surplus holdings of eligible securities would have to either lend securities directly to the deficit units, or use their securities to raise cash from the central bank and lend it to the deficit units, in both cases bearing the related credit risk. Once more, there is a natural need for somebody in the system to get the power to create liquidity (money or securities, as necessary) at a risk.¹⁹

The importance of the money-creation feature of banking survives to today's financial market transformation and to the banks' lesser involvement in direct lending to production. Aside from the continuing relevance of bank lending to small and medium sized businesses, it is undoubtedly the case that in the advanced economies nonbank quasi-money and financing products are taking increasing business shares away from banks, while nonbanks manage to offer products which allow investors and consumers to economize on less remunerative bank deposits. Yet, money transactions take place by deposit transfers across bank accounts, and the acceptance by the public of nonbank products owes to these products' convertibility into bank deposits. This presupposes the existence of banks and their readiness to supply deposits to refinance such products when necessary.²⁰ Narrow banking would hamper the development of the nonbank financial sector, contrary to what its advocates assert.

Today, banks increasingly specialize in retail services or in wholesale businesses. Through both channels, they continue to use lending and loan commitments to supply the economy with the money needed to effect transactions. Narrow banking, at least in its more conservative versions, would abort those channels at a major loss to the society.

In conclusion, as one judges from theory, forcing a synchronization of maturity between bank assets and liabilities, and eliminating potential bank difficulties by removing conventional banks, would dissipate the significant benefits associated with conventional banking systems, which stem from issuing demandable deposits to finance other than government liabilities.

B. Potential Consequences of Narrow Banking

Aside from the theoretical considerations above, there are important, more operational issues concerning the impact of narrow

banking on finance and the real economy, which need discussing. These include:

The Supply of High-Quality Assets

All narrow-banking proposals must confront the question of whether there is in the economy enough of the instruments eligible to be used as collateral for transaction deposits. If narrow banks were required to hold government paper only, the supply of such paper would depend on the government's debt management strategy. To the extent that a country runs large debt-financed deficits, the stock of public securities outstanding might be enough to serve the economy's monetary needs.²¹ But this need not be the case, especially when the country decides to cut its public deficits and reduce its stock of debt (see Schinasi, Kramer, and Smith 2001; and International Monetary Fund 2001, Ch. IV).

More importantly, tying the provision of monetary services to public debt management and assigning it to the government might not be a good policy. Similarly, tying public debt management to monetary and payment system objectives does not look sensible either. (By construction, such a link would become the strongest once the flexibility afforded by conventional banking as a creator of private money would be suppressed by narrow banking, and all the stock of money available to the public would have to be fully backed with government paper).

The alternative is to extend the admissible narrow-bank portfolios to a broader class of assets, including private-sector securities. This, obviously, would reflect back on the creditworthiness of the narrow banks and on the costs of monitoring more diversified portfolios. In particular, if narrow banks were permitted to hold high-grade corporate bonds, one would have to question whether the quality of such bonds would still be the same in the absence of bank commitments to provide contingent liquidity to corporations when needed.

Narrow Banks and the Safety Nets (I)

Can narrow banks do without safety nets? Insuring narrow-bank deposits is usually predicated for the only purpose of protecting depositors against the residual risk of bank fraud (Mishkin 1999). For narrow banks to be able to do without safety nets, they must obviously be perceived by the public as being financially viable and fully safe. I shall deal with the viability issue further below. On the safety issue, narrow banks are clearly as good as their assets. Now, even under regulation requiring narrow banks to hold only short-term government paper, full safety cannot be achieved in the absence of a credible commitment from the issuing banks to convert on request into cash, at par, all deposit holdings. To the extent that the narrow-bank collateral is not accepted in the economy as money, there is always a chance that depositors would rush to their banks if they perceived their collateral to be losing value or to become illiquid, and if they fear that other depositors might do the same at the same time.

Perceptions of less than full safety may become significant when fluctuations in the market value of government paper are marked, and when sovereign risk is not negligible.²² Developing countries may suffer from both these problems. Ghosh and Sagar (1998) discuss the significant market and capital loss risks that narrow banks would likely confront in developing economies. In particular, they point to the many historical cases of governments and central banks deliberately inflicting capital losses on public debt holders through inflation, repudiation, and outright manipulation of yields. Since a large exposure to a single borrower (i.e., the government) might not be advisable in some countries, an alternative could be to permit narrow banks to hold foreign assets (although this would introduce the foreign exchange risk dimension).

Narrow banks would likely take huge capital losses in the process of massive stock selling, even if they could liquidate the collateral in a large, deep, and well-developed secondary market. They might still be unable to face withdrawal demands unless they held enough extra capital.

In the end, like under conventional banking, only an "insurer" (in the form of a deposit insurance mechanism, or a lender of last resort) would remove the risk of default from narrow banks altogether. Alternatively, narrow banks could be (even more stringently) required to hold only central bank notes or deposits, although not even this option could protect them from runs on the currency (unless the central bank held a 100% foreign reserve collateral).

Narrow Banks and the Safety Nets (II)

Does narrow banking eliminate the need of safety nets for nonbank intermediaries? As discussed, one of the most strongly-held expectations by narrow-banking advocates is that, once transaction money is fully protected, the rest of the financial system can be left to operate outside of any public protection mechanism. Their belief is that, without the distortive effect of public protection that subsidizes liquidity transformation, there would be no real incentives for banks to operate as such (Kareken 1985). Accordingly, if safety nets were to be removed from under fractional-reserve deposits, banks would cease to finance loans with transaction deposits, they would transform themselves into some other types of nonbank intermediary, and try to match their asset/liability term structure to resolve their fragility.

But this stands in stark contrast against the historical evolution of banking, which shows that earliest banks developed without safety nets, let alone regulation, by conducting maturity and liquidity transformation, and by issuing banknotes in excess of reserves.

History thus shows the existence of a natural incentive for some firms to finance dynamic portfolios of opaque assets with relatively short-term liabilities (Flannery 1994), leading to the establishment of intermediaries specialized in the supply of liquidity and asset transformation services (Mussa 1987), and to the emergence of special intermediaries ("banks") capable of financing loans by creating money (see Section IV.A). Under narrow banking, such natural incentive would lead some intermediaries to compete for the provision of conventional banking services, eventually replicating the world before narrow banking. The public would again demand safety nets for their short-term liabilities, and government guarantees would tend to migrate along with depositor funds to the new

intermediaries.²³

Also, runs are not confined to narrowly defined transaction accounts within the narrow banks, but can occur on non-transaction deposits (CD accounts, bankers acceptances, and time deposits) that are not covered by narrow-bank deposit insurance (Calomiris 1999), and no-bailout commitments are not credible, especially when the issuers of such instruments are large institutions.

In conclusion, government appears unable to credibly commit to not insuring bank deposits, as well as to not extending insurance to other types of financial sector liability, under public pressure. Limiting insurance to narrow-bank deposits might fail to add to market discipline, and narrowing the scope of banking might not do much to repeal deposit insurance.²⁴

The Cost of Restructuring

A practical concern on narrow banking regards the cost of breaking long-standing multifunction banks into specialized, legally, and physically separate corporations (Benston and Kaufman 1993). New structures would have to be built, or old structures redesigned; employees would have to be reassigned to each organization; and information costs to and for customers might be significant.

As a least-cost alternative, some propose that the institutions that wished to offer depository services (even in addition to other nonbank riskier services) be simply required to keep a 100% reserve in government securities against their transaction deposit liabilities.²⁵ The proponents of this option believe that such constraint would be enough to protect transaction deposits from the other activities of the depository institution, and would not eliminate bank scale or scope economies from "one-stop" consumer shopping.

Although appealing, this solution must be proven to be able to raise a tight enough "firewall" between the monetary and the non-monetary financial activities. This is deemed necessary to prevent that narrow-bank assets were used to bail out the non-monetary financial activities in the event of some liquidity or solvency problems. For this reason, narrow-banking proposals usually recommend that narrow-bank assets be segregated and unreachable.²⁶

The Viability of Narrow Banks

How attractive is the narrow-banking business? Based on the experience of money market mutual funds, Spong (1993) argues that, once freed from major regulatory burdens, narrow banks should be able to offer depositors a return competitive with other low-risk investment alternatives. Narrow banks would earn interest income from their assets and non-interest income from the fees charged on transaction services. Also, because of their minimal capital needs, narrow banks could operate on low margins and still be able to earn satisfactory returns on equity.

From the opposite stance, Ely (1991) sees the restrictions in the range of investment activity to result in a reduction of narrow banks' size and income. This tendency, he contends, would be accentuated by the small bank exemption clause (see the proposals by Pierce and Litan above), which would prompt the formation of many small banks, especially in urban areas.²⁷ In fact, the income losses associated with the smaller scale might turn out to be significant in light of the recent findings on scale economies in the banking industry.²⁸

Moreover, in countries where banks are not free to close branches as they see fit, a reduction in activity would face would-be narrow banks with increasing unit operating expenses, possibly leading them to depress the interest rate paid on deposits, and causing outflows of funds toward nonbanks.

The reduction in size anticipated by Ely is consistent with country evidence indicating a small demand-deposit base in relation to overall banking activity. Using 1995 survey data on India, Ghosh and Saggari (1998) conclude that the imposition of narrow banking would squeeze the country's banking sector. They also argue that requiring banks to invest only in government paper may lower their income substantially, even after adjusting for the gains from lower non-performing loans, and note that such gains could be easily wiped out by a single interest rate shock similar to those experienced in India in the late 1990s.

Separating lending from deposit-taking activities may also cause intermediaries to miss the efficiency gains from the joint-production of the two services (see subsection A).

Finally, in the case of developing economies with large price volatility in the government securities markets, it is less than certain that the after-risk rate of return on narrow-bank portfolios would be competitive with the return on well diversified and well-managed conventional bank portfolios.

Private-Sector Credit Availability

Opponents of narrow banking argue that not enough credit would flow to the private sector, if commercial banks were to turn into narrow banks. Credit would become relatively scarcer and costlier, most notably for smaller (firm and consumer) borrowers, since non-insured financial companies would be motivated to invest in larger enterprises.

With the exception of Wallace (1996) and the discussion in Section IV.A, this issue has usually been debated outside of well-defined theoretical frameworks. The following are the typical arguments used by narrow-banking proponents to dismiss the concern on short credit supply.

Proponents of narrow banking trust that the incentives prompted by narrow banking would further the ongoing transformation of the financial system away from traditional banking and into nonbanking intermediation. They hold that experience so far shows that nonbanks in the advanced economies attract more and more business away from banks. Thus, new entry into the market of finance

companies, investment banks, and institutional investors, as well as the increasing use of financing instruments alternative to deposits (e.g., securitization, equities, and junk bonds), it is asserted, should supplement the supply of credit as needed.

On the other hand, the exemption of small banks from narrow-banking regulation would help protect the flow of credit supply to the small business sector. However, if the cost of credit did increase overall, this would be the (explicit) price that society would have to pay to achieve higher financial stability in a system that does not subsidize risk taking through public guarantees (Burnham 1990). Finally, if credit to small borrowers remains a concern, then some form of explicit public support mechanism would be preferable than the continued use of distortive indirect subsidy schemes such as deposit insurance.

C. In Search of Evidence

In the absence of historical experience with narrow banking, this section looks for indicative empirical evidence out of a simple proxy experiment. This consists of estimating through OLS method the impact of bank *narrowness* on the cost and availability of lending to the private sector over a large sample of countries and across an extended period of time. The results are reported in Appendix I. Bank narrowness is proxied by the liquidity-to-asset ratio of the domestic banking sector, where liquidity is defined to include total claims on the central bank and government bonds held by the banks. If predictions from contemporary banking theories are correct (see Section IV.A), all else equal, narrow banking should reduce the supply of credit to the private sector and raise its cost to borrowers.

The data used in the exercise are from the IMF *International Financial Statistics* and cover 46 industrial and developing countries, each reporting for different years ranging variously from 1966-2000. The bank market concentration indicator included in one equation is from Beck, Demirgüç-Kunt, and Levine (1999).

For the purpose at hand, identifying structural equations to explain the variability of the lending rate was considered less important than finding a simple, straightforward relationship with a could be added to get a sense of its relative impact on private sector credit. A good candidate for a simple model was a cost-based relationship, in the assumption that the lending rate would be strongly correlated with the deposit interest rate.

The results (Table A.1) show bank narrowness to have a positive, statistically significant effect on the cost of lending to the private sector. The equation, however, may hide the effect of reserve requirements in that they impose an implicit tax on banks (if they are not adequately remunerated), which banks eventually recover through lower deposit rates and higher lending rates. In this case, it would not be clear if a change in reserve requirements would affect lending rates because of their effect on bank cost structure, or because they make credit scarcer through the bank narrowness effect.

A simple regression was thus tested to measure the dependence of the spread between lending and deposit rates on the reserves-to-asset ratio and on banking concentration, showing the reserve ratio effect to be significant (Table A.2).²⁹ In light of this result, the lending rate equation was rerun eliminating reserves from the bank narrowness indicator. The equation proved to be more than robust as the statistics for (re-defined) bank narrowness all improved (Table A.3).

Narrow banking should make bank credit to the private sector relatively scarcer. To show this, credit to the private sector was regressed against the lending rate and the bank narrowness indicator. The results (Table A.4) support the prediction showing a significant, negative effect of bank narrowness on bank credit to the private sector (in percent of GDP). In fact, the marginal impact of bank narrowness is significantly larger than that of the price variable.

The advocates of narrow banking argue that the restriction of credit would be offset dynamically through alternative supplies of funds. The effect of bank narrowness was then measured on a credit aggregate which includes credit to the private sector financed with instruments other than demand deposits: if the substitution effect is in place, it must be captured by the estimated coefficient of bank narrowness, which should turn out to be significantly lower (in absolute value) than under the narrower credit aggregate, or statistically not different from zero. The results (Table A.5) show a significant, negative coefficient (even larger in absolute value than under the narrower credit aggregate), suggesting that, as bank narrowness increases, no alternative forms of credit emerge enough to offset the reduction of bank credit. Running the same regression on the sample including only developing countries confirms this result (Table A.6).

This simple model does not explicitly control for other factors like sovereign risk. Often, one finds high lending rates and little private-sector credit in countries with high sovereign risk, where banks just invest in government bonds. In part, this phenomenon reflects adverse selection issues in which any party willing to borrow at high rates (perhaps because of sovereign risk) is a poor credit risk and the only alternative for lenders is to invest in government paper. The model, however, uses nominal lending rates. In so far as they are market-determined, such rates incorporate various risk factors. Unsurprisingly, all model regressions in the exercise show a negative coefficient of the lending rate, perhaps suggesting that the adverse selection effect is controlled for in the equations, and that the estimate of bank narrowness is orthogonal to it.

To improve on these results, an equation was run where the lending rate is corrected for inflation and inflation is included separately as a proxy for country macroeconomic risk. The results are even stronger than in the alternative formulation and confirm the negative effect of all the three variables considered (Tables A.7-A.8). Based on the full country sample, it turns that on average a 1 percent increase in bank narrowness reduces the availability of credit to the private sector by 0.73 percent.

V. Policy discussion and conclusion

From the above analysis it seems fair to conclude that narrowing the scope of banking would, at best, bear less than certain benefits in terms of greater financial stability, while it would exact some heavy costs in terms of efficiency and credit availability.

Narrow banking would sever the link between liquidity, money, credit, and economic activity, which banking has a natural incentive to establish efficiently (under stable macroeconomic conditions). By suppressing bank money as an instrument to finance lending to the private sector, narrow banking would create serious market incompleteness. The consequent economic losses might generate incentives for other financial firms to fill in the gap left by undertaking conventional banking activities. While this would forswear the very purpose of narrow banking, it would eventually replicate the world before narrow banking, engendering the same risks that were supposed to be removed in the first place through limiting the scope of banks.

The economic costs of narrow banking could be particularly significant for developing countries, where the need is vital for an efficient banking system both as an engine of economic growth and a support for the development of a strong nonbank financial sector. Also, in many developing countries propositions to move to narrow banking should be resisted given the absence of a well-developed secondary market for government securities, a highly volatile environment for securities prices, the existence of sovereign risk, and a non-credible government commitment not to insure deposits or financial instruments of large public use.

Definitely better alternatives to narrow banking would be Bryan's core banking model (footnote 9, Section III), or those regulatory regimes that separate commercial (short-term) banking from investment (longer-term) banking activities, even within the same financial holding companies.

There is some favor to the idea that narrow banking could be used in some countries as a response to crises (World Bank 2001). In particular, weak banks could be required to operate as narrow banks with a view to fixing their balance sheets. Whereas selective intervention on individual banks could be justified, policymakers should be aware that the banks required to operate as narrow banks would rapidly dissipate their banking knowledge capital.³⁰

While mandatory narrow-banking regulations should be rejected, nothing should stand in the way of individual institutions wanting to offer narrow-banking services to their customers on a voluntary basis, or to create narrow-bank subsidiaries that would be segregated from other businesses within the same bank holding companies.

An efficient, free-choice regulatory solution would be that prospected by Mishkin (1999) and discussed in Section III.B. While not suppressing the risks inherent in conventional banking, such solution would retain the money-creation power of conventional banks, avail risk-averse investors of a full risk-proof money instrument, and let the financial institutions and their customers free to opt for conventional and/or narrow banking instruments based on their own convenience.

There are two additional (not mutually exclusive) alternatives that would improve the incentives to prudence for both banks and depositors while preserving conventional banking. Banks could issue uninsured deposits bearing an option clause whereby, in the event of liquidity problems, a bank could suspend deposit convertibility up to a predetermined time interval while it liquidates its assets in an orderly fashion. In the meantime, the bank's deposits would continue to circulate in the payment system. To induce depositors to accept such provision, the bank would commit to pay an interest penalty in the event it invoked the option or to pay a premium on the deposit interest rate.³¹

On the other hand, banks could issue uninsured subordinated debt, as proposed by Keehn (1989), Wall (1989), and recently by Calomiris (1999). The subordinated debt would produce a signal to the market and the banking supervisors on the relative risk-ness of the issuing banks. By inducing debt-holders to use information optimally, it would strengthen the incentive to prudence inherent in the banks' sequential service constraint and in the associated risk of runs.³²

While contributing to increasing financial market completeness, the approaches recalled above, alternative to narrow banking, would spur competition within the banking sector and strengthen market discipline, without suppressing conventional banks: the patient's health would be restored through good medicines, not euthanasia.

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NOTES

1. Boot and Greambaum (1992) characterize narrow banking as a form of *direct* regulation that proscribes specific types of activities, as opposed to *indirect* regulation which aims to induce (socially) optimal choices by altering the firms' incentive structure through rules (such as for minimum capital and liquidity, loan loss provisions, exit/entry, accounting and disclosure, and the like).
2. With only one exception, the review in this section draws exclusively on the Anglo-Saxon financial literature.
3. In the *Wealth of Nations*, Adam Smith warned that "The whole paper money of every kind which can easily circulate in any country never can exceed the value of gold and silver...which would circulate there, if there was no paper money...Should the circulating paper at any time exceed that sum,... [m]any people would immediately perceive that they had more of this paper than was necessary for transacting, and...they would immediately demand payment of it from the banks." (Bk. II, Ch. II: 361-62). Later, David Ricardo would write: "To secure the public against any other variations in the value of the currency than those to which the standard itself is subject, and, at the same time, to carry on the circulation with a medium the least expensive, is to attain the most perfect state to which a currency can be brought, and we should possess all the advantages by subjecting the [b]ank to the delivery of uncoined gold or silver at the Mint standard and price, in exchange for their notes..." (From *The Works of David Ricardo*, Vol. I, *Principles of Political Economy*, edited by P. Sraffa, Cambridge University Press, 1951: 358.)
4. For an historical reconstruction of these contributions and their political fate, see Phillips (1992). On the Chicago Plan see also the references in Friedman (1959), Ch. Three, footnote 8: 108.
5. See for instance Fisher (1935) Ch. V, Part II.
6. For a recent reappraisal of Allais' theory, see Phillips (1992).

7. Friedman justified this measure on three grounds. First, it would allow banks to pay interest on deposits and thus avert unproductive real resource investments by individuals to economize on cash balances. Second, it would lessen the incentive for banks to evade the 100% requirement. Third, it would redistribute back to the economy the government's monopolistic rents from money issue.

8. See, for instance, Black (1985), Tobin (1985), and Kareken (1985). Tobin (1987) elaborates on his earlier proposal, moving away from narrow banking strictly and proposing a redefinition of commercial banking that preserves the link between deposit money and commercial lending. This idea is close to Bryan's (1991) "core banking" model, whereby the scope of banking is narrowed down to a core of activities where banks have a demonstrated comparative advantage: issuance of checking, savings, and money market deposit accounts; provision of payment, trust, and custody services; and loans to individuals, small businesses, and medium-sized companies. A *core bank*, on the other hand, would not lend to large corporations and developing countries; it would not engage in high-leveraged transactions and in large commercial real estate projects; it would not undertake global money market activities of large money center banks or large regional banks; and it would not underwrite securities. According to Bryan, a core bank is a "safe place to keep your money", and the core banking functions he refers to are those where banks reportedly make the overwhelming bulk of their profits.

9. Litan discusses the consequences of broadening the class and term-structure of the securities available to narrow banks for investments, and the regulatory actions that would have to be associated with those changes.

10. As Kareken points out, there is a clear tradeoff here between a contract of certain value but carrying the risk of not being honored and a contract of uncertain value but which is going to be honored with certainty. Goodhart (1988) evaluates (and supports) the idea of introducing such type of mutual-funds money.

11. Through sweep accounts, banks can handle large volumes of transaction balances throughout each business day but record only a small amount at the end of the day. While recorded balances would be insured, the unrecorded ones would be unprotected by insurance and bear full risk to their holders.

12. The exemption of smaller banks recognizes that narrow banks need some minimum scale to operate efficiently. The exemption would also help to counteract any contraction of credit supply to small businesses, without imperiling systemic stability. As importantly, the exemption would facilitate the access to funds from small organizations that lack direct access to major credit markets (Spong 1993).

13. As Mishkin notes, eventual reduction of insured deposits would be consistent with no loss of efficiency since the deposits that disappear would have been issued in larger amounts only because of the deposit insurance subsidy.

14. The concerns expressed by some on the risks raised by interbank overdrafts (see for instance Pierce 1991, Spong 1993, and Phillips 1995) are overstated. In a narrow banking regime, the exchange of fully covered deposits through the payment system would make payment settlement by netting safer than under fractional reserve banking, since all the interbank intraday lending implicit in the netting process would be fully collateralized (by construction): banks could not create mutual debit/credit positions that exceeded their deposit cover, since no uncovered deposits would be allowed in the system. Adopting a gross settlement rule would therefore add only protection against the risk of some participants deliberately refusing to settle their outstanding debit balances, when required, or against the (even more remote) risk of some participants losing access to the means necessary to settle interbank payments.

15. The approach here used expands on Kobayakawa and Nakamura (2000).

16. In other words, if depositors hold the illiquid assets, they may have to forego immediate consumption needs. If they hold the perfectly liquid asset, they forego higher future consumption possibilities.

17. In fact, even in this special case, the depositors' potential demand for convertibility would require the bank to hold a fraction of its liabilities in the form of some higher-powered claim.

18. For a very recent and insightful theoretical analysis of the (in)efficiencies associated with private and public money regimes, see Azariadis, Bullard, and Smith (2001).

19. Note that the *liquidity creation* in this example rests on the regulatory fiat broadening the class of papers eligible for conversion into reserve money.

20. As confidence in the nonbank products grows, nothing prevents the public from accepting nonbank quasi-monies as money at some point. The issuing nonbanks would then no longer need to rely on bank deposits to effect transactions. At that point, they would have an incentive to start lending their own-produced money, precisely like banks do.

21. Add to this that, as the system shifted to the narrow-banking mode, the public might want to economize on transaction deposits and invest elsewhere their wealth--say in uninsured short-term paper--so that the overall stock of transaction deposits would shrink, thus making collateralization easier.

22. In countries where government securities are free of default risk, a regulation that would permit narrow banks to hold long-term government paper (following, for example, Litan 1987) could subject them to a considerable interest rate risk. McCulloch (1987) notes that at the time he wrote the Macaulay duration (and thus the interest rate sensitivity) of 30-year U.S. Treasury bonds was greater than that of 30-year amortized mortgage loans.
23. Caprio and Summers (1993) and Caprio (1997) note that under narrow banking the rise in the price of safe assets will lead investors to want to hold some less secure paper than narrow-bank deposits, motivating nonbanks to offer deposit accounts backed by higher-yielding assets which could be subject to default. This would induce a demand for safety nets to be extended to such accounts.
24. As Calomiris (1999) notes, politically, the absence of de jure protection on bank liabilities outside the narrow bank does not imply the absence of de facto protection by the government. Absent the government's credible commitment to not intervene to prop up banks during a crisis, narrow banking may only end up substituting ad hoc bailouts for explicit insurance coverage.
25. See Benston and others (1989), Merton and Bodie (1993), and Benston and Kaufman (1993).
26. See the discussion on this point in Phillips (1995).
27. Considering the high standardization of the narrow-banking products and the need for achieving economies of scale, one could make the case that the narrow-banking business is a natural monopoly. In this case, narrow banking services could be provided directly by the central bank, or by one single banking entity with a large geographical presence across the country. The Postal Office could be an example of such an entity.
28. For an extensive review of the literature on scale economies in banking and the nonbanking financial sector, see Bossone, Honohan, and Long (2001).
29. It must be noted that the reserves variable used in the equation includes all bank claims with the central bank, with no distinction between required and free reserves. It is therefore likely that the obtained regression coefficient overestimates the required reserves effect discussed above.
30. A few years ago, while visiting officially one major emerging economy where a long record of macroeconomic instability and disproportionately high interest rates on government securities had driven most banks to disengage from lending to the private sector and to invest in government paper, I was told by major local bankers that a transition to a stable environment and to less distorted financial prices would find most banks unprepared to return to their old banking business and to make profits by selecting good risks.
31. In the early nineteenth century Scottish banks adopted this solution for their notes (England 1991).
32. Evanoff and Wall (2001) show that, while some measures such as capital ratios have no predictive power and, therefore, are not good candidates to trigger prompt corrective actions from supervisors, subordinated-debt yield spreads (on a riskless rate) perform better in this regard. See also the recent supportive evidence by Hancock and Kwast (2001).

APPENDIX I

Results of panel regression

| Table A.1 Bank Narrowness and the Cost of Lending | | | |
|--|---------------------------------------|----------|--------|
| Variables | <i>Dep. Variable</i> Lending rate* | <i>t</i> | P |
| Constant | 1.67 | 4.35 | 0.0001 |
| Deposit rate | 1.31 | 43.38 | 0.0001 |
| Bank narrowness | 2.88 | 2.37 | 0.0179 |
| No. of obs. | 763 | | |
| R^2 | 0.73 | | |
| * Yearly average | | | |

Table A.2 Bank Reserves and the Cost of Lending

| Variables | <i>Dep. Variable</i> Lending rate - Deposit rate | <i>t</i> | P |
|------------------------------|---|----------|--------|
| Constant | 4.38 | 2.58 | 0.0106 |
| Banking sector concentration | -0.84 | -0.38 | 0.7060 |
| Reserves/asset ratio | 33.81 | 5.20 | 0.0001 |
| No. of obs. | 181 | | |
| R^2 | 0.13 | | |

Table A.3 Bank Narrowness and the Cost of Lending

| Variables | <i>Dep. Variable</i> Lending rate* | <i>t</i> | P |
|--|---------------------------------------|----------|--------|
| Constant | 1.56 | 3.95 | 0.0001 |
| Deposit rate | 1.33 | 45.38 | 0.0001 |
| Bank narrowness (- reserves/assets) | 4.49 | 2.71 | 0.0068 |
| No. of obs. | 762 | | |
| R^2 | 0.73 | | |
| * Yearly average | | | |

Table A.4 Bank Narrowness and Credit Availability

| Variables | <i>Dep. Variable</i> Credit to private sector/GDP | <i>T</i> | P |
|-----------------|--|----------|--------|
| Constant | 0.78 | 42.53 | 0.0001 |
| Lending rate | -0.01 | -7.90 | 0.0001 |
| Bank narrowness | -1.02 | -17.59 | 0.0001 |
| No. of obs. | 763 | | |
| R^2 | 0.38 | | |

Table A.5 Bank Narrowness and Credit Availability

| Variables | <i>Dep. Variable</i> Credit to private sector*/GDP | <i>t</i> | P |
|-----------------|--|----------|--------|
| Constant | 1.17 | 43.45 | 0.0001 |
| Lending rate | -0.01 | -8.42 | 0.0001 |
| Bank narrowness | -1.56 | -18.53 | 0.0001 |
| No. of obs. | 763 | | |
| R^2 | 0.41 | | |

* Includes credit financed with instruments other than demand deposits.

**Table A.6 Bank Narrowness and Credit Availability
(Developing Countries Only)**

| Variables | <i>Dep. Variable</i> Credit to the private sector*/GDP | <i>t</i> | P |
|-----------------|--|----------|--------|
| Constant | 0.87 | 31.00 | 0.0001 |
| Lending rate | -0.01 | -6.03 | 0.0001 |
| Bank narrowness | -1.06 | -14.60 | 0.0001 |
| No. of obs. | 537 | | |
| R^2 | 0.34 | | |

* Includes credit financed with instruments other than demand deposits.

Table A.7 Bank Narrowness and Credit Availability

| Variables | <i>Dep. Variable</i> Credit to private sector*/GDP | <i>T</i> | P |
|------------------------|--|----------|--------|
| Constant | 1.42 | 26.77 | 0.0001 |
| Lend. rate - inflation | -0.01 | -4.76 | 0.0001 |
| Inflation | -0.02 | -6.17 | 0.0001 |
| Bank narrowness | -1.73 | -6.46 | 0.0001 |
| No. of obs. | 763 | | |
| R^2 | 0.50 | | |

* Includes credit financed with instruments other than demand deposits.

**Table A.8 Bank Narrowness and Credit Availability
(Developing Countries Only)**

| Variables | <i>Dep. Variable</i> Credit to private sector*/GDP | <i>T</i> | <i>P</i> |
|------------------------|--|----------|----------|
| Constant | 1.16 | 20.17 | 0.0001 |
| Lend. rate — inflation | -0.01 | -3.85 | 0.0002 |
| Inflation | -0.01 | -5.78 | 0.0001 |
| Bank narrowness | -1.27 | -5.66 | 0.0001 |
| No. of obs. | 537 | | |
| <i>R</i> ² | 0.49 | | |

* Includes credit financed with instruments other than demand deposits.