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Abstract

We investigate how bank migration across state lines over the last quarter century has affected the size and covariance of business fluctuations across states. Starting with a two-state version of the unit banking model in Holmstrom and Tirole (1997), we conclude that the theoretical effect of integration on business fluctuations is ambiguous because integration dampens the impact of bank capital shocks but amplifies the impact of firm collateral shocks. The net effect empirically seems stabilizing, however, as we find fluctuations in employment growth within states falls as integration rises, especially when we instrument for the level of integration and control for employment composition within states. Integration also weakens the link between bank capital growth within states and growth in state employment and bank lending.

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I. Introduction

The United States once had 50 little banking systems, one per state, because all the states effectively blocked entry by out-of-state banks. Under that segregated system, the fate of each state and its banks were closely tied; as went the states, so went the banks. Farm price deflation in the early 1980s bankrupted many farmers and many farm banks, just as falling oil prices in the late 80s wiped out a lot of Texans and Texas banks. Now that states have mostly opened their borders to out-of-state banks, the banking industry is converging toward a single system dominated by the very large holding companies with banks operating in many states (Map).

Whether this integration of our banking system has any real, macro consequences depends on whether these intermediaries provide any unique services to the economy. If not, if banks are just another thread in a financial veil, then their integration is largely irrelevant; we might expect second- or third-order benefits at most in the form of paper work reduction and back-office consolidation.

Integration gets a lot more interesting if banks are essential producers of important monitoring and risk-sharing services. As a starting point for thinking about those more important effects, our paper lays out a modified version of Holmstrom and Tirole's (1997) banking model. Bankers in their model can prevent moral hazard—by monitoring firms—and they can commit moral hazard—by neglecting to monitor. These hazards make the equilibrium rate of investment in the economy depend on the level of firm collateral and bank capital; these seemingly backward-looking state variables give firms and bankers a stake in future investment outcomes, and that stake keeps both

parties honest. Exogenous shocks to either variable cause equilibrium investment to fall, i.e., collateral damage and capital crunches are both contractionary.

To see whether interstate banking alters those effects, we add a second (physical) state to the H-T model. Both collateral and capital shocks are still contractionary, not surprisingly, but interstate banking changes their magnitudes: bank capital shocks in state A have a smaller impact with interstate banking, but the impact of collateral shocks gets bigger. These derivatives are fairly complicated functions of the frictions in the model, but the intuition is straightforward and general: a holding company that is diversified across two states can import capital to state A if lending opportunities there are still good, but a collateral shock in state A will lead the holding company to export capital and lending away from that state.

Rather than try to identify these effects separately (the econometric equivalent of laser surgery it seems to us), we ask the data whether the *net* effect of integration has been to make state economies more or less stable.[1] Table 1 suggests the answer. As states' banking systems integrated, the state-specific variation in employment, variation that can be *not* be attributed either to aggregate business cycles or to differences in average growth across states, fell. The decline in volatility was large, dropping by more than one-half, from 2.4% in the late 1970s to 1.1% in the middle of the 1990s.[2] Personal income growth displayed a similar trend; we include these figures in Panel B to show that

[1] Banks and firms share risk to some extent, so they end up inheriting each other's problems. The precise division of those risks (and the bad outcome) would depend in a complicate way on *ex ante* contracts and *ex post* bargaining power. Nor do we consider the welfare benefits of integration, but presumably welfare rises as volatility falls.

[2] These figures are the root mean squared error from a regression of state employment growth on a time effect (to remove aggregate cycles) and a state effect (to remove state differences in mean growth). See Table 1 for details.

there was no trend decline toward lower state-specific volatility during the 1960s and 1970s, prior to deregulation-induced bank integration.[3]

The empirical results presented below convince us that this correlation between state volatility and bank integration is no coincidence. Using a panel of state-year data on employment growth over 1976-1994, we link fluctuations in employment growth around the state-year average to banking integration and find that it fell significantly as banks became increasingly integrated (via holding companies) with out-of-state banks. The panel data also allow us to control for reductions in volatility across *all* states, and thus demonstrate that state-specific increases in banking integration were followed by state-specific decreases in business cycle fluctuations. Various "endogenous integration" possibilities are also considered, but rejected, because we find even stronger results when we use instruments for integration. Controlling for the composition of employment in each state also strengthens the result.

The net stabilizing we find suggests that the insurance or diversification against bank capital shocks associated with integration more than offset any amplified effect on collateral. Although we avoid trying to identify those separately, we do find that the link between growth in capital at banks in a state and growth in that state's employment (and bank lending in that state) is substantially reduced once its banks become more closely tied to other states' banks. That is certainly consistent with our conclusion that integration over the last quarter century has helped stabilize state economic activity by helping banks diversify against shocks to their own capital.

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[3] Personal income growth is a somewhat less reliable measure of economic activity that occurs within a state than employment growth because it attributes income generated from returns on capital earned anywhere to individuals living within the state. For this reason, we will focus the remainder of our empirical analysis on state employment growth.

Although our focus here is on volatility in state economies, integration has important implications for bank stability and risk as well; operating across many states should have obvious diversification benefits, although how that plays out in terms of banks' risk taking is less obvious (Demsetz and Strahan, 1997). Our findings here also bear on developments in Europe, where banks are just starting to integrate across nations (judging from their *liability* mix in Chart 1).[4] Applying our findings there would imply that further bank integration abroad should lead to smaller, but more correlated, national business cycles. More generally, our results may inform thinking about worldwide financial integration, since "globalization" is just a scaled-up version of the national integration studied here.

II. Interstate Banking

Capital and banking market integration have been considered in a variety of contexts. The international literature on capital market integration (across nations) focuses mostly on the risk-sharing benefits of integration; cross-country diversification of asset portfolios tends to smooth aggregate consumption within nations. We doubt that banking integration in the U.S. has important risk-sharing effects for savers since they could always diversify via the stock market. In fact, Asdrubali et al. (1996) find that U.S. capital markets play a more vital role in income and consumption smoothing across states than do credit markets. The international literature does find, however, that increased capital market integration may actually amplify the own-country effect of productivity

[4] Except, of course, for the banking centers of Switzerland and the U.K. and the three "Benelux" nations. Garcia Blandon (2001) finds that foreign bank entry in Europe is impeded by various *non*-regulatory barriers, such as cultural distance between consumers, while export levels and the presence of multinationals are positively correlated with foreign bank penetration.

shocks as capital is able to flee a country afflicted with a productivity slump. Our model of interstate banking has some of that flavor.

Williamson (1989) compares the unit banking system in the U.S. to the more integrated system in Canada. Using an equilibrium costly monitoring model, he argues that the cross-province banking there should have stabilized the Canadian banking system relative to the U.S. unit banking system. His model also implies, somewhat counter-intuitively, that integration amplifies the impact of aggregate real shocks. Integrated banking systems are less volatile, in other words, but the economy as a whole becomes more volatile.[5]

Our paper, by contrast, investigates how banking integration affects *state* volatility (rather than bank or aggregate volatility). Our model introduces a second physical state to the (unit) banking model in Holmstrom and Tirole (1997) to illustrate how interstate banking can alter the impact of various shocks and thus affect the amplitude of the business cycle. As it turns out, interstate banking is *not* necessarily stabilizing because some types of shocks get dampened, but other types get amplified.

II.1 The Holmstrom and Tirole Model

The HT model comprises three players: firms, financial intermediaries, and investors. All are risk neutral. Firms have access to identical project technologies, but they differ in their initial capital endowments: A_0. Financial intermediaries ("banks") and investors can both lend to firms, but only the banks have monitoring know-how; the

[5] The counterintuitive result that integration amplifies the effect of real shocks seems to stem from the type of shock considered (a mean preserving increase in the projected technology risk) and on a hard-to-explain effect of bank diversification on the elasticity of credit demanded by firms. His evidence from the pre-War period is mixed.

uninformed investors must rely on monitoring by the banks. Investors have access to an alternative investment opportunity.

Technology. Firms choose between a good project and either of two bad projects. The "good" project succeeds with probability p_H; both "bad" projects succeed with probability p_L. A key parameter in the model is the good and bad projects' relative likelihood of success: $\Delta p = p_H - p_L > 0$. All of the projects return R per-unit invested if they are successful and 0 if not. R is public. The two bad projects also produce differing amounts of *private* benefits (to the firm): type *b* bad projects produce a small private benefit (*b);* type B bad projects produce a larger private benefit ($B > b$).

Moral Hazard and Monitoring. Moral hazard arises because of the private benefits from bad investments; firms may choose bad projects over good projects (with higher expected returns) because the former produce private (i.e., unshared) benefits. Monitoring by a bank can prevent type B investment, but not type *b* investment. The idea here is that monitoring is an effective deterrent against obvious fraud and abuse (e.g., simply absconding with the borrowed funds), but smaller abuses, (shirking, etc.) must be remedied through incentive schemes. Monitoring costs are proportional to the amount invested; if investment is *I*, monitoring costs = *cI.* Monitoring is itself a private activity, in that savers cannot determine if bankers have actually monitored a given firm. Private monitoring creates a second moral hazard; unless it is worthwhile, bankers will only pretend to monitor. Banks must invest enough of their own capital in the project to ensure that they will monitor adequately.[6]

[6] Project risk is not completely diversifiable so banks need a stake in the project (or else they would shirk on monitoring).

Contracts. Firms will always choose a mix of liabilities, borrowing from both the bank and investors. If the project succeeds, the firm, bank monitor, and uninformed investors receive *Rf*, *Rm* and *Ru*. These shares are determined endogenously, of course, by the opportunity costs of the three parties. We prefer the *intermediation* interpretation of financing structure offered by HT: investors deposit their money with the bank, and banks fund the firms they monitor with those deposits and the bank's own capital. The bank's ability to attract deposits depends on its own capital (which is needed to assure uninformed investors that it will monitor firms adequately).[7]

Equilibrium and Comparative Statics. Given the rates of return required by investors (g) and banks (b), a firm with initial assets A_0 chooses investment (I), its own capital contribution (A), and its mix of liabilities to maximize its expected profits:

$$\max U(A_0) = p_H RI - p_H Rm - p_H Ru + g(A_0 - A) \qquad \text{subject to:}$$

$$RI \geq Rf + Rm + Ru \qquad (1)$$

$$Rf \geq bI / \Delta p \qquad (2)$$

$$Rm \geq cI / \Delta p \qquad (3)$$

The main budget constraint (1) limits the sum of returns to the three parties to the total return on the investment.[8] Eq. (2) is an incentive constraint on the firm; the gain in expected payments to the firm from choosing the good project cannot be less than the

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[7] Under the *certification* interpretation, uninformed investors invest directly in the firm, but only after the monitor has taken a large enough financial interest in the firm that the investor can be assured that the firm will behave diligently.

[8] The other budget constraints (i,ii,iii and iv HT p. 680) are omitted here for brevity.

private benefit from choosing the first bad project. Eq. (3) is an incentive constraint on the intermediary; the expected gain in return to the bank from forcing the firm to choose the good project must exceed the cost of monitoring, else the bank will not monitor. Together, Eq. (1)-(3) define the maximum pledgeable income $p_H(R-(b+c)/\Delta p)$, i.e. the maximum payment per unit of investment that can be promised to uninformed investors without destroying incentives. At the optimum, all constraints will bind.

Because firms choose the same optimal policy per unit of own capital, an economy-wide equilibrium is easily found by aggegating across firms. Let Kf be the aggregate amount of firm capital, Km the aggregate amount of informed capital, and Ku the aggregate supply of uninformed capital. The first two are fixed, while the third is determined so that the demand for uninformed capital (the sum of the pledgeable expected returns of individual firms, discounted by g) equals the supply of uninformed capital. Let $g(Ku)$ be the inverse supply function. The equilibrium in the market for uninformed capital obtains when

(1a) $$p_H(Kf+Km+Ku)\big(R-(b+c)/\Delta p\big)=g(Ku)\cdot Ku\,.$$

The equilibrium rates of return in the two capital markets are

(2) $$g(Ku)=p_H K\big(R-(b+c)/\Delta p\big)/Ku$$

(3) $$b=p_H c\cdot K/(Km\cdot\Delta p)\,,$$

where $K=Kf+Km+Ku$ is the total amount of capital invested.

Holmstrom and Tirole show how shocks to each player's capital affect the equilibrium returns to investors (g) and banks (b) and the rate of investment by firms. A

decrease in informed capital (a capital "crunch") decreases g and increases b. A fall in firms' capital (a collateral "squeeze") decreases g and decreases b.

The model can also be used to examine how the two types of shock affect the availability of external finance and firms' investment spending. First, there is a direct contractionary effect due to the fact that the capital crunch and the collateral squeeze lead to a reduction in the amount of capital that can be invested in the firm by the bank and by the entrepreneur, respectively. Second, there is an indirect contractionary effect due to the fact that the collateral squeeze and the capital crunch reduce the pledgeable income that can be promised to uninformed debtholders without destroying incentives. The decrease in the pledgeable income affects negatively firms' ability to attract uninformed capital (see equation 1a).

II.2 Interstate Banking in the HT Model

We extend the HT model to interstate banking by simply adding another physical state. The only subtlety is in the treatment of capital mobility across states under the two banking regimes (unit and interstate) that we want to compare. For simplicity, we make the extreme assumption that informed capital is completely immobile across states under unit banking. In other words, unit banking is equivalent to the single state world HT considered. At the opposite extreme, we assume that informed capital is completely mobile across states under interstate banking. These extreme assumptions are not necessary for our results below, however; we obtain qualitatively similar results so long as informed capital is relatively less mobile under unit banking. Note that we also assume that the return on uninformed capital is exogenous and equal across states for both unit banking and interstate banking. This is consistent with the fact that uninformed investors have access to a nation-wide securities market regardless of the banking regime.

On this securities market, there is a quasi-unlimited supply of investment opportunities, with a rate of return independent of state-specific shocks.

The appendix contains details on the extended model, the equilibrium, and the comparative statics. In short, the own-state effect of a bank capital shock is diminished under interstate banking because bank capital can flow from other states that did not experience a shock. The own-state impact of a firm collateral shock is amplified under interstate banking because banks in the affected state are free to shift their lending across the border to firms with better collateral. Thus, the net effect of integration on volatility is ambiguous. The following propositions compare the impact of the two shocks under unit banking and interstate banking.

Proposition 1: with interstate banking, the negative impact of a bank capital crunch in state 1 on the amount of uninformed and informed capital invested in that state is smaller than with unit banking. The intuition for this result is that with interstate banking, the increase in b caused by the bank capital crunch will attract bank capital from state 2. This will mitigate the impact of the bank capital crunch on the availability of external finance in two ways. First, the bank capital inflow leads to a lower decrease in the amount lent by banks to firms in state 1. Second, because the amount lent by banks to firms in state 1 decreases less, we also have a smaller reduction in the pledgeable income that can be promised to uninformed investors by firms in state 1 without breaking incentives. As a result, we have a smaller reduction in the amount of uninformed capital that firms in state 1 can attract. With unit banking, these mitigating effects do not take place, since bank capital cannot move across states.

Proposition 2: with interstate banking, the negative impact of a collateral squeeze in state 1 on the amount of uninformed and informed capital invested in that state is larger than with unit banking. The intuition for this result is that with interstate banking, the decrease in b following the collateral squeeze will induce bank capital to move to state 2. Here again, two effects must be distinguished. First, the bank capital flight leads to a decrease in the amount lent by banks to firms in state 1. Second, because of this reduction of the amount lent by banks to state 1 firms, we also have a decrease in the pledgeable income that can be promised to uninformed investors. As a result, there is a reduction of the amount of uninformed capital that state 1 firms can attract. With unit banking, these amplifying effects do not take place, since bank capital cannot move across states.

In sum, cross-state banking amplifies the effects of local shocks to entrepreneurial wealth (or, equivalently, productivity shocks) because capital chases the highest return. Capital flows in when collateral (productivity) is high and out when it is low, making the highs higher and the lows lower. Integration dampens the impact of bank capital supply. This source of instability becomes *less* important because entrepreneurs are less dependent on local sources of funding in an integrated market since bank capital can be imported from other states.

III. Empirical Strategy and Data

Identifying the separate shocks just discussed seems like an impossible task. Even with the requisite data, the high correlation between bank capital and borrower collateral would require strong and perhaps implausible identifying assumptions. Instead,

ask a more tractable (but still useful) question: how has banking integration across states affected overall volatility within states? Do state-specific business fluctuations get bigger or smaller as banks in the state become increasingly integrated with banks in other states? We know from the model that if bank capital shocks are more a source of volatility than collateral shocks, the net effect of integration should be stabilizing. Integration, in other words, should reduce volatility.

Endogenous Integration?

Reverse causality of two sorts concerns us. First, increased cross-state banking may indicate merely that states' economies are becoming more integrated; banks may simply follow their customers across state lines. If so, and if "real" integration (as opposed to bank integration) affects business volatility, our results may confuse the effects of real vs. bank integration. Reverse causality could arise also via banking "hangovers" (from too much farming, or too much oil), as the associated distress and volatility may attract bargain-hunting banks from other states. (In fact, we find evidence of this idea below.) To guard against these or other potential endogeneity problems, we instrument for integration using an indicator equal to one after a state entered an interstate banking agreement, and the number of years elapsed since the agreement.

A Brief History of Interstate Banking

Restrictions on interstate banking in the U.S. date back to the infamous Douglas Amendment to the 1956 Bank Holding Company (BHC) Act. With that amendment, banks or holding companies headquartered in one state were prohibited from acquiring banks in another state unless such acquisitions were permitted by the second state's government. No states allowed such transactions in 1956, so the amendment effectively

barred interstate banking. Change began in 1978, when Maine passed a law allowing entry by out-of-state BHCs if, in return, banks from Maine were allowed to enter those states (entry meaning the ability to buy incumbent banks). No states reciprocated, however, so the integration process remained effectively stalled until 1982, when Alaska, Massachusetts, and New York passed laws similar to Maine's.[9] State deregulation was nearly complete by 1992, by which time all states but Hawaii had passed similar laws.[10] The process was completed in 1994 with the passage of the Interstate Banking and Branching Efficiency Act of 1994 (IBBEA) that mandated complete interstate banking as of 1997 and gave states the option to permit interstate branching.[11]

This roughly 15-year history provides an excellent opportunity to test how the resulting integration has affected volatility. Luckily for us, the states did not deregulate all at once, and the subsequent integration across states proceeded at different rates (Chart 2). The staggered deregulatory events provide us with both cross-sectional and time series variation with which to identify the effects of integration; also, the deregulatory events themselves provide a good instrument for integration.[12]

Measuring Integration and Volatility

Our measure of bank integration equals the share of total bank assets in a state that are owned by bank holding companies that also hold banking assets in other states

[9] As part of the Garn-St Germain Act, federal legislators amended in 1982 the Bank Holding Company Act to allow failed banks and thrifts to be acquired by any bank holding company, regardless of state laws (see, e.g., Kane (1996) and Kroszner and Strahan, 1999).

[10] State-level deregulation of restrictions on branching also occurred widely during the second half of the 1970s and during all of the 1980s.

[11] IBBEA permitted states to opt out of interstate branching, but only Texas and Montana chose to do so. Other states, however, protected their banks by forcing entrants to buy their way into the market.

[12] While we focus here on interstate banking, Jayaratne and Strahan (1996) report that state-level growth accelerated following branching deregulation; Jayaratne and Strahan (1998) show that branching deregulation led to improved efficiency in banking.

(or other countries). To illustrate, if a state had one stand-alone bank and one affiliated bank of equal size, integration in that state would equal ½.

We associate volatility with the year-to-year deviations (from average) in measures of business activity. Starting with the annual growth rate of series *x* for state *i* in year *t*, we first subtract off the mean growth rate in *x* for state *i* over time. "Demeaning" by the state average removes long-run growth differences across states. We then subtract off the mean growth rate of series *x* across states in year *t*. Demeaning by the national average each year helps control for aggregate business fluctuations. We are left with the state-specific shock to our measure of business activity. Our volatility measures will be the square of the resulting deviations, the log of the squared deviations, or the absolute value of these deviations.

Our sample starts in 1976, a few years before interstate deregulation began. We end the sample in 1994, the year that the Riegle-Neal Interstate Banking and Branching Efficiency Act became law. Riegle-Neal allowed bank holding companies to acquire banks in any state after September 29, 1995 and permitted mergers between banks in different states as of June 1, 1997, which effectively allowed nationwide branch networks. The law also gave states the right to adopt an earlier starting date for interstate bank mergers, however, and about half of the states did so (Spong, 2000). In response, banks such as NationsBank consolidated operations from several other states into its primary North Carolina bank (NationBank NC N.A.), leading to an increase of this bank's (and hence North Carolina's) assets from $31 billion in 1994 to $79 billion in 1995. Because of this cross state consolidation, we lose the ability to measure bank assets meaningfully at the state level after 1994.

Our two measures of business activity are the annual growth rates of total state employment and small-firm employment, where we define a small firm as one with fewer than 20 employees.[13] Numbers on total employment are available from 1976-94 from the Census Bureau. Small-firm employment comes from the Bureau's County Business Patterns series, starting in 1977 (1978 after converting to growth rates).[14] In principle, the more bank-dependent firms in the latter category may be more affected by banking integration. To isolate the volatility that is specific to these small firms, we remove the state-specific shock to employment that is common to *both* small and large firms before constructing our measure of volatility. We do this by regressing small-firm employment growth on the state effect (removes the long-run state mean growth rate), the time effect (removes the current aggregate business cycle) *and* the growth rate in employment at large firms (those with more than 250 employees). We use the residuals from this regression to construct our measures of small-firm volatility.[15]

Table 2 reports summary statistics for the integration and volatility measures. The average share of integrated bank assets over the full sample of state-years was 0.34, rising from under 0.1 in the 1970s to about 0.6 by the mid-1990s. Overall employment grew 2.3 percent per year on average over the sample of state-years. The squared deviation of employment growth from its mean averaged 0.03 percent, and, perhaps more

[13] The employment data from the County Business Patterns are stratified by establishment size rather than firm size. Thus, there may be some misclassifications in cases of large firms operating many small-scale plants.

[14] The small firm and total employment data are not directly comparable as the former excludes self-employed individuals, employees of private households, railroad employees, agricultural production employees, and most government employees. We drop Delaware and South Dakota as these two states' banking sectors are dominated by credit card banks due to their liberal usury laws. See Jayaratne and Strahan, 1999 for details.

[15] The justification for this procedure is a pragmatic one. We are comfortable that firms with fewer than 20 employees ought to be viewed as "small", and that firms with more than 250 are "large." In between lies a

interpretable, the absolute deviation of employment growth averaged 1.3 percent. Small-firm employment growth was slightly more volatile than overall employment growth, averaging 0.04 percent for squared deviations and 1.4 percent for absolute deviations. We also control for the share of employment in a given state/year in each of eight broad industrial categories (one-digit SIC), along with the sum of squared shares in these groups as a measure of the diversification across industries in a given state/year. (We call the diversification index the "labor share HHI".) The summary statistics for these variables are also reported in Table 2.

IV. Results

IV.1 State Business Volatility Declines with Bank Integration

In view of the ambiguous theoretical relationship between integration and volatility, we choose to report a variety of relationships. We have two growth measures (total employment and small-firm employment) and three ways to define volatility. Also, for each dependent variable, we report both a fixed effects regression (OLS) and an instrumental variable (IV) estimate. IV seems advisable because the pace of integration may itself depend on volatility as noted earlier. We use two instruments in the first stage: an indicator variable equal to zero before a state entered an interstate banking agreement with other states and one after; and a continuous variable equal to zero before interstate banking, and equal to the log of the number of years that have elapsed since a state entered an interstate banking arrangement with other states.[16]

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difficult-to-categorize group of firms. We therefore leave these firms out in trying to isolate the shock to employment growth at small firms.

[16] In the first stage models, both instruments have very strong explanatory power. These regressions are available on request.

As noted, employment volatility will obviously depend on labor force composition, so we also control for the share of employment in each one-digit SIC sector (manufacturing, services, etc.) and employment concentration (the sum of the squared shares). In all specifications we control for the year and state, so the resulting fixed effect estimates reveal how increased integration within a state in a given year is related to volatility within the same state and year.[17]

Tables 3 and 4 report the estimated coefficients for the twelve specifications. For overall employment growth, *all* of the estimates are negative, and five of the six are statistically significant at the five percent level (Table 3). Integration has had, on net, a stabilizing influence on state business volatility. In addition, the IV coefficient estimates are much larger than the corresponding OLS estimates in all three cases, implying that the stabilizing influence of integration is larger (if less precisely estimated) when we use deregulation variables to parcel out the endogenous variation in integration.[18] In fact, the portion of integration that is orthogonal to deregulation is strongly *positively* related to employment volatility (not reported), perhaps because out-of-state banking companies opportunistically enter new states when banks in those states are facing difficulties

[17] But other important changes occurred during the 1980s, such as rapid adoption of sophisticated financial models and increased use of securitization, not just for residential mortgages but also for consumer loans, commercial real estate loans and even commercial and industrial loans (Mishkin and Strahan, 1999). These new technologies seem to have increased the efficient scale in banking and may be responsible, in part, for greater integration. For an exhaustive review of the causes and consequences of financial consolidation in the U.S., see Berger, Demsetz and Strahan (1999).

[18] One might object that interstate banking deregulation itself may be determined, in part, by the volatility of a state's business cycle. For example, perhaps political pressure for opening a state's banking system to out-of-state competition intensifies during economic downturns (when volatility is high). To rule out the possibility that endogenous deregulation drives our IV results, we have also estimated the model after dropping the 3 years just prior to deregulation as well as the year of deregulation itself. In these specifications, the coefficient increases in magnitude (i.e. becomes more negative), and its statistical significance increases across all three measures of volatility.

associated with an economic downturn. (Remember: banks enter new states by buying their way in.)[19]

We do not find evidence in these regressions that diversification across industries, measured by the labor share HHI index, reduces volatility, as one might expect. There is very little time-series variation in this index, however, making it difficult to measure its coefficient in the fixed effects models. If we drop the state fixed effects and estimate the model with random effects instead, the labor share HHI does enter the regression with a positive and statistically significant coefficient (not reported).

We also find declines in employment growth volatility at small firms, where we expect the influence of banking, and hence banking integration, to be most important (Table 4). Here, we find a statistically significant effect of banking integration on volatility in five of our six specifications. Moreover, the declines in volatility are larger for the small firms than for overall employment in all of the IV specifications.

The IV estimates for both overall and small-firm employment imply a substantial stabilizing benefit from integrating bank assets across states. The share of integrated bank assets rose from around 10 percent in 1976 to around 60 percent in 1994; the reduced form model (not reported) suggests that about one-half of this increase can be attributed to interstate deregulation, or an increase in integration of 25 percent. Based on the coefficient from the IV model, this 25 percent increase in integrated bank assets reduced the absolute deviation of overall state employment growth by 0.9 percent (Table 3, column 6). This decline is very large relative to the mean (1.3 percent) and standard

[19] We have also estimated this model with a full set of interactions between the year effects and the state-level industry employment share variables in order to allow the impact of the aggregate shock to depend on a state's industry mix. These results give very similar results for the effect of integration on volatility (i.e. negative and statistically significant).

deviation (1.2 percent) over the whole sample. For small-firm employment, the IV estimate suggests that the 25 percent increase in integrated bank assets led to a drop in volatility of 1 percent (Table 4, column 6).

Table 5 reports a slightly more complex model in which we interact the labor share HHI index with the banking integration variable. We find that banking integration matters more when a state specializes in one or a few broad industries. In states with a well-diversified economy (i.e. states with many industries), we should not expect banking integration to matter very much. A well-diversified state will have well-diversified (unit) banks too, thus reducing the potential benefit of integration. In contrast, in a state that relies heavily on one or two sectors, banks constrained to operating only there will also rely on those one or two sectors. Integrating these banks ought to have greater benefits, and the results suggest that it has. To understand the magnitude of this interaction, consider two states, one with labor share HHI one standard deviation *below* average, and the other with labor share HHI one standard deviation *above* average. The poorly diversified state's growth volatility (absolute value of growth deviation) would decline by 1.2 percent following the 25 increase in integration, while the well-diversified state's growth volatility would decline by just 0.6 percent (Table 5, column 6).

IV.2 Integration Weakens the Links between Bank Capital and Business Activity

The model laid out in Section 2 suggests that the stabilizing effects of integration occur because of better diversification against bank capital shocks. If capital falls in state A, affiliated banks in state B will be happy to supply more to take advantage of good investment opportunities. Integration means that more banks in state A have affiliates

outside the state. Therefore, integration ought to weaken the link between bank capital growth within a state and growth in both lending and business activity in that state.

To test this idea, we estimate how local employment growth, as well as loan growth by local banks, correlates with local capital growth, and how this correlation has changed in response to banking integration. To be precise, we regress state employment growth (total and small firm), aggregate growth of commercial and industrial loans, and aggregate growth of commercial real estate loans on: the growth in total bank capital held at banks in the state, our measure of banking integration, and an *interaction* between banking integration and bank capital growth.[20] If the model is right, capital growth ought to be highly correlated with both employment growth and loan growth prior to banking integration, but much less correlated after. That is, the coefficient on the interaction term ought to be negative.[21] (In all of the specifications, we also include time and state fixed effects.)

The results in Table 6 suggest that as states integrate, local bank capital becomes much less correlated with measures of overall economic activity (employment growth) and with lending by banks in the state.[22] For example, prior to banking integration, a one standard deviation decline in bank capital growth (a decline of 8.4 percent) was associated with a reduction in employment growth of 1.4 percent (Panel A, column 1).

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[20] The data on commercial and industrial loans only become available after 1984, so these regressions have fewer observations than the others.

[21] The approach is somewhat similar to studies testing whether bank lending becomes less sensitive to their own capital or to the supply of local deposits if the bank is part of a multi-bank holding company. Our test is essentially an aggregated version of these tests. We ask: does a bank system become less sensitive to its own financial health when it is integrated with banks outside the system? See Houston and James (1997) and Jayaratne and Morgan (1999).

[22] We have also estimated these regressions using IV, where an instrument for integration is constructed from a indicator variable equal to one after state-level interstate banking reform and a continuous variable equal to the log of the number of years elapsed since reform. These results are similar to those reported in Table 5.

With full banking integration, the model suggests that a one standard deviation decline in bank capital growth would be associated with a slight increase in employment growth. We find similar effects of banking integration on employment growth at small firms; bank capital matters a lot prior to integration but much less after.

Table 6 also shows that the link between bank capital and loan growth to businesses declined sharply after banking integration. Here, the effects are even more striking. Prior to integration, we estimate a coefficient on capital that is not statistically significantly different from one. Capital growth and loan growth moved one-for-one; if capital growth fell by one percent in a year, so did loan growth. In contrast, the coefficient on capital growth falls almost to zero after full integration. A zero coefficient makes sense in a fully integrated banking system – a banking system in which *all* of the state's banking assets are owned by companies operating in other states too – because lending will be determined by the presence or absence of good projects, not the presence or absence of local capital. Capital can be imported or exported at low cost once banks integrate.

V. Conclusions

The U.S. used to have 50 little banking systems, one in every state. With deregulation over the last twenty-five years, we now have a more integrated, national banking system with holding companies operating banks in many different states. As a theoretical matter, the impact of cross-state banking on business volatility is ambiguous because integration immunizes borrowers from shocks to their own banks but exposes them to shocks to their own wealth. We find that the balkanized business of U.S banking

before the mid-1980s was, in all likelihood, a source of state business volatility. On net, integration was stabilizing; employment growth fluctuations in a state diminished as its banks commingled with other states' banks. State business cycles have become smaller, in other words, but more alike. As the French say: the more things change, the more they stay the same.

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Appendix: Comparative statics in the HT Model with unit and interstate banking

Equilibrium with unit banking

With unit banking and assuming g exogenous, equilibrium on the uninformed capital market in state 1 obtains when

(1a) $$p_H(Kf_1 + Km_1 + Ku_1^u)\left(R - (b+c)/\Delta p\right) = g \cdot Ku_1^u .$$

Solving this equation, we obtain the equilibrium quantity of uninformed capital attracted by firms in state 1

(2a) $$Ku_1^u = \frac{p_H(-b-c+R\cdot\Delta p)(Kf_1 + Km_1)}{p_H(b+c-R\cdot\Delta p) + \Delta p \cdot g}.$$

Equilibrium in state 2 can be defined in a similar way.

Equilibrium with interstate banking

Interstate banking changes the equilibrium in the following way. Assuming capital *can* move freely across states, the shares p_1 and (1- p_1) of aggregate informed capital Km_1+Km_2 invested in each state adjust endogenously to equalize the return on informed capital across states. When the share of informed capital invested in each state is endogenous, equilibrium in the uninformed capital market under interstate banking is defined by

(3a) $$p_H\left(Kf_1 + p_1(Km_1 + Km_2) + Ku_1^i\right)\left(R - (b+c)/\Delta p\right) = g \cdot Ku_1^i$$

(4a) $$p_H\left(Kf_2 + (1-p_1)(Km_1 + Km_2) + Ku_2^i\right)\left(R - (b+c)/\Delta p\right) = g \cdot Ku_2^i .$$

The equilibrium rate of return on the bank capital market is:

(5a) $$b = p_H \cdot c \cdot K_1 / \left(\Delta p \cdot p_1 (Km_1 + Km_2)\right) = p_H \cdot c \cdot K_2 / \left(\Delta p (1 - p_1)(Km_1 + Km_2)\right).$$

With $K_1 = Kf_1 + p_1(Km_1 + Km_2) + Ku_1^i$ and $K_2 = Kf_2 + (1 - p_1)(Km_1 + Km_2) + Ku_2^i$

Solving the system of equations defined by (3a)-(5a), we obtain the equilibrium quantities attracted by firms in each state and the share of informed capital invested in each state:

(6a) $$Ku_1^i = \frac{p_H(-b - c + R \cdot \Delta p)(Kf_1 + Kf_2 + Km_1 + Km_2)Kf_1}{\left(p_H(b + c - R \cdot \Delta p) + \Delta p \cdot g\right)(Kf_1 + Kf_2)}$$

(7a) $$Ku_2^i = \frac{p_H(-b - c + R \cdot \Delta p)(Kf_1 + Kf_2 + Km_1 + Km_2)Kf_2}{\left(p_H(b + c - R \cdot \Delta p) + \Delta p \cdot g\right)(Kf_1 + Kf_2)}$$

(8a) $$p_1 = \frac{Kf_1}{Kf_1 + Kf_2}$$

Comparative statics

To get the intuition for proposition 1 and 2, we compare the equilibrium condition for unit banking (1a) and for interstate banking in state 1 (3a), after substitution of p_1 by its reduced-form solution in (8a). The equilibrium conditions for the two regimes are plotted in figure 1.

Let's first consider the bank capital crunch. With unit banking, the reduction in the pledgeable income is proportional to the reduction of Km_1. With interstate banking, by contrast, the reduction in the pledgeable income is less than proportional to the reduction of Km_1, since p_1 is smaller than unity. Graphically, this implies a smaller reduction of the intercept of the curve representing the pledgeable income. Because the pledgeable income decreases less with interstate banking following a bank capital crunch, we also have a smaller reduction in the amount of uninformed capital that can be attracted by firms.

A similar mechanism is at work for the collateral squeeze. With unit banking, the reduction in pledgeable income is proportional to the reduction of Kf_1. With interstate banking, by contrast, the reduction in pledgeable income is more than proportional to the reduction of Kf_1, because the share of informed capital p_1 invested in state 1 – which depends on the amount of capital available in the two states – also decreases following a decrease of Kf_1. Graphically, this implies a larger reduction of the intercept of the curve representing the pledgeable income. Because the pledgeable income decreases more with interstate banking following a collateral squeeze, we also have a larger reduction in the amount of uninformed capital that can be attracted by firms.

Capital crunch: proof of proposition 1

For the unit banking case, the derivative of Ku_1 with respect to Km_1 is

Impact on the availability of uninformed capital

For the unit banking case, the derivative of Ku_1 with respect to Km_1 is

$$\frac{\partial Ku_1^u}{\partial Km_1} = \frac{p_H(-b-c+R\cdot\Delta p)}{p_H(b+c-R\cdot\Delta p)+\Delta p\cdot g}$$

$\partial Ku_1^u / \partial Km_1$ is positive. The numerator is positive because the positiveness of the payment promised to uninformed investors, $Rm = K(R-(b+c)/\Delta p) > 0$, implies $p_H(-b-c+R\cdot\Delta p) > 0$. The denominator is also positive, because the return on uninformed capital g has to be larger than the pledgeable expected income $p_H(R-(b+c)/\Delta p)$ to have an interior solution for Ku_1 (see HT, p. 682). For the interstate banking case, the derivative of Ku_1 with respect to Km_1 is

$$\frac{\partial Ku_1^i}{\partial Km_1} = \frac{p_H(-b-c+R\cdot\Delta p)}{2\left(p_H(b+c-R\cdot\Delta p)+\Delta p\cdot g\right)}$$

under the above mentioned symmetry conditions.

$\partial Ku_1^u / \partial Km_1$ is twice as large as $\partial Ku_1^i / \partial Km_1$.

Impact on the availability of informed capital

For the unit banking case, the derivative of Km_1 with respect to itself is equal to unity.

For the interstate banking case, the quantity of informed capital attracted by firms in state 1 is equal to $p_1(Km_1 + Km_2)$ with $p_1 = \frac{Kf_1}{Kf_1 + Kf_2}$. The derivative of this quantity with respect to Km_1 is

$$\frac{\partial p_1(Km_1 + Km_2)}{\partial Km_1} = \frac{1}{2}$$

under the above mentioned symmetry conditions.

$\partial p_1(Km_1 + Km_2) / \partial Km_1$ is smaller than unity.

Collateral squeeze: proof of proposition 2

Impact on the availability of uninformed capital

For the unit banking case, the derivative of Ku_1 with respect to Kf_1 is

$$\frac{\partial Ku_1^u}{\partial Kf_1} = \frac{p_H(-b - c + R \cdot \Delta p)}{p_H(b + c - R \cdot \Delta p) + \Delta p \cdot g} \quad .$$

$\partial Ku_1^u / \partial Kf_1$ is positive.

For the interstate banking case, the derivative of Ku_1 with respect to Kf_1 is equal to

$$\frac{\partial Ku_1^i}{\partial Kf_1} = \frac{p_H(-b - c + R \cdot \Delta p)(2Kf_1 + Km_1)}{2Kf_1\left(p_H(b + c - R \cdot \Delta p) + \Delta p \cdot g\right)}$$

under the symmetry conditions $Kf_1 = Kf_2$ and $Km_1 = Km_2$ at initial values. $\partial Ku_1^i / \partial Kf_1$ is positive.

The difference between the two derivatives is

$$\frac{\partial Ku_2^i}{\partial Kf_1} - \frac{\partial Ku_2^u}{\partial Kf_1} = \frac{p_H(-b-c+R\cdot\Delta p)Km_1}{2Kf_1\left(p_H(b+c-R\cdot\Delta p)+\Delta p\cdot g\right)}$$

$\partial Ku_2^i / \partial Kf_1 - \partial Ku_2^u / \partial Kf_1$ is positive. ¦

Impact on the availability of uninformed capital

For the unit banking case, the derivative of Km_1 with respect to Kf_1 is equal to zero, since Km_1 is independent of Kf_1.

For the interstate banking case, the quantity of informed capital attracted by firms in state 1 is equal to $p_1(Km_1 + Km_2)$ with $p_1 = \frac{Kf_1}{Kf_1 + Kf_2}$. The derivative of this quantity with respect to Kf_1 is

$$\frac{\partial p_1(Km_1 + Km_2)}{\partial Kf_1} = \frac{Km_1}{2Kf_1}$$

under the above mentioned symmetry conditions.

$\partial p_1(Km_1 + Km_2) / \partial Km_1$ is larger than zero. ¦

Table 1
State-Specific Business Cycle Shocks have Fallen as Integration Has Risen

We decompose employment growth and personal income growth, for which we have a longer time series, in state *j* in year *t* as follows:

$$Y_{j,t}=a_j+b_t+e_{j,t}$$

Where a_j is the state-specific average growth rate over the period; b_t is the aggregate shock to growth at time *t*; $e_{j,t}$ is the time *t* shock to growth that is specific to circumstances in state *j*. We estimate these regressions separately over 5 non-overlapping periods (i.e. the state fixed effect is allowed to be different over each of the 5 periods).

Panel A: Employment Growth

Period		**Root MSE Of State-Specific Shock to Employment Growth ($e_{j,t}$)**	**Average Bank Integration**
1977-1981	Pre-Interstate Banking	2.4%	14%
1982-1985	Transition	2.2%	26%
1986-1989	Transition	1.9%	46%
1990-1993	Transition	1.6%	53%
1994-1997	Post-Interstate Banking	1.1%	59%

Panel B: Personal Income Growth

Period		**Root MSE Of State-Specific Shock to Personal Income Growth ($e_{j,t}$)**	**Average Bank Integration**
1962-1966	Pre-Interstate Banking	3.5%	Low*
1967-1971	Pre-Interstate Banking	2.0%	Low
1972-1976	Pre-Interstate Banking	3.9%	Low
1977-1981	Pre-Interstate Banking	3.0%	14%
1982-1985	Transition	2.0%	26%
1986-1989	Transition	1.9%	46%
1990-1993	Transition	1.3%	53%
1994-1997	Post-Interstate Banking	1.5%	59%
1998-2000	Post-Interstate Banking	1.0%	High*

*Integration equals the share of banking assets in a state owned by a multi-state bank holding company. We do not have the data to construct this integration measure before 1976 or after 1994. (The figure for the 1994-1997 period is the average for 1994.) Note that interstate integration continued after 1994 due to cross-state consolidation such as the merger of Bank of America (a west coast bank holding company) and NationsBank (an southeast bank holding company) in 1998. We cannot construct our measure of integration after 1994 because bank holding companies began to consolidate their holding of bank assets across state lines in 1995. We believe that the integration figure would be higher than 59% during the last years in this table, however.

Table 2
Bank Integration, Business Volatility and State Labor Share
Summary Statistics

Statistics calculated using state-year observations. Integration is the share of bank assets in each state held by banks with offices out of the state. Growth is the annual growth in employment or small firm employment, where a firm is defined as small if it has fewer than 20 employees. Volatility is based on the deviation in the annual growth of total employment or small firm employment (firms with fewer than 20 employees) from state and national means. To construct this deviation for small firms, we also control for employment growth at large firms (firms with more than 250 employees).

	N	Mean	Standard Deviation
A. Integration	931	0.34	0.28
B. Employment			
Employment Growth	931	0.023	0.023
Squared Deviation from Expected Growth	931	0.0003	0.0007
Log of Squared Deviation from Expected Growth	931	-9.66	2.40
Absolute Value of Deviation from Expected Growth	931	0.013	0.012
C. Small-Firm Employment (< 20 Employees)			
Employment Growth	823	0.023	0.026
Squared Deviation from Expected Growth	823	0.0004	0.0008
Log of Squared Deviation from Expected Growth	823	-9.58	2.46
Absolute Value of Deviation from Expected Growth	823	0.014	0.013
D. Labor Shares			
Mining	870	0.013	0.018
Construction	870	0.048	0.014
Manufacturing	870	0.194	0.112
Transportation	870	0.055	0.012
Trade	870	0.229	0.038
Finance	870	0.054	0.013
Services	870	0.221	0.060
Government	870	0.188	0.048
Labor Share HHI (Sum of Squared Shares)	870	0.203	0.058

Table 3
Employment Growth Volatility Falls with Banking Integration

Regressions are based on a panel of state-year observations. Integration is the share of bank assets in each state held by banks with offices out of the state. Growth is the annual growth in employment. Volatility is based on the deviation in the annual growth of total employment from state and national means. Coefficients estimated with state-year observations over 1976-94 (standard errors in parenthesis). All models include state and year fixed effects.

	Fixed Effects Regressions			*IV Regressions*		
Dependent Variable:	**Squared Deviation from Expected Growth**	**Log of Squared Deviation from Expected Growth**	**Absolute Value of Deviation from Expected Growth**	**Squared Deviation from Expected Growth**	**Log of Squared Deviation from Expected Growth**	**Absolute Value of Deviation from Expected Growth**
Integration	-0.0006**	-1.44**	-0.013**	-0.002**	-1.90	-0.036**
	(0.0002)	(0.65)	(0.003)	(0.0005)	(1.84)	(0.009)
<u>Labor Shares</u>:						
Mining	0.002	30.7*	0.13*	0.010*	32.8*	0.24**
	(0.004)	(17.1)	(0.08)	(0.005)	(18.9)	(0.09)
Construction	0.012**	22.8*	0.19**	0.018**	24.6*	0.28**
	(0.003)	(12.7)	(0.06)	(0.004)	(14.5)	(0.07)
Manufacturing	-0.008**	-23.8*	-0.16**	-0.002	-22.3	-0.09
	(0.004)	(13.4)	(0.06)	(0.004)	(14.6)	(0.07)
Transportation	-0.012	13.0	-0.13	-0.003	15.6	0.01
	(0.010)	(38.7)	(0.18)	(0.011)	(39.9)	(0.20)
Trade	-0.009	-19.9	-0.13	0.008	-15.3	0.11
	(0.005)	(20.6)	(0.10)	(0.008)	(27.0)	(0.13)
Finance	-0.015	-35.8	-0.26	-0.019*	-36.9	-0.32*
	(0.010)	(36.1)	(0.17)	(0.010)	(36.4)	(0.18)
Services	0.001	-16.6	-0.06	0.010*	-14.1	0.07
	(0.004)	(17.0)	(0.08)	(0.005)	(19.6)	(0.10)
Government	----------*Omitted Category*----------					
Labor Share	-0.002	27.8	0.08	-0.002	27.7	0.08
HHI	(0.005)	(18.7)	(0.09)	(0.005)	(18.7)	(0.09)
N	870	870	870	870	870	870
R^2	0.1093	0.0874	0.1339	0.1179	0.0831	0.1328

*significant at 10% level. ** significant at 5% level

Table 4
Employment Growth Volatility in *Small Firms* Falls with Banking Integration

Regressions are based on a panel of state-year observations. Integration is the share of bank assets in each state held by banks with offices out of the state. Growth is the annual growth in employment at small establishments, defined as establishments with fewer than 20 employees. Volatility is based on the deviation in the annual growth of total employment fro m state and national means; in addition, we control for growth at large establishments (defined as those with more than 250 employees). Coefficients estimated with state-year observations over 1976-94 (standard errors in parenthesis). All models include state and year fixed effects.

	Fixed Effects Regressions			*IV Regressions*		
Dependent Variable:	**Squared Deviation from Expected Growth**	**Log of Squared Deviation from Expected Growth**	**Absolute Value of Deviation from Expected Growth**	**Squared Deviation from Expected Growth**	**Log of Squared Deviation from Expected Growth**	**Absolute Value of Deviation from Expected Growth**
Integration	-0.0003	-1.55**	-0.009**	-0.003**	-4.66**	-0.040**
	(0.0002)	(0.71)	(0.004)	(0.0007)	(2.19)	(0.011)
Labor Shares:						
Mining	-0.018**	29.3	-0.12	-0.008	43.5*	0.02
	(0.006)	(20.8)	(0.10)	(0.008)	(23.1)	(0.12)
Construction	0.025**	42.8**	0.33**	0.034**	55.4**	0.45**
	(0.005)	(17.2)	(0.09)	(0.006)	(19.3)	(0.10)
Manufacturing	-0.016**	-7.1	-0.20**	-0.007	4.7	-0.08
	(0.005)	(16.4)	(0.08)	(0.006)	(18.3)	(0.09)
Transportation	-0.033**	28.3	-0.25	-0.016	52.0	-0.01
	(0.008)	(45.1)	(0.22)	(0.016)	(48.3)	(0.25)
Trade	-0.014	-3.5	-0.14	0.012	32.2	0.21
	(0.013)	(24.9)	(0.12)	(0.011)	(34.6)	(0.18)
Finance	-0.014	39.9	-0.09	-0.023	28.2	-0.20
	(0.013)	(41.7)	(0.10)	(0.014)	(43.0)	(0.22)
Services	-0.002	-11.4	-0.08	0.011	7.4	0.11
	(0.006)	(21.1)	(0.10)	(0.008)	(25.9)	(0.13)
Government		----------	*Omitted Category*	----------		
Labor Share	0.002	25.7	0.07	0.001	22.9	0.04
HHI	(0.008)	(25.5)	(0.13)	(0.008)	(25.9)	(0.13)
N	778	778	778	778	778	778
R^2	0.1765	0.1012	0.1731	0.1903	0.1008	0.1802

*significant at 10% level. ** significant at 5% level

Table 5
Employment Growth Volatility Falls with Banking Integration,
Particularly in States with Highly Concentrated Economies

Regressions are based on a panel of state-year observations. Integration is the share of bank assets in each state held by banks with offices out of the state. Growth is the annual growth in employment. Volatility is based on the deviation in the annual growth of total employment from state and national means. Coefficients estimated with state-year observations over 1976-94 (standard errors in parenthesis). All models include state and year fixed effects.

	Fixed Effects Regressions			*IV Regressions*		
Dependent Variable:	**Squared Deviation from Expected Growth**	**Log of Squared Deviation from Expected Growth**	**Absolute Value of Deviation from Expected Growth**	**Squared Deviation from Expected Growth**	**Log of Squared Deviation from Expected Growth**	**Absolute Value of Deviation from Expected Growth**
Integration	0.0012	0.87	0.016*	-0.0004	3.20	0.003
	(0.0005)	(1.99)	(0.009)	(0.0009)	(1.84)	(0.016)
Integration *	-0.008**	-11.24	-0.137**	-0.009**	-25.01*	-0.192**
Labor Share	(0.002)	(9.13)	(0.043)	(0.004)	(14.78)	(0.070)
HHI						
Labor Shares:						
Mining	-0.001	27.8	0.10	0.010*	31.8*	0.23**
	(0.005)	(17.2)	(0.08)	(0.005)	(18.8)	(0.09)
Construction	0.010**	21.3*	0.17**	0.017**	22.2	0.26**
	(0.003)	(12.7)	(0.06)	(0.004)	(14.6)	(0.07)
Manufacturing	-0.010**	-26.2*	-0.19**	-0.003	-24.2*	-0.10
	(0.004)	(13.6)	(0.06)	(0.004)	(14.6)	(0.07)
Transportation	-0.013	11.3	-0.15	-0.005	9.0	-0.05
	(0.010)	(38.7)	(0.18)	(0.010)	(40.1)	(0.19)
Trade	-0.013**	-25.1	-0.20*	0.005	-23.9	0.04
	(0.005)	(21.0)	(0.10)	(0.007)	(27.5)	(0.13)
Finance	-0.014	-34.2	-0.24	-0.019**	-37.3	-0.32*
	(0.009)	(36.1)	(0.17)	(0.010)	(36.4)	(0.17)
Services	-0.006	-25.6	-0.17*	0.007	-21.7	0.01
	(0.005)	(18.5)	(0.09)	(0.005)	(20.1)	(0.09)
Government	----------*Omitted Category*----------					
Labor Share	0.001	30.9	0.12	-0.002	27.2	0.08
HHI	(0.005)	(18.9)	(0.09)	(0.005)	(18.7)	(0.09)
N	870	870	870	870	870	870
R^2	0.1231	0.0891	0.1448	0.1263	0.0862	0.1424

*significant at 10% level. ** significant at 5% level

Table 6
Integration *Lowers* the Correlation between Employment, Loan Growth and Bank Capital

Reported are fixed effects regression coefficients and standards errors (in parenthesis) estimated for panel of 48 states and D.C. The dependent variable and associated estimation periods are indicated at the top of each column. Bank capital growth is the annual growth rate of total capital held by all banks headquartered in each state. Integration is the share of bank assets in each state held by banks with offices out of the state. All regressions include state and year fixed effects (not reported).

Panel A: Employment Growth

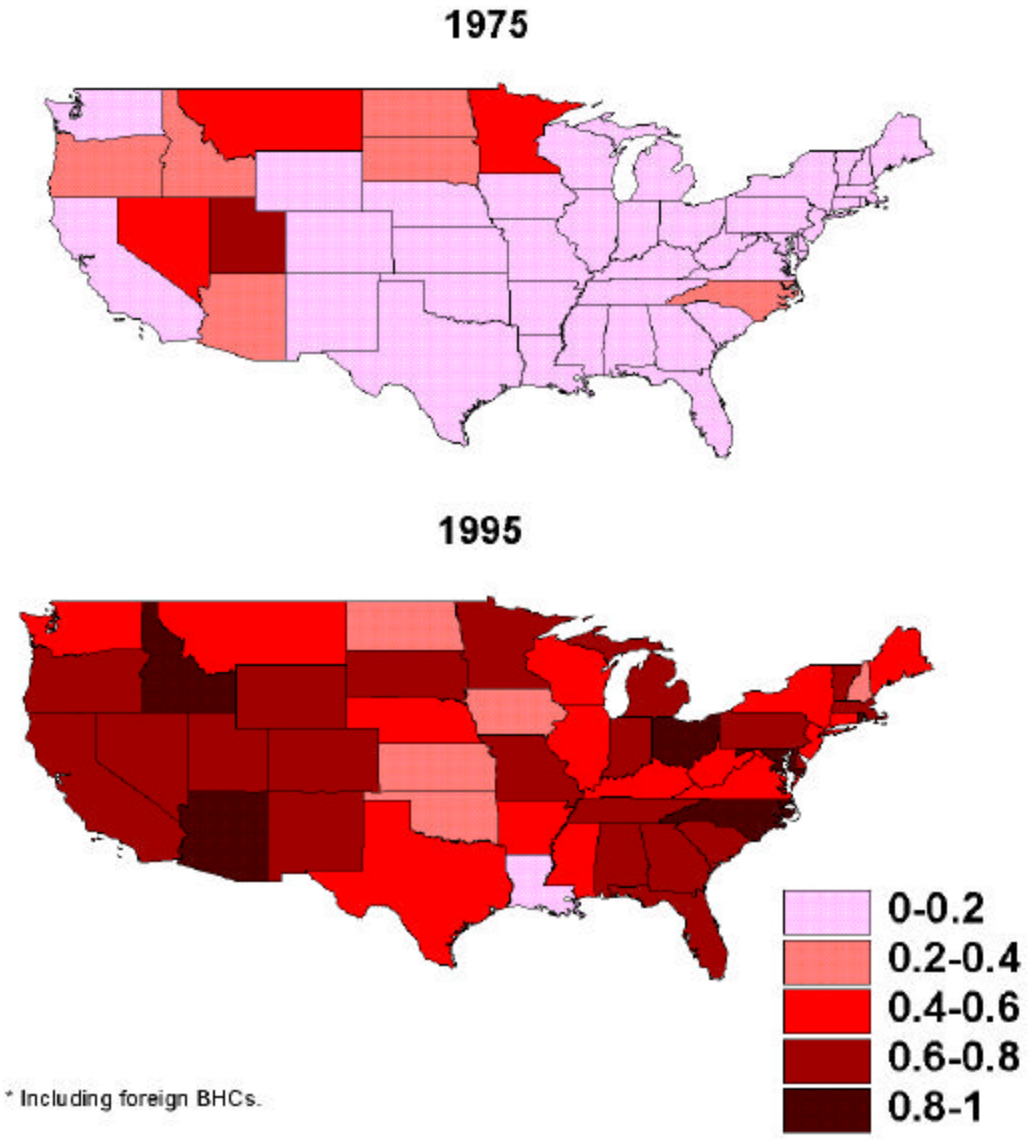
Dependent variables:	Employment growth (1976-94)	Small-firm employment growth (1978-94)
Bank Capital Growth	0.162**	0.206**
	(0.014)	(0.016)
Integration	0.020**	0.030**
	(0.004)	(0.005)
Bank Capital Growth x Integration	-0.188**	-0.239**
	(0.021)	(0.024)
R^2	0.542	0.604
N	882	823
F-test that Bank Capital + Capital x Integration = 0 (p-value)	5.50 (0.02)	7.11 (0.01)

Panel B: Loan Growth

Dependent variables:	C&I loan growth (1978-1994)	Commercial real estate loan growth (1985-1994)
Bank Capital Growth	0.944**	1.148**
	(0.108)	(0.097)
Integration	0.091*	0.094**
	(0.047)	(0.029)
Bank Capital Growth x Integration	-0.780**	-0.994**
	(0.159)	(0.149)
R^2	0.444	0.426
N	490	882
F-test that Bank Capital + Capital x Integration = 0 (p-value)	4.73 (0.03)	3.92 (0.05)

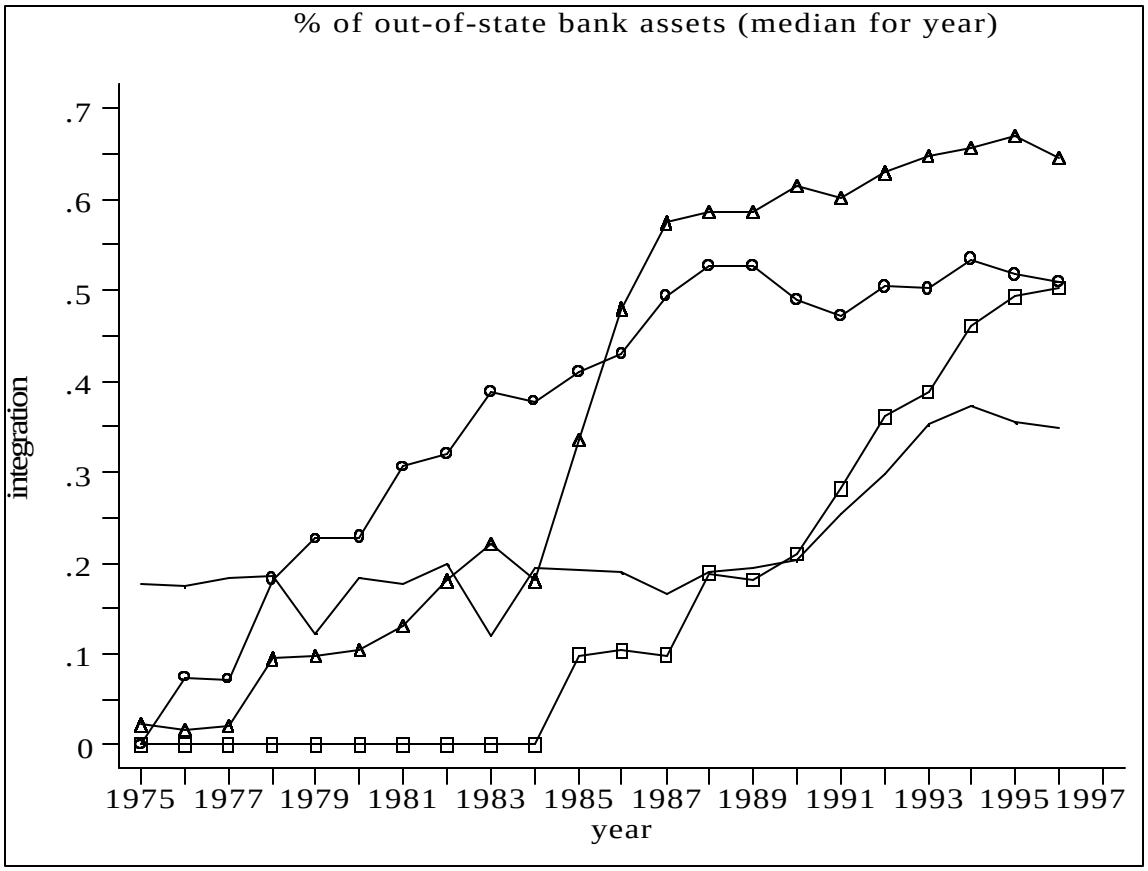
*significant at 10% level. ** significant at 5% level

Percent of Bank Assets in a State Held by Out-of-State Bank Holding Companies*



* Including foreign BHCs.

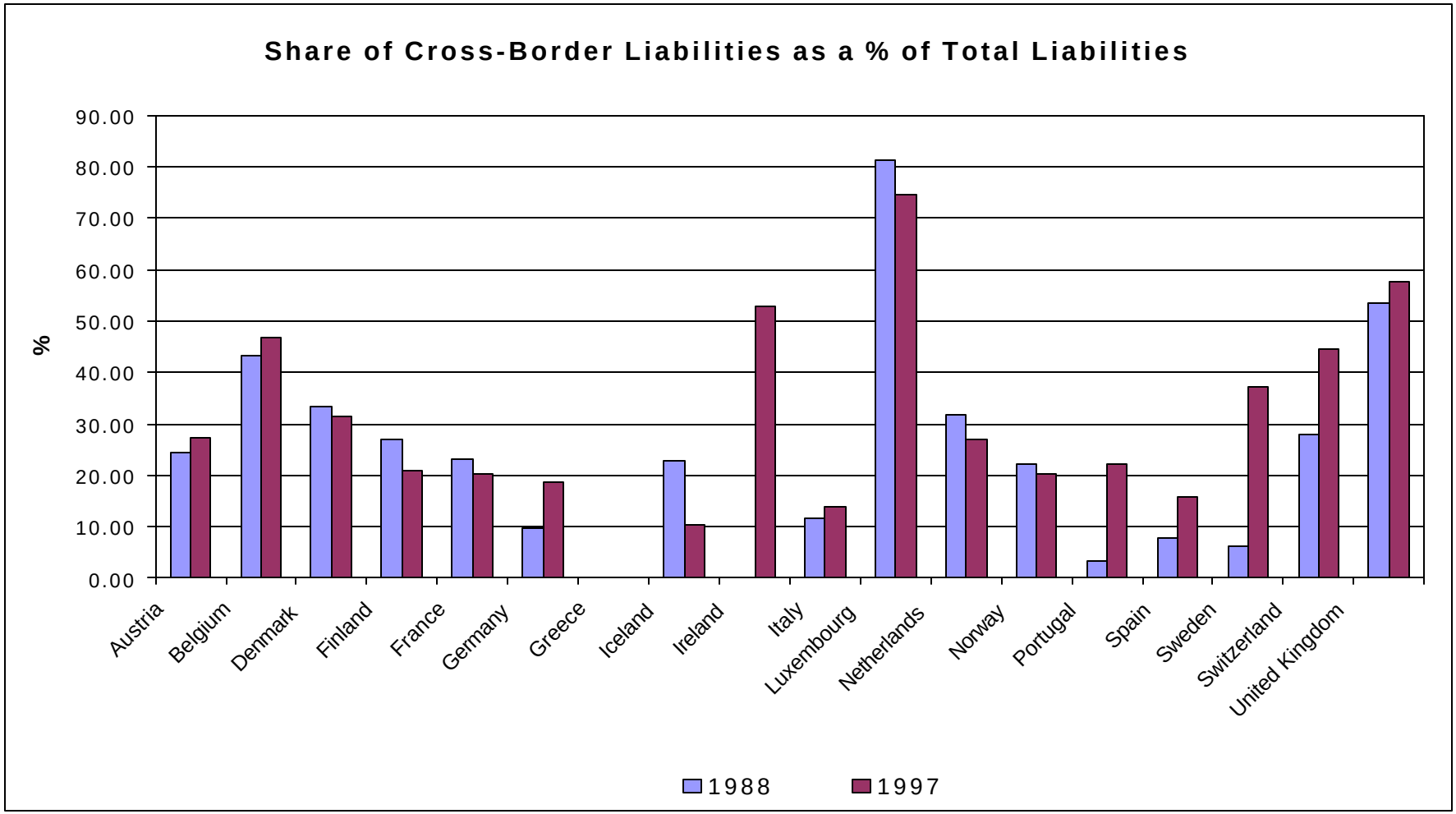
Chart2: Cross-State Banking Waves



Interstate banking agreements occurred in waves between 1982 and 1993. States were grouped by the year that they entered into an agreement. Plotted for each wave is the median share of out-of-state banking assets for states in each wave.

o: 1982-1984 wave
Δ: 1985-1987 wave
□: 1988-1990 wave
: 1991-1993 wave

Chart 1: Cross-Nation Bank Liabilities in Europe (1988 and 1997)



Source: Bank of International Settlements