

FRB CHICAGO ECONOMIC PERSPECTIVES

A review from
the Federal Reserve Bank
of Chicago

SEPTEMBER/OCTOBER 1988

**Capital market imperfections and
investment fluctuations**

Financial services in the year 2000

**New directions for economic
development—the banking industry**

ECONOMIC PERSPECTIVES

September/October 1988

Volume XII, Issue 5

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ISSN 0164-0682

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Capital market imperfections and investment fluctuations

Bruce Petersen

It is well known that investment is a very volatile and procyclical component of Gross National Product. Recent studies indicate that in the United States, investment fluctuations have been approximately four to five times greater than fluctuations in output over the post-war period.¹ For example, between 1973 and 1975, the peak-to-trough change in the investment-to-capital ratio was approximately -20 percent. A change of similar magnitude, but of opposite sign, occurred between 1975 and 1979. These changes were much larger than output deviations over this time period. Investment is also more volatile than output in other countries, such as Japan, the United Kingdom, and West Germany, although the difference is less pronounced.²

Because the volatility of investment is a key aspect of the business cycle, economists have become increasingly interested in providing a sound microeconomic explanation for this aggregate phenomenon. That is, an attempt is being made to understand why business enterprises find it in their best interest to invest in such a pronounced procyclical pattern over time. One of the most promising theories is based on the premise that there are serious imperfections in capital markets.³

The logic of this theory can be briefly summarized. As a consequence of capital market imperfections, external finance (debt and new share issues) costs the firm considerably more than internally generated finance from earnings and depreciation allowances. Thus, firms may be either unable or unwilling to offset reductions in available internal finance with external finance. As a result, a firm's optimal response to a reduction in its internal finance may be to reduce its investment. Because fluctuations in internal finance are highly correlated with fluctuations in aggregate output, imperfections in capital markets may explain why aggregate investment is so volatile.

Capital market imperfections should not, however, have a uniform impact on the investment behavior of all firms. This point has not been emphasized in the models employing

capital market imperfections to explain aggregate fluctuations in investment. Many corporations generate quantities of internal finance well in excess of their demand for finance—that is, they do not depend on external finance at the margin. The existence of capital market imperfections may be of little consequence for the investment behavior of these firms. On the other hand, a large fraction of the firms in the United States do exhaust all, or nearly all, of their internal finance. Investment of these firms should be the most sensitive to fluctuations in internal finance if capital markets are imperfect. This is the basic idea behind the test described in this paper.

A panel of publicly listed manufacturing firms is grouped according to what fraction of their earnings they retain in the firm. If the cost disadvantage of external finance is slight, then corporate retention behavior should contain little or no information about investment behavior—firms can simply use external finance to smooth investment when internal finance fluctuates. If, however, there is a pronounced difference between the cost of internal and external finance, the investment of firms retaining all of their income may be driven by fluctuations in their internal finance.

The first section of the paper describes possible sources of capital market imperfections and the resulting cost-of-capital schedule. Implications for investment behavior are developed and related to a standard model of investment. The next two sections of the paper present the test results, which indicate that investment is much more sensitive to fluctuations in internal finance for firms which retain all of their income.⁴ In addition, these firms, as an aggregate, exhibit an extremely pronounced procyclical pattern of investment. This is not the case for firms in the sample with a high dividend-payout ratio.

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Capital market imperfections

Early investment research often emphasized the importance of financial factors such as liquidity and access to internal finance as determinants of investment spending.⁵ Indeed, financial effects on many aspects of real economic activity received considerable attention during the early post-war period. Over the last twenty years, however, most research on investment behavior has proceeded under the assumption that the investment decision of the firm can be separated from purely financial decisions. The theoretical basis for this approach was provided by Modigliani and Miller (1958) who demonstrated the irrelevance of financial policy for real investment under certain (very restrictive) conditions.

More recently, some economists and corporate finance specialists have seriously questioned how closely the predictions of the Miller-Modigliani Theorem match the actual stylized facts about corporate financing. Myers (1984) has proposed an alternative framework which he refers to as a “pecking order” theory: There is a financing hierarchy, with internal finance dominating external finance.

There are several explanations for a cost advantage of internal finance over external finance, including issue costs, the taxation of capital income, and asymmetric information between managers and potential investors. In this paper, we will limit our examination to taxation and asymmetric information.

Many countries tax income from capital gains at much lower effective rates than the rate on dividends. Such was the case in the United States until quite recently.⁶ A large number of studies have examined the cost of equity finance in light of the above provisions. A thorough review of this literature can be found in Auerbach (1983). The central conclusion of these studies is that internal finance has a tax advantage over new share issues. The basic intuition is that no tax savings occur from the issue of new shares, while tax savings do occur when earnings are retained, because a dividend tax is avoided for a lower tax on capital gains.

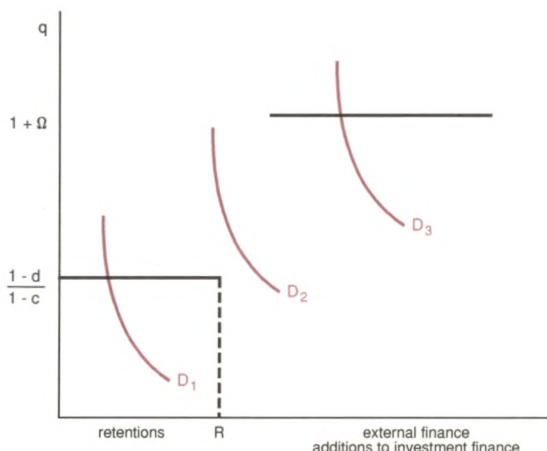
A measure of the cost advantage of internal finance can be readily calculated. Using the “ q ” model of investment (utilized and explained in the next section of the paper), consider how the favorable taxation of internal

finance alters the breakeven q value. (Tobin’s q is the ratio of the stock market value of the firm to its replacement cost.) The essential insight underlying Tobin’s q theory of investment is that, in a taxless world, firms should invest as long as each additional dollar spent purchasing capital raises the market value of the firm by at least one dollar; that is, as long as marginal q is at least equal to unity. This breakeven condition of $q = 1$ changes when the tax rate on dividends (d) exceeds the tax rate on capital gains (c). Consider what q value will make shareholders indifferent to \$1 of retained earnings or \$1 of dividends. The after-tax return on \$1 of dividends is $\$1(1 - d)$ while the after-tax return on \$1 of capital gains is $\$1q(1 - c)$. These returns will be equated only if: $q = (1 - d)/(1 - c)$, which is a value clearly less than unity if $c < d$.

Thus, the breakeven q value on internal finance is $q = (1 - d)/(1 - c)$ while firms should issue new shares only if $q \geq 1$. The breakeven q value on retentions is shown on the vertical axis of the cost-of-capital schedule appearing in Figure 1. Internal finance is exhausted at R on the horizontal axis, the point of discontinuity on the cost-of-capital schedule.

A second reason for financing hierarchies is asymmetric information. This is a situation in which potential suppliers of finance have less complete or less accurate information about a firm’s prospects than the firm itself. Important recent papers by Myers and Majluf (1984) and Greenwald, Stiglitz, and Weiss (1984) explain why asymmetric information either eliminates

Figure 1
Investments and financing decisions



any reliance on external equity finance or causes suppliers to demand a large premium.⁷

Myers and Majluf consider a situation in which managers (or current owners) are better informed than potential shareholders about the true value of both the firm's investment opportunities and the existing assets in place. In addition, managers are assumed to act in the interest of existing shareholders, and potential new investors are aware of this. Since external investors cannot distinguish the quality of firms, they value them all at the population average. Consequently, new shareholders implicitly demand a premium to purchase the shares of relatively good firms to offset the losses that will arise from inadvertently funding below-average firms, sometimes referred to as "lemons".

The intuition behind the "lemons" premium also can be described in terms of the q model of investment. Following the example in Myers and Majluf, let the true q value of "good" firms be q^G and the true q value of "lemons" be q^L and the percentage of good firms be p . Because of asymmetric information, all firms are initially valued at a weighted-average value, $q^A = pq^G + (1 - p)q^L$. It can be shown that if the market does not collapse because good firms drop out, the breakeven q value for good firms is approximately: $q = q^G/q^A$. The breakeven q will exceed unity by an amount that depends on the percentage of "lemons" and the difference between the value of good firms and "lemons". The ratio q^G/q^A indicates how much dilution occurs when good firms issue new shares; the lemons premium, Ω , is equal to $q^G/q^A - 1$.⁸

A financing hierarchy depicting the combined effects of taxation and asymmetric information is shown in Figure 1. Firms exhaust internal finance first and issue new shares only if the marginal project has a q of at least $1 + \Omega$. Also appearing in Figure 1 are three possible demand schedules for new investment, where projects are ranked according to their Tobin's q value. If a firm has available an amount of internal finance R and an investment schedule depicted by demand curve D_1 , it would finance all desired investment internally and pay out some dividends. If its investment demand schedule was D_2 instead of D_1 , it would exhaust all internal finance but not issue new shares. Finally, only if a firm's investment demand schedule intersects the ex-

ternal finance portion of the financing hierarchy, as depicted by investment demand D_3 , will it issue new shares.

Debt considerations can be incorporated into the cost schedules depicted in Figure 1. It is often assumed that firms have some "debt capacity" which is determined by the cost of financial distress and by agency costs.⁹ It is well known that debt finance creates agency problems and that the greater the debt-equity ratio, the more distorted are the firm's investment incentives. Additionally, managers have incentives to issue new debt, which will raise the riskiness and lower the value of existing debt. Debt-holders understand these conflicts of interest and rationally demand covenants which restrict the behavior of managers, particularly with respect to new debt issues.

In addition, recent work by Stiglitz and Weiss (1981) and others emphasize how asymmetric information between borrowers and lenders can cause distortions similar to those discussed above for new share issues. Asymmetric information may increase the cost of new debt, or even result in "credit rationing".

One simple way to include debt finance in the cost-of-capital schedule is to allow firms to leverage every dollar of equity finance by some fraction of a dollar of debt finance. In this case, a dollar contraction in internal finance would cause R to decline by more than one dollar. A second, more general way to introduce debt finance is to include an upward sloping schedule which connects the internal and external finance segments (see for example Auerbach, 1983). The position of this schedule shifts in tandem with shifts in the quantity of internal finance. The slope of the debt supply schedule determines the extent to which firms can offset reductions in internal finance with greater leverage.

The financing patterns of most corporations are consistent with the predictions of a financing hierarchy. Most corporations rely very heavily on internal finance, particularly small corporations where asymmetric information problems are likely to be most pronounced. New share issues account for only a small fraction of new equity finance in the United States.

Srini Vasan (1986) examines the financing behavior of corporations engaged in manufacturing over the period 1960-80. He finds that corporations with assets of under \$100 million raised 85 percent of their finance from

internal sources. The balance came from bank debt (10%), corporate bonds (3%) and new share issues (2%). In addition, Srinivasan finds that the average retention ratio of small corporations is very high and that many corporations pay no dividends at all for long periods of time. This evidence indicates that it may be very common for corporations to operate at or near point R in Figure 1.

Fluctuations in investment at the firm level

Consider a firm which has an investment demand schedule like D_2 in Figure 1. It is important to note that D_2 does not intersect either the internal finance segment or the new share issues segment. Ignoring debt finance, the firm's optimal position is R ; that is, it exhausts all internal finance but does not issue new shares. If the cost differential between internal and external finance is large enough, the investment demand schedule can shift a considerable distance without any investment response.

Now consider what happens if internal finance expands or contracts. This amounts to an increase or a decrease in the length (OR) of the internal finance segment in Figure 1. Because the firm is exhausting all internal finance, changes in earnings can cause a dollar-for-dollar change in investment. For example, if internal finance declines, the firm will contract investment by moving up its investment demand schedule. External finance will not be used to smooth investment until the marginal project has a return of at least $1 + \Omega$.

Such a prediction is quite contrary to standard neoclassical models of firm investment behavior. In these models, capital markets are assumed to be perfect, thus firms' cost-of-capital schedules are not discontinuous as shown in Figure 1. A firm's optimal level of investment is determined by the cost of capital; vertical shifts in the cost-of-capital schedule will change the optimal capital stock and the rate of investment.

The investment model that will be considered in the remainder of the paper is the q theory of investment. The intuition of the model is that, absent considerations of taxes or capital-market imperfections, a firm will invest so long as the value of an additional unit of capital—marginal q —exceeds unity. In equilibrium,

the value of an extra unit of capital is just its replacement cost, so that marginal q is unity. The conceptual advantage of this framework is that it is forward looking; that is, investment is driven by the stock market's evaluation of the firm as measured by q . This has become a standard model of investment behavior and it has been estimated by many researchers, usually for highly aggregated data.

Empirical implementation of the q theory of investment requires rather strong assumptions about technology and adjustment costs. Following Summers (1981) and several subsequent papers, adjustment costs are assumed to be zero until some normal level of investment is reached, after which marginal adjustment costs rise linearly with investment.¹⁰ This can be shown to produce the following equation:

$$(1) \quad (I/K)_{it} = \alpha_i + \alpha_1 Q_{it} + \mu_{it}$$

where I is investment, K is the replacement value of the capital stock, i and t denote the firm and time period, respectively, α_i is the normal value of $(I/K)_i$ and μ_{it} is an error term. Q represents the value of q at the beginning of the period adjusted for corporate and personal tax considerations. (The tax adjustments are calculated following the procedures outlined by Summers [1981].)

An alternative model is required to describe the investment behavior of firms who may not be able to respond to fluctuations in Q because of capital market imperfections. In the simplest alternative, investment is constrained by available cash flow (CF). The basic model estimated in the paper is:

$$(2) \quad (I/K)_{it} = \alpha_i + \alpha_1 Q_{it} + \alpha_2 (CF/K)_{it} + \mu_{it}$$

Tax-adjusted q is included in the model to control for variation over time in investment opportunities. Tests of robustness of this basic model are discussed in the next section.

To summarize, in a world of no capital market imperfections, variations in Tobin's q should lead to variations in investment. However, for firms exhausting all internal finance and facing a high shadow price on external finance, q could vary over a considerable range with no investment response. Thus, variations in cash flow, not q , may drive investment for some firms.

The data and test results

Value Line data is used to implement the test described above. (The detailed definitions of the empirical measures can be found in Fazzari, Hubbard, and Petersen [1988].) Attention here is limited to firms within the manufacturing sector. The selection of the time period over which to conduct the test is very important. Enough years are needed to obtain adequate time-series variation. However, too long a time period would permit firms that may initially be constrained by capital market imperfections to mature. With these considerations in mind, and taking into account the data availability, the time period 1970 to 1984 was selected.¹¹ Subintervals within this period are also analyzed.

The sample of firms was obtained as follows. Firms with missing or inconsistent data were deleted. In addition, firms with major mergers were deleted because mergers can cause inconsistencies when constructing lags. Finally, firms with negative growth rates in sales were excluded.¹² The resulting sample consisted of 422 manufacturing firms.

The tests described above require that the sample be partitioned into groups of firms; the obvious selection criteria is retention behavior. If capital market imperfections lead to financing constraints on investment, they should be most evident for firms that retain all of their income. If, however, internal and external finance are nearly perfect substitutes, then retention behavior should contain little or no information about investment behavior, including fluctuations in investment. The classification scheme chosen divides the sample into three groups as follows.¹³

- Class 1: $\frac{\text{Dividends}}{\text{Income}} < 0.1$ for at least 10 years
- Class 2: $\frac{\text{Dividends}}{\text{Income}} < 0.2$ for at least 10 years, but not in class 1;
- Class 3: All others.

Several summary statistics for the firms in each class are reported in Table 1. Class 1 firms—those that are most likely to be affected by capital market imperfections—retained an average of 94 percent of their income, and paid a dividend on average in only 33 percent of the

Table 1
Summary statistics: Sample of manufacturing firms, 1970-1984

	Category of firm		
	Class 1	Class 2	Class 3
Number of firms	49	39	334
Average retention ratio	0.94	0.83	0.58
Percent of years with positive dividends	33%	83%	98%
Median capital stock-1970 (millions of 1982 dollars)	27.1	54.2	401.6
Median capital stock-1984 (millions of 1982 dollars)	94.9	192.5	480.8
Average real sales growth	13.7%	8.7%	4.6%

Source: These calculations are based on samples selected from the Value Line database.

years. The typical class 1 firm paid no dividends for the first seven to ten years and a small dividend in the remaining years. In fact, 21 firms in class 1 never paid a dividend over the entire time period, although these firms are, on average, very profitable. Going across classes, there is a pronounced increase in the percentage of time that a positive dividend is paid and a corresponding decrease in the retention ratio.

The classes are effectively sorted by firm size as well, as the capital stock figures show. While class 1 firms are small relative to firms in class 3, they are still large relative to U.S. manufacturing corporations in general.¹⁴

Table 2 presents information on new share issues and debt finance for each of the classes. *Ceteris paribus*, one would expect firms in class 1 to rely more heavily on new share issues than firms in the remaining classes. The typical firm in class 1 has an investment demand schedule like D_2 or D_3 in Figure 1. In contrast, the typical firm in class 3 has a demand schedule like D_1 and should not simultaneously pay dividends and issue new shares, given the taxation of corporate income. Consistent with the cost-of-capital schedule in Figure 1, firms in class 1 issue new shares more frequently—approximately one year in every four—than do firms in the other two classes. Even for class 1, however, the amount of finance raised from new share issues is small

Table 2
New share issues and debt utilization

	Category of firm		
	Class 1	Class 2	Class 3
Average percent of years with new share issues	28%	19%	10%
Average value of share issue as a percentage of cash flow	23%	13%	8%
Average ratio of debt to capital stock	0.57	0.52	0.33
Correlation of the earnings-to-capital ratio and the change in total debt-to-capital ratio (averaged over firms)	0.23	0.15	0.09

Source: These calculations are based on samples selected from the Value Line database.

compared to funds generated from internal cash flows.

The last two lines of Table 2 provide information on debt utilization. Although one would expect the firms in class 3 to have higher debt capacities, the debt-to-capital ratios are much higher for classes 1 and 2. These results are consistent with the existence of a financing hierarchy; i.e., constrained firms appear to borrow up to their debt capacity.

Table 3 reports the estimates of the contribution of internal finance toward explaining investment after controlling for movements in Q . Equation 2 is estimated for each retention class with Q and CF/K as explanatory variables. Fixed firm and year effects are included, and the equations are estimated over three time periods: 1970-75, 1970-79, and 1970-84.

Given the method of construction of the Value Line database, the strongest case for asymmetric information between firms and outside investors can be made for the shorter time periods, particularly 1970-75. A firm is not added to the database until it is "of interest to subscribers and the financial community." Once a firm is added, however, observations on items from its income statements and balance sheets are collected as far back as possible; in practice, for at least 10 years prior to the date it is added to the Value Line database. The majority of class 1 firms were not recognized until near the end of the full-sample period, even though the data for these firms extend back to 1969. Thus, if asymmetric in-

formation is an important impediment to firms obtaining external finance, then the sensitivity of investment to fluctuations in internal finance for class 1 firms should be greatest in the earlier time periods.

The results in Table 3 show large estimated cash flow coefficients for class 1 firms. As expected, the cash flow coefficient is largest (0.670) in the earliest period. The coefficient is the smallest (0.461) for 1970-84. Furthermore, as the sample period is extended one year at a time from 1970-75 to 1970-84, the estimated class 1 cash flow coefficients decline monotonically. The cash flow coefficients in classes 2 and 3 are positive and approximately stable over time.

It is the difference in the estimated coefficients across the three classes that should be stressed. Comparing classes 1 and 3, the differences in the estimated coefficients range from 0.416 for 1970-75 to 0.231 for 1970-84. These differences are always statistically significant at very high confidence levels. It is also important to note that including internal finance in the investment model (Equation 2) explains a

Table 3
Effects of Q and cash flow on investment

Dependent variable: $(I/K)_{it}$			
Variable	Class 1	Class 2	Class 3
Sample period: 1970-75			
Q_{it}	-0.0010 (0.0004)	0.0072 (0.0017)	0.0014 (0.0004)
$(CF/K)_{it}$	0.670 (0.044)	0.349 (0.075)	0.254 (0.022)
\bar{R}^2	0.55	0.19	0.13
Sample period: 1970-79			
Q_{it}	0.0002 (0.0004)	0.0060 (0.0011)	0.0020 (0.0003)
$(CF/K)_{it}$	0.540 (0.036)	0.313 (0.054)	0.185 (0.013)
\bar{R}^2	0.47	0.20	0.14
Sample period: 1970-84			
Q_{it}	0.0008 (0.0004)	0.0046 (0.0009)	0.0020 (0.0003)
$(CF/K)_{it}$	0.461 (0.027)	0.363 (0.039)	0.230 (0.010)
\bar{R}^2	0.46	0.28	0.19

Note: Standard errors appear in parentheses. The equations were estimated using fixed firm and year effects (not reported).

much greater proportion of the variance of the investment-to-capital ratio (I/K) in class 1 than in the other two classes. In class 1, 46 to 55 percent of the variance in I/K is explained, depending on the time period analyzed, primarily by the variation in cash flow alone.

Several tests of robustness of these findings were undertaken.¹⁵ In addition, alternative specifications of Equation 2 were estimated, including lags of cash flow and current and lagged sales. A number of investment studies in the literature have found that models which include sales or output ("accelerator" models) often outperform q models. Thus, the results in Table 3 could arise because cash flow and sales are correlated. When current and lagged sales are included in the model, the cash flow coefficient declines in all three classes. For firms paying out a large share of their income as dividends (class 3 firms), the coefficient falls so close to zero that it is insignificant, with one exception.¹⁶ However, for firms retaining all of their income (class 1 firms), the cash flow coef-

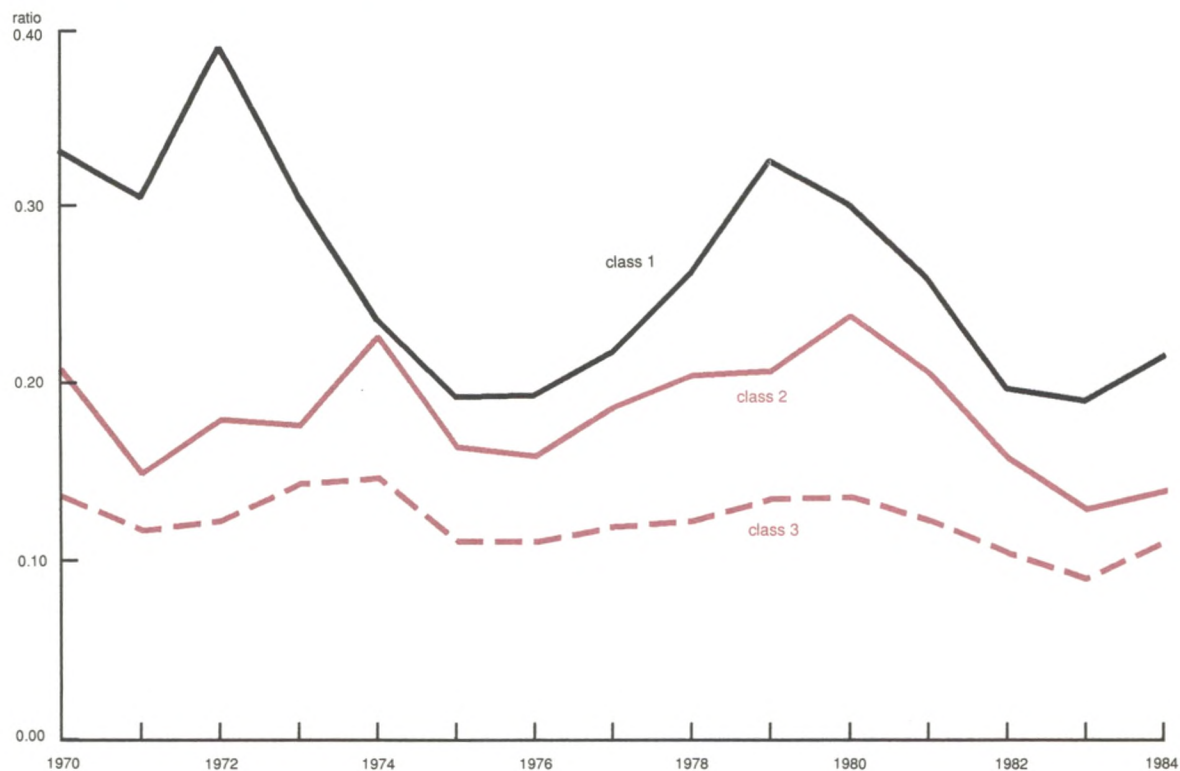
ficient is 0.392 for 1970-75, 0.360 for 1970-79 and 0.301 for 1970-84; these coefficients are highly statistically significant. Thus, for class 1 firms, a large fraction of the fluctuation in investment continues to be explained by fluctuations in cash flow even after including sales in the model.

Aggregate investment fluctuations

The results in Table 3 strongly suggest that capital market imperfections do not have a uniform effect on investment behavior across firms. An implication of these results is that researchers looking for explanations of why aggregate investment is so volatile should focus their attention on specific types of enterprises. There are solid theoretical reasons for using retention behavior as a selection criterion in future studies. Additional empirical support is provided below.

The results in Table 3 indicate that at the *firm level*, fluctuations in cash flow appear to

Figure 2
Average investment-to-capital ratio (by dividend payout class)



cause pronounced fluctuations in investment for firms exhausting all of their earnings. The important question for macroeconomics is whether this leads to pronounced *aggregate* fluctuations in investment.

Figure 2 presents a plot over time of the average investment-to-capital ratio (I/K) for each class, constructed by averaging across firms. It is apparent that I/K is procyclical in each of the classes. It is further apparent that the fluctuations in I/K are much more pronounced for the class 1 aggregate than for the class 3 aggregate. While not shown here, for the class 1 aggregate, the plot of the cash-flow-to-capital ratio is almost identical to the I/K plot. This is not the case, however, for the class 3 aggregate.

For the class 1 aggregate, there are peak-to-trough changes in I/K of 0.21 between 1972 and 1975 and 0.14 between 1979 and 1983. Peak-to-trough changes in the average cash-flow-to-capital ratio are of almost identical magnitude. In contrast, for the class 3 aggregate, there are peak-to-trough changes in I/K of 0.03 between 1973 and 1975 and 0.04 between 1980 and 1983. While not reported here, simple regressions of I/K on various measures of the aggregate economy reveal the same pattern.¹⁷ These regressions indicate that investment is much more procyclical for firms which retain all of their income.

While not as interesting as the peak-to-trough movements in I/K , the variance of the I/K series also gives a rough impression of just how much more volatile is investment in the class 1 aggregate than in the other two classes. The variance of I/K for the class 1 aggregate over the 1970-84 period is four times greater than the variance of the class 2 aggregate and ten times greater than that of the class 3 aggregate. While not shown in Figure 2, two average I/K series were constructed, one for all of the firms in the sample and a second which excluded all class 1 firms. While class 1 firms make up only ten percent of the sample, excluding them causes the variance of the I/K series to fall by nearly one-third.

Conclusion

It is beyond the scope of this paper to give an estimate of what fraction of the fluctuation in aggregate investment in recent decades can be explained by imperfections in capital mar-

kets. Much depends, of course, on what fraction of investment comes from firms that are exhausting all, or almost all, of their internal finance. In the sample of firms employed in this study, that fraction is not particularly large (see Table 1). This is because the Value Line database is heavily weighted toward large, mature corporations; that is, towards firms for which public information is readily available.

Statistics indicate, however, that a substantial fraction of investment in the manufacturing sector is coming from firms with characteristics similar to the class 1 aggregate. For example, manufacturing firms of under \$10 million in assets accounted for approximately 14 percent of total investment in manufacturing over the period 1970-84. (The average firm size in the class 1 category is considerably larger than \$10 million.) The average retention ratio of these firms is very high—approximately 80 percent—and they raised a negligible fraction of finance from new share issues.¹⁸ If these firms have I/K ratios that are as volatile as those making up the class 1 aggregate reported here, they could easily account for a major fraction of the investment volatility in manufacturing.

Finally, it is important to point out that the sample of firms utilized in this study were drawn entirely from the manufacturing sector. The average size of enterprises in other sectors of the economy, such as trade and agriculture, is much smaller than firms in manufacturing. For this reason, capital market imperfections such as asymmetric information may be even more important, and access to external finance more restricted in these sectors. Further research is needed to assess the volatility of investment in these sectors.

¹ See, for example, the findings in Greenwald and Stiglitz (1988).

² See the findings in Greenwald and Stiglitz (1988).

³ See, for example, Greenwald, Stiglitz, and Weiss (1984).

⁴ The test results presented in this paper draw heavily on the statistical results in Fazzari, Hubbard, and Petersen (1988).

⁵ An extensive list of citations on this investment research can be found in Fazzari, Hubbard, and Petersen (1988).

⁶ The difference between the tax rate on dividends and capital gains has been quite large because of (1) the exclusion of 60 percent of long-term capital gains; (2) the taxation of such gains only upon realization; and (3) forgiveness of the tax if the gain is not realized before death. Recent tax reform has greatly reduced the difference.

⁷ These theoretical arguments draw heavily on the "lemons" problem first considered by Akerlof (1970).

⁸ For example, suppose $q^G = 5$ and $q^A = 2$, then Ω is 1.5 and a new project must have a q of at least 2.5 before managers will seek external equity finance.

⁹ Financial distress refers to the set of problems that arise whenever a firm has difficulties in meeting its principal and interest obligations. Agency costs arise from the efforts of creditors of the firm to ensure that the firm honors its contractual obligations.

¹⁰ For an overview of these assumptions, see the discussion in Summers (1981).

¹¹ Manufacturing firms were included in the sample only if they had observations from 1969 to 1984. The number of firms and data items available on Value Line increased substantially in 1969. The number of firms that had observations on the necessary variables dropped significantly after 1984. 675 firms had some data from 1969 to 1984. The sample was reduced to 422 firms for reasons discussed in the paper.

¹² The objective is to consider the investment behavior of firms constrained because of capital mar-

ket imperfections, as opposed to financial distress due to poor market performance.

¹³ This approach limits the sensitivity of the classification scheme to outliers of the dividend-income ratio. In a particular year, this ratio could be very high due to abnormally low income, even though the firm generally retains most of its earnings.

¹⁴ Based on information from the *Quarterly Financial Reports* of the Securities and Exchange Commission, approximately 85 percent of manufacturing corporations had smaller capital stocks in 1970 than the average class 1 firm.

¹⁵ For example, Equation (2) was estimated using first and second differences (as opposed to the conventional within-group estimation) to address measurement-error considerations. The coefficient estimates are quite similar. These tests are reported in Fazzari, Hubbard, and Petersen (1988).

¹⁶ The exception is the full sample period of 1970-84.

¹⁷ The regressions mentioned in the text are of the form:

$$(I/K)_t = Y_1 + Y_2 A_t$$

where A is either capacity utilization in manufacturing or unemployment. The regressions were run with and without time trends. The coefficient on A is, in absolute value, three to four times greater for the class 1 aggregate.

¹⁸ Firms between \$10 and \$100 million in assets also have, on average, very high retention ratios. Information on total investment and retention ratios of manufacturing firms grouped by asset size can be found in the *Quarterly Financial Reports* of the Securities and Exchange Commission.

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Financial Services in the Year 2000

"While the expansion of banking powers is consistent with a flexible, safe, and efficient financial system and increased real benefits to consumers, there still remain reasons for policy makers to be cautious about such changes in financial structure," said Alan Greenspan, Chairman of the Federal Reserve Board and keynote speaker at the 24th annual Conference on Bank Structure and Competition, sponsored by the Federal Reserve Bank of Chicago on May 12-13, 1988. The Conference offered many experts from regulatory agencies, the banking industry, and academia the opportunity to present their views and recommendations for balancing the benefits of increased efficiency from expanded powers against possible increases in bank risk.

In a number of speeches and panel discussions, the participants discussed a variety of issues, including the effects of October 19, financial restructuring, corporate separateness, new powers, and bank risk. The last session of the Conference assembled a panel of industry experts who attempted to sum up the two days of discussion and build a framework for restructuring. The panel included Donald Crawford, senior vice president and director of government relations for the Securities Industry Association; Robert Litan, senior fellow at the Brookings Institution; S. Waite Rawls III, vice chairman of Continental Illinois Corporation; and Kenneth Scott, professor of law at the Stanford Law School.

New powers

While many at the Conference believed that banking firms would be granted broader powers, there was considerable disagreement about the specific powers banking firms would and should have.

Kenneth Scott, of the Stanford Law School, provided some insight into the determination of new bank powers. According to Mr. Scott, if new bank powers are determined in the political arena where special interest groups need a "super majority" to effect change but a simple majority to keep the status quo, little change will occur. If new powers for

banking firms are left to the regulators, only those powers that are easily understood or easily measured will be granted. If new powers are decided by economists, new powers will be granted only if there are synergies between banking and the new activities. Finally, said Mr. Scott, if new powers are determined by the market, those firms that correctly assess the opportunities for expansion will be rewarded and those that do not will be punished. This "marketplace calculus," according to Mr. Scott, is the best way from an efficiency standpoint to determine which new powers are appropriate for banking firms.

Donald Crawford, from the Securities Industry Association, argued that the political process, in fact, was directing the push for new powers in an inappropriate direction—toward securities activities. Citing profitability figures for the underwriting of various securities, Mr. Crawford argued that competition, tax reform, and deregulation have narrowed spreads in virtually every area of investment banking. Therefore, if banks entered this industry, the competition would be ruinous to both banking firms and securities firms. "Combining the two industries will exponentially increase the potential for mismanagement on both sides of the fence," said Mr. Crawford. Earlier in the day, William T. Gregor, a senior vice president at the MAC Group, had made the same point: "For many banks underwriting is going to be an economic Vietnam."

Furthermore, Mr. Crawford noted that the securities industry is one in which "mistakes are made easily," and is "unforgiving" because assets are marked to market daily. To support this contention he pointed to the Stock Market Crash of October 1987. As a result of the Crash, the securities industry lost \$2.2 billion in two days, \$1.7 billion of which was from trading accounts. This produced the worst quarter in the history of the securities industry. "You can't underwrite unless you make markets," Mr. Crawford warned the bankers in the audience, "and if you make markets, you will occasionally have to take hits."

These losses, however, did not impress S. Waite Rawls III, Continental Illinois Corpo-

ration and the only commercial banker on the panel: "Shoot, a billion seven. Citi[bank] charged off twice that in a day. I thought we were talking about risk here." Mr. Rawls also asked Mr. Crawford, "If what you're protecting is worth so little, why do you defend it so doggedly?"

In a previous session of the Conference, Larry Mote, a vice president and economic adviser at the Federal Reserve Bank of Chicago, may have provided an answer to Mr. Rawls' question. He noted that average returns and levels of compensation in the securities industry are relatively high. Moreover, there is a high degree of concentration and barriers to entry are significant in the securities industry. These characteristics, along with long-run stability of some spreads, are suggestive of market power.

In his presentation, Robert Litan, of the Brookings Institution, suggested that if banks broaden their securities activities, prices for underwriting services are going to come down and profits will decrease. This effect will be most pronounced in merger and acquisition services, according to Mr. Litan. Currently, banks can provide advice on mergers and acquisition, but cannot underwrite corporate securities. However, underwriting capabilities are very advantageous to the M&A business. Earlier, Thomas G. Labrecque, president and chief operating officer of Chase Manhattan Corporation, had commented on that very issue. He stated that his organization recently lost business to Deutsche Bank because Chase cannot underwrite corporate securities. "In my humble opinion," Mr. Litan opined, "those fat, outrageous M&A fees would come down if banks were in that business and could also underwrite securities."

Robert Litan, however, conceded to Mr. Crawford that securities may not be the most important area for banking firms to enter. Mr. Litan felt that bank entry into insurance would have a greater impact on consumers than bank entry into the securities industry. Citing studies of the Consumers Federation of America and the American Insurance Association, Mr. Litan estimated that more competition in insurance agency would reduce premiums by \$5 billion annually. Banking, he argued, is a logical source for this new competition. As John Boyd, a research officer at the Federal Reserve Bank of Minneapolis, contended earlier in the day,

life insurance underwriting is a low-risk activity, and if banking firms were to engage in this activity, their overall level of risk would likely decrease.

Restructuring

If banks are going to be granted broader powers—securities as well as real estate and insurance—how should the financial services industry be restructured so that safety and soundness are preserved; the safety net is not extended to nonbank sectors; and efficiency is not sacrificed? In other words, restructuring requires walking a tight rope between risk and efficiency.

"In this industry [banking]," said Mr. Rawls, "risk is a four-letter word," but without risk, a company would have "zero potential for revenues or growth." Mr. Rawls continued, "Today, risk is adapting to a new reality, or failing to adapt." That new reality is that "the needs of business have changed faster than banks' capability of serving those needs. Being a reliable provider of funds just isn't enough anymore." Earlier in the day, Bert Ely, a financial institutions consultant, had stated that the financial services industry is changing more rapidly than banking regulation, due to electronic technology and financial innovation. The issue, said Mr. Rawls, "is what are we going to do about it?"

Three conference participants, Robert Litan, Robert Laurence of the Federal Financial Institutions Examination Council, and Samuel Talley, a banking consultant, would allow a banking firm to engage in any nonbank activity it chooses so long as those activities are carried out in subsidiaries of the holding company and the banking subsidiaries are "narrow banks." A narrow bank is one that accepts deposits and invests them only in government securities.

Mr. Litan conceded that having nonbank activities operated as a bank subsidiary would be more efficient, but it would also be riskier. In other words, the temptation for the bank to come to the rescue of a nonbank subsidiary would be great since the performance of the subsidiary directly affects the bank's financial statements. Therefore, in the interest of safety, Mr. Litan said that he preferred that nonbank activities be carried out by subsidiaries of the bank holding company rather than the bank.

Locating nonbank operations in subsidiaries of the holding company, however, was not enough for Mr. Litan, nor was it enough for the other panelists. All agreed that “firewalls” are needed. How high, how thick, and of what substance, however, were major issues yet to be resolved.

According to Mr. Litan, the choices are imperfect. One of those choices is the “lawyers/regulators approach.” This approach entails making rules and regulations that govern transactions and affiliations between banks and their nonbank affiliates.

Mr. Rawls thought that this “approach” was not so much a means to control risk but a battle over turf. The Glass Steagall Act separated investment and commercial banking, but “the insidious thing is,” explained Mr. Rawls, “it also created separate regulatory bodies—the SEC and the Fed. And it created separate Congressional committees to oversee the separate regulatory bodies.” The problem, according to Mr. Rawls, is that “the distinction between banking and securities has really blurred; the distinctions between the bodies that regulate them have not.” Consequently, “the issues are discussed from two different points of view. Compromise is hard to come by. Firewalls, functional regulation, and subsidiaries are products to serve the regulators and Congress, not to serve bankers or their customers,” said Mr. Rawls.

Mr. Rawls as well as the other panelists felt it necessary to distinguish between financial firewalls and management and marketing firewalls. While Mr. Crawford was accused of favoring management and marketing firewalls, such as a ban on cross marketing, the other panelists generally agreed that only financial firewalls were appropriate and necessary. As Mr. Rawls pointed out, “you have to keep bank deposits away from other activities, but not marketing and management.” In fact, he argued that marketing and management firewalls would increase risk and reduce efficiency. Furthermore, as for financial firewalls, Mr. Rawls said that if barriers are erected, deposits should not necessarily be with loans on one side of the firewall and securities on the other side.

That solution flies in the face the “narrow bank” proposal. The narrow bank proposal is another firewall alternative and the one that

Mr. Litan believes to be the best among the imperfect choices.

Because a narrow bank does not make loans, all lending as well as other activities would be carried out in nonbank affiliates under the umbrella of a bank holding company. According to Mr. Litan’s proposal, bank holding companies that converted their banks to narrow banks could engage in any nonbank activities, not only those deemed permissible by the regulators or Congress. The deposits of narrow banks would be federally insured, but they would have relatively low deposit insurance premiums because they are virtually risk-free entities. Narrow banks could invest in both long- and short-term government securities. Conversion to narrow banking would be purely voluntary and gradual (over a ten-year period), and small banks would be exempt because, in Mr. Litan’s opinion, small banks do not pose a risk to the system.

Referring to his narrow bank proposal, Mr. Litan said “I think it solves all the problems, or most of the problems that have been leveled against the banking industry in terms of going out to broader powers.” He then elaborated on that point, “It solves the conflict problem because a narrow bank can’t loan; it solves the run problem because a narrow bank is liquid”

Whether firewalls be in the form of rules or narrow banking, Mr. Scott questioned whether any firewalls would be effective as long as the fundamentals of the current federal deposit insurance system go unchanged. Firewalls are supposed to protect against “unacceptable risk.” But protect whom? The insurance fund, said Mr. Scott, and accordingly any discussion about new powers and risk must include a discussion about federal deposit insurance. The current flat-rate system inherently has a “perverse incentive system,” said Mr. Scott. Furthermore, he said that if regulation and supervision were adequate, then the current deposit system would not be in the poor condition that it currently is in. Therefore, said Mr. Scott, “if the present system is going to be bailed out but not otherwise materially altered,” then the thickness of firewalls and distinctions between banking and nonbank subsidiaries becomes important. But Mr. Scott conceded, “maybe that’s all that is politically possible now.”

Politically possible

Other panelists at the Conference's last session also spoke of the politically possible. They all seemed to have agreed that the Congress will grant banks broader securities powers. If they don't, commented Mr. Litan, the "states will take it upon themselves to broaden securities powers," especially New York. Mr. Crawford further pointed out, and Mr. Litan concurred, that political forces may have banks trade insurance and real estate powers for securities powers. "Is the trade-off worth it?" Mr. Crawford queried.

All the panelists seemed to have agreed that the approach to firewalls would be rules-oriented. While this is not the best alternative as far as Mr. Litan was concerned, he conceded that he would not see his narrow bank proposal adopted in his lifetime. Referring to the regulatory approach to firewalls, he said that this seems to be "the direction we're headed." Mr. Rawls lamented that this approach may very well mean that when all is said and done the restrictions placed on banks' securities activities will be onerous. Then bankers will say to Congress, "thanks, but you didn't do anything."

—Christine A. Pavel

New directions for economic development—the banking industry

Eleanor H. Erdevig

Projected job growth in the service industries has stimulated interest in those industries as a source of economic development and employment growth.

One of the service industries that has generated particular interest has been the banking industry. Technological improvements no longer require that banking operations be located in close proximity to a bank's customers. The elimination by some states of restrictions on banking, such as geographic limits and usury laws, has provided a means of attracting banking operations from other states. The results have been an acceleration of the deregulation trend as states affected by the possible or actual loss of banking employment enact similar measures to retain and attract banking operations and economic benefits for consumers.

South Dakota and Delaware were pioneers in targeting the banking industry for economic development. The efforts of South Dakota were directed toward credit card operations. Delaware targeted not only credit card operations, but also wholesale banking and international banking.

General interstate banking legislation provides an opportunity for bank holding companies to transfer operations to banking subsidiaries located in states with the greatest opportunities for profitable operations. It also provides geographic diversification of risk.

This paper looks at the efforts and results in South Dakota and Delaware in developing the banking industry in their states. It also looks at the current status of interstate banking, i.e., where bank holding companies are establishing or acquiring new out-of-state banking subsidiaries and the resulting effects on asset, deposit, and employment growth in the individual states.

Projected job growth all in services

More than 21 million jobs are projected to be added to the United States economy between now and the end of the century, accord-

Table 1
Projected employment growth, 1986-2000

Industry	Number (mil.)	Percent change
Total	21.4	19
Nonfarm wage and salary	20.1	20
Goods-producing	*	*
Mining	*	-8
Construction	.9	18
Manufacturing	-.8	4
Service-producing	20.1	27
Transportation and public utilities	.5	9
Wholesale trade	1.5	27
Retail trade	4.9	27
Finance, insurance, and real estate	1.6	26
Services	10.0	44
Government	1.6	10
Agriculture	-.3	-10
Private households	*	-2
Nonfarm self-employed and unpaid family workers	1.7	20

*Less than .05

Source: Kutscher, Ronald E., "Projections 2000: Overview and implications of the projections to 2000," *Monthly Labor Review*, Vol. 100, pp. 3-9, September 1987.

ing to the Bureau of Labor Statistics. (See Table 1.) Of the increase, virtually all will be in the service-producing industries. Although some of the goods-producing industries, which include manufacturing, mining, and construction, are projected to grow, others will decline, and as a result, no net change in employment is expected in the goods-producing sector.

Financial services are among the service-producing industries expected to continue to show substantial rates of output growth. Although employment in finance is expected to grow less rapidly than in the recent past, there are expected to be 262,000 more jobs in banking, 495,000 more in credit agencies and in-

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vestment offices, and 134,000 more in security and commodity brokerages and exchanges by the year 2000.

State opportunities for financial centers

Projected growth in employment in financial services has encouraged states and cities interested in economic development to establish financial centers. Among the incentives offered to encourage financial services firms, particularly banking institutions, to locate in an area have been the elimination of interest rate ceilings on loans, lower tax rates on bank net income, and permission for interstate banking.

In 1978, the Supreme Court, in *Marquette National Bank v. First of Omaha Service Corporation*, 439 U.S. 298 (1978), affirmed the right of a national bank to charge interest rates to out-of-state credit card customers at the rate permitted by the law of its home state. This meant that national banks in states with higher or nonexistent ceilings on consumer lending rates could export that rate to consumers in states with lower ceiling rates.

The ability to offer more pricing flexibility in consumer lending presented an opportunity for a state to increase commercial banking transaction activity and employment. By increasing or eliminating ceiling rates on consumer loans and granting permission to out-of-state bank holding companies to own national bank subsidiaries, state legislators could encourage such companies to establish subsidiaries engaged primarily in national credit card operations. Subsidies or tax incentives, frequently used by states to attract manufacturing companies, were usually not involved. Minimum employment levels were usually the only requirement in implementing the legislation. In addition the legislation usually included restrictions on the operations of the bank subsidiary of the out-of-state bank holding company to protect existing in-state banks, which also benefited from the changes in usury rates.

In addition to nonexistent or nonbinding usury rates, some states offered other inducements in targeting commercial banks. These included permission to charge annual fees for credit cards or loans and lower income tax rates on bank income. The soliciting state could also offer lower cost operations and a plentiful, educated labor force.

Competition for the out-of-state bank's operations came from other states. These states sought either to retain the operations of their resident banks or to attract operations of banks located in other states.

Technological improvements have facilitated the ability of bank holding companies to locate certain banking operations in other states. Thanks to electronic data transmission and funds transfers and other communications technologies banking operations no longer need be carried on in close proximity to the majority of a bank's customers.

The marketing strategy of some states was to be financial pioneers. If successful, the pioneer states would become established financial centers. Once established, bank operations were unlikely to move back to the home state or elsewhere unless a new location could demonstrate distinct advantages.

States adjacent to the pioneers have generally been follow-the-leader states. They have enacted similar legislation when faced with the prospect of losing banking operation facilities to neighboring states.

Pioneer states: South Dakota and Delaware

South Dakota was the first state to enact commercial banking legislation specifically aimed at bringing out-of-state banking operations to the state to create jobs, expand the economy, and increase tax revenues. In February 1980, South Dakota removed all usury ceilings for credit card loans and other types of consumer lending effective May 1. Commercial banks, savings banks, savings and loan associations, and credit unions were previously held to a 12 percent usury ceiling. In March, the state further amended its banking laws to permit an out-of-state bank holding company to establish a single state or national de novo bank and move its credit card operations there. Such a bank was limited to a single banking office and was to be operated in a manner and at a location that would not attract customers from the general public. (Subsequent legislation has eliminated most of these original restrictions.)

New York's Citicorp was the first out-of-state bank holding company to establish a new national bank in South Dakota. The bank, Citibank (South Dakota), N.A., at Sioux Falls,

Table 2
Growth at commercial banks
1980 - 1987

	United States		South Dakota		Delaware	
	Amount	Percent	Amount	Percent	Amount	Percent
Total domestic assets (bil.)	\$1,068.9	70	\$15.3	300	\$39.3	1,067
Total loans	782.7	96	13.2	453	35.3	1,953
Loans to individuals	153.3	85	12.7	2,549	26.3	4,100
Credit card loans	72.4	243	12.3	207,876	25.0	24,375
Employment	96,566	7	3,281	75	13,536	347

was organized to engage principally in nationwide consumer credit card lending activities then currently conducted by Citibank's New York banks.¹ At the end of 1987, it was the largest commercial bank in South Dakota, with domestic assets of \$12.0 billion, total loans to individuals of \$11.6 billion, and 3,462 employees. (See Figure 1.)

Other out-of-state bank holding companies from Texas and Nebraska also established subsidiaries in South Dakota, primarily to offer credit card services. At the same time, two large bank holding companies with headquarters in Minnesota expanded consumer loans and employment at existing subsidiary banks in South Dakota. Currently, four of the five largest commercial banks in South Dakota are subsidiaries of out-of-state bank holding companies and all are located in Sioux Falls.

As a result of the acquisitions and expansions of subsidiary banks by out-of-state bank holding companies, South Dakota experienced the fastest rate of growth in the U.S. in loans to individuals for credit cards at commercial banks. Additionally, its rates of growth in total domestic assets, total loans, loans to individuals, and employment were second only to Delaware. (See Table 2.)

Delaware has long been a state with generally less restrictive requirements for business corporations. About 179,000 companies, including 56 percent of the Fortune 500 firms and 45 percent of the companies listed on the New York Stock Exchange, are incorporated in Delaware.

Since 1981, legislation has been directed more specifically toward the development of the financial services industry, with emphasis on commercial banking.

The Financial Center Development Act of 1981 (FCDA) was signed into law on February 18, 1981. It permitted an out-of-state bank holding company to establish a de novo bank with a single office operated in a manner and at a location not likely to attract customers from the general public in Delaware. However, the bank could operate to attract and retain customers with whom the bank, the out-of-state holding company, or such holding company's bank or nonbanking subsidiaries had business relations. The bank was required to employ within one year not less than 100 persons in the state in its business.

In addition, FCDA essentially eliminated interest rate ceilings on all types of loans including bank revolving credit (i.e., credit cards) and bank closed-end credit and permitted banks to charge fees "for the privileges made available to the borrower under the plan" (i.e., annual card fees).

The Delaware legislation also included an attractive bank tax structure. The rate of tax on bank net income was revised to 8.7 percent of net income not in excess of \$20 million; 6.7 percent of net income over \$20 million but not over \$25 million; 4.7 percent of net income over \$25 million but not over \$30 million; and 2.7 percent of net income over \$30 million. The combined state and local marginal tax rate in Wilmington, Delaware, has been calculated at 4.5 percent, compared to 24.2 percent in New York City, 11.7 percent in Philadelphia, 10 percent in Pittsburgh, and 6.5 percent in Chicago.

The first acquisition approved by the Federal Reserve Board of Governors under Delaware's FCDA of 1981 was that by J.P. Morgan & Company, Incorporated, a New York bank holding company, of Morgan Bank

Table 3
Delaware banking industry changes
December 1980 - December 1987

Bank group	Total domestic assets		Total domestic loans		Employees	
	Amount*	%	Amount*	%	Amount	%
Continuing banks	4,062.5	10.3	3,498.7	9.9	1,218	9.0
FCDA banks	23,263.4	59.1	20,688.7	58.6	6,400	47.2
CCBA banks	1,390.0	3.5	1,328.1	3.8	158	1.1
Nonbank banks	10,659.7	27.1	9,781.3	27.7	5,793	42.7
Subtotal	39,375.6	100.0	35,296.8	100.0	13,569	100.0
Discontinued banks	(41.0)		(22.6)		(33)	
Total	39,334.6		35,274.2		13,536	

	Loans to individuals		Credit card loans		Total deposits	
	Amount*	%	Amount*	%	Amount*	%
Continuing banks	1,298.1	4.9	747.2	3.0	3,473.0	20.6
FCDA banks	14,064.6	53.6	13,575.4	54.4	7,332.9	43.4
CCBA banks	1,328.8	5.1	1,328.8	5.3	612.4	3.6
Nonbank banks	9,570.8	36.4	9,305.0	37.3	5,474.8	32.4
Subtotal	26,262.3	100.0	24,956.4	100.0	16,893.1	100.0
Discontinued banks	(2.7)		0		(36.0)	
Total	26,259.6		24,956.4		16,857.1	

*mil.\$

(Delaware), on November 19, 1981.² The newly chartered bank was formed to engage in wholesale banking to domestic corporations and financial institutions nationally and internationally. The bank also planned to participate in large loans made by Delaware banks and in loans to Delaware banks. In its order, the Board stated, "This increase in available capital should have a positive impact on economic development in Delaware."

On June 6, 1983, Delaware enacted two additional state banking laws, the Consumer Credit Bank Act of 1983 (CCBA) and the International Banking Development Act of 1983 (IBDA). The CCBA permitted an out-of-state bank holding company to establish a consumer credit bank which was limited to conducting a nationwide credit card or consumer loan business. Capital requirements were minimal and there was not an employ-

ment requirement. The bank however was required to be allied with a qualified credit card processing association that must hire at least 250 employees in its first three years in Delaware.³ The International Banking Development Act of 1983 was specifically aimed at attracting foreign banks and foreign capital but it also encouraged the establishment of internationally-oriented Edge Act banks and international banking facilities. It removed the usury ceiling on extensions of credit by international banking facilities, eliminated reserve requirements for such facilities, and also exempted their net income from Delaware's state franchise tax.

The Delaware legislation eliminating interest rate ceilings on consumer loans and implementing an attractive tax-rate schedule on bank net income has also encouraged the acquisition of so-called nonbank banks by out-of-

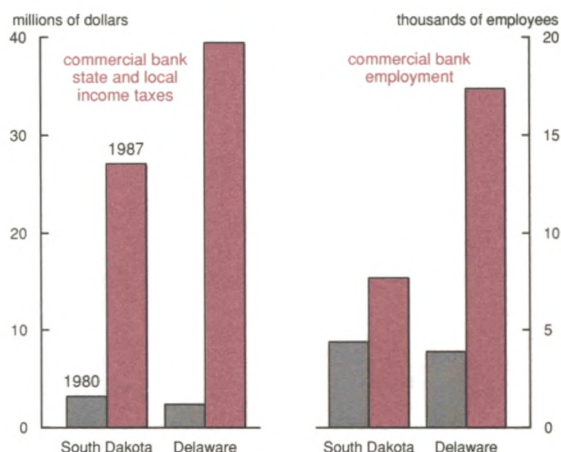
state companies. Such nonbank banks have usually been acquired or established by nonbank holding companies, primarily for the purpose of offering consumer loans and credit cards, or alternatively, offering commercial loans but not accepting demand deposits.⁴

The major contributors to the growth in the commercial banking industry in Delaware have been the FCDA banks. (See Table 3.) By the end of 1987, 17 FCDA banks had opened and one was pending. Eight are subsidiaries of bank holding companies located in New York, and are variously engaged in wholesale banking, cash management services, nationwide commercial lending, as well as consumer lending and credit card operations. FCDA banks that are subsidiaries of bank holding companies in Georgia, Maryland, Virginia, North Carolina, and Pennsylvania, are primarily engaged in consumer lending and credit card operations.

Eight nonbank banks were in operation at the end of 1987 and have been the second major source of growth in commercial bank assets and employment, particularly recently. Increases in total domestic assets and total loans at nonbank banks have been primarily the result of the increases in loans to individuals for credit cards. Growth in employment has been particularly strong at nonbank banks compared to other banks in Delaware. Of the 13,536 employment increase at Delaware commercial banks from 1980 to the end of 1987, 5793 or 43 percent was at nonbank banks. Employment increased 3168 alone at Greenwood Trust Company in New Castle, Delaware, after it was acquired by a subsidiary of Sears, Roebuck and Company in January 1985 and began offering the new Discover credit card.

The limited-purpose CCBA banks have had a smaller impact on the growth of assets, total loans, and employment. Part of this is attributable to the more recent enactment of the CCBA legislation. Most of the impact of the CCBA has been the result of the aggregate growth of credit-card related loans to individuals. The total effect of the CCBA banks on employment does not appear in the banks' figures because the increases in employment are primarily at the credit-card processing associations with which the CCBA banks are usually affiliated. In fact, only 158 employees were

Figure 1
The rewards of innovation



reported at the nine CCBA banks in operation at the end of 1987.

Delaware's eleven continuing commercial banks also benefited from the legislation to encourage the expansion of banking employment. They experienced aggregate growth in domestic assets, loans, deposits, and employment well above the national average. Growth in credit card loan balances was a major contributor to the increase in total domestic assets at the continuing banks. A substantial amount of the increase was at Mellon Bank Delaware, N.A., which had become a subsidiary of the Mellon National Corporation, Pittsburgh, following approval of the merger of Mellon with The Girard Company on March 7, 1983. The elimination of the usury ceiling in Delaware provided an incentive for the Pennsylvania bank holding company to expand credit card operations at the Delaware subsidiary bank.

In addition, CCBA provided an opportunity for Delaware banks to serve as a qualified credit card processing association. Growth in commercial and industrial loans and real estate loans at the banks was also well above the national average.

Nearby states: playing follow-the-leader

After the successes in South Dakota and Delaware, other states, particularly those nearby, found it necessary to play follow-the-leader. Some of the banks in these nearby states were either moving their credit card operations to South Dakota or Delaware or were

threatening to do so. These states, particularly New York, Nebraska, Virginia, Maryland, and Pennsylvania found it necessary to take immediate action to retain a competitive edge in the banking industry.

New York was among the first states affected by the moves, real and threatened, of its banks to South Dakota and Delaware. New York's response was to enact legislation, effective January 1, 1981, that eliminated ceilings on interest rates for credit cards and most personal loans and permitted credit card fees.

The New York legislation, however, did not reverse the planned move by Citicorp of its credit card operations from New York to South Dakota. Furthermore, the state was unable to compete very successfully for some of its other banks' operations with Delaware, which was much closer to New York and offered both the absence of a usury rate and much lower tax rates on bank net income. Consequently, many of the large New York bank holding companies established subsidiary banking operations there.

Nebraska, South Dakota's neighbor, found it necessary to enact banking legislation similar to that in South Dakota. In early 1983, First National of Nebraska, Inc., Omaha, agreed to acquire Valley State Bank, Yankton, South Dakota, just across the South Dakota-Nebraska border.⁵ The acquisition's purpose was to direct the expansion of the credit card business of its subsidiary, First National Bank of Omaha, to the Yankton bank. First National, the largest credit card issuer in Nebraska, wanted to take advantage of the absence of usury restrictions in South Dakota.

In response to the First National move and the apparent success of South Dakota in attracting out-of-state banking operations, Nebraska approved similar legislation on April 18, 1983. The legislation eliminated all usury ceilings on credit cards and allowed out-of-state bank holding companies to acquire a single de novo bank in Nebraska whose services were limited to credit card operations at one office.

Following the passage of the Nebraska legislation, First National Bank of Omaha said that it would expand its credit card operations in Omaha as well as open the credit card subsidiary bank in Yankton, South Dakota.

Virginia, near Delaware, also sought to retain the credit card operations of its banks. It eliminated the interest rate ceiling on bank

credit card loans effective April 1, 1983. Unlimited annual fees were also permitted.

On March 15, 1983, Virginia approved legislation that permitted so-called Financial Service Center Banks. The legislation authorized an out-of-state bank holding company to acquire a de novo bank, provided the bank was created primarily to engage in a significant multi-state credit card operation. The bank could also engage in limited deposit-taking and commercial loan operations and was therefore subject to regulation as a bank.

First Kentucky National Corporation, Louisville, Kentucky, in April 1984, was the first out-of-state bank holding company to acquire a de novo bank for credit card operations in Virginia.⁶ The bank was acquired to transfer the credit card operations of its Louisville Bank to the Virginia bank in light of Virginia's more liberal revolving credit interest rate and credit card fee laws.

Maryland. Efforts in Maryland to increase or eliminate interest rate ceilings and permit credit card fees encountered strong opposition from consumer groups and labor organizations. Legislation was enacted, effective July 1, 1982, to raise the interest rate ceiling to permit banks to charge up to 24 percent interest on outstanding balances on credit cards. Annual fees on credit card accounts, however, were not permitted and other restrictions on credit card operations remained. It was not until July 1, 1983, in a major shift in state policy, that fees were permitted for credit cards. At the same time, legislation was enacted similar to that in Delaware to encourage out-of-state bank holding companies to establish credit card operations in Maryland.

The Maryland legislation, however, was too late to prevent four of its major banks from moving their credit operations to Delaware. The holding company of Maryland National Bank, the state's largest bank, established Maryland Bank, N.A., a Delaware subsidiary, on March 15, 1982. Maryland National Bank then moved its credit card operations to Delaware and sold all of the bank's credit card accounts to its subsidiary. By September 1982, three more Maryland bank holding companies had shifted the credit card operations of their Maryland bank subsidiaries to de novo banks in Delaware: First Omni Bank, N.A.; Suburban Bank/Delaware;⁷ and Equitable Bank of Delaware, N.A.

Pennsylvania. Early attempts to increase the interest rate ceiling on credit card loans and allow credit card fees in Pennsylvania were unsuccessful. As in Maryland the opposition was primarily from consumer groups and union organizations. Legislation was finally approved on March 25, 1982 which raised the maximum interest rate on purchases made with bank and merchant credit cards and installment contracts from 15 to 18 percent. In November 1982, banks were permitted to charge a card fee of up to \$15 per year.

Opposition to an increase in interest rate ceilings and permission to charge credit card fees in Pennsylvania encouraged banks in the state to move their credit card operations to Delaware. As noted above, Mellon National Corporation through its merger with The Girard Corporation acquired the original Farmers Bank of the State of Delaware at which credit card operations were expanded.⁸ Other Pennsylvania bank holding companies established FCDA banks in Delaware. PNC Financial Corporation, Pittsburgh, established PNC National Bank, Wilmington, on March 10, 1982 and CoreStates Financial Corporation, Philadelphia, parent of Philadelphia National Bank, established CoreStates Bank of Delaware, N.A., on June 1, 1982. More recently, Equibank, Pittsburgh, established Equibank (Delaware), N.A., Wilmington, on March 4, 1987.

Effects of general interstate banking

Legislation to permit out-of-state bank holding companies to acquire limited-purpose commercial banks has been followed by an accelerated trend toward general interstate banking. The activities of subsidiary banks are usually not restricted and the banks are allowed to compete fully with existing instate banks. As a result, additional alternatives are available for bank holding companies to locate operations at subsidiary banks in states where the least risk and the greatest opportunities for profit exist.

The extent to which the assets of a state's commercial banks were held by subsidiaries of out-of-state bank holding companies at the end of 1987 ranged from none in seven states to over 60 percent in five states. These were Maine, South Dakota, Washington, Delaware, and Nevada. (See Table 4.) These states also

loans and the employment at commercial banks at the subsidiaries of the out-of-state bank holding companies.

Policy implications

Emphasis by states on economic development goals for the banking industry raised concerns that sufficient attention was not being directed toward any inherent safety and soundness risks associated with interstate expansions. To date the concerns do not appear to have been necessary.

Interstate expansion on the basis of deregulation in a target state may not have been the most efficient. Expansion in the home state or into other states might have been more efficient if the regulatory environments had been comparable.

The trend toward deregulation of interest rates and elimination of usury rates has accelerated. Adjacent states faced with the movement of bank operations, credit card operations in particular, to states that had eliminated interest rate ceilings on consumer loans either raised their own usury rate ceilings or eliminated them.

The trend toward interstate banking has also accelerated but the emphasis has been on

Table 4

States with over 20 percent of total domestic assets at subsidiaries of out-of-state bank holding companies

Rank	State	Percent of total at subsidiaries of out-of-state bank holding companies		
		Domestic assets	Credit card loans	Employees
1	Maine	86	93	86
2	South Dakota	76	99	62
3	Washington	73	92	70
4	Delaware	66	72	52
5	Nevada	66	98	53
6	Arizona	59	54	56
7	District of Columbia	53	48	43
8	South Carolina	48	67	41
9	Oregon	45	44	48
10	Connecticut	40	46	46
11	Montana	40	69	32
12	Idaho	37	53	36
13	Rhode Island	37	35	40
14	Georgia	35	64	33
15	North Dakota	32	47	27
16	Utah	30	17	35
17	Tennessee	30	28	29
18	Maryland	26	57	24
19	Kentucky	22	26	18
20	Florida	21	14	20
21	Indiana	21	42	22

acquisition of existing banks that offer a full range of bank services. When out-of-state bank holding companies seek to acquire existing banks, the number of possible buyers of in-state banks and generally the sale prices increase. Additionally, it also encourages bank holding companies to shift certain operations to subsidiary banks in states offering the most attractive climate for operations.

Overall results in the banking industry have been similar to those associated with financial incentives offered by states to attract industrial firms. Those states that are the first to offer new incentives to attract firms generally succeed in attracting at least a few firms. Then, faced with the prospect of their firms expanding elsewhere, other states soon begin to offer similar incentives. Once a significant number of states begin to offer similar incentives, the ability of the incentives to affect the location decision is lost.

In the case of bank deregulation, when the regulatory environment in all states becomes roughly similar, the ability of states to successfully use deregulation as an incentive for economic development is also lost.

¹ Citicorp, New York, New York, 67 *Federal Reserve Bulletin* 181 (February 1981).

² J. P. Morgan & Company, Incorporated, New York, New York (Morgan Holdings Corp., Wilmington, Delaware), 67 *Federal Reserve Bulletin* 917 (December 1981).

³ A consumer credit bank, because it does not make commercial loans, is not considered to be a bank for

the purposes of the Bank Holding Company Act of 1956, as amended, and is specifically excluded from the definition of a bank in the Competitive Equality Banking Act of 1987 with given restrictions. It is therefore not subject to the Douglas Amendment restrictions on interstate banking.

⁴ The Bank Holding Company Act of 1956 (BHCA), as amended, defined a commercial bank subject to regulation under BHCA as one that accepted demand deposits and made commercial loans. If both of these conditions were not present, national or state chartered banks were not subject to regulation under BHCA, and became known as nonbank banks. The Competitive Equality Banking Act of 1987 redefined the term bank to include an FDIC-insured institution whether or not it accepted demand deposits or made commercial loans. Companies that had acquired nonbank banks on or before March 5, 1987 were grandfathered and were permitted to retain the bank and not be regulated as a bank holding company but were generally restricted to existing activities and limited to an annual rate of growth in assets of seven percent.

⁵ First National of Nebraska, Inc., Omaha, Nebraska, 69 *Federal Reserve Bulletin* 390 (May 1983).

⁶ First Kentucky National Corporation, Louisville, Kentucky, 70 *Federal Reserve Bulletin* 434 (May 1984).

⁷ Maryland National Corporation, Baltimore, Maryland, 68 *Federal Reserve Bulletin* 203 (March 1982).

⁸ First Maryland Bancorp, Baltimore, Maryland, 68 *Federal Reserve Bulletin* 320 (May 1982); Sovran Financial Corporation, Norfolk, Virginia, 72 *Federal Reserve Bulletin* 276 (April 1986).

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