Working Paper 9414

LOAN SALES: PACIFIC RIM TRADE IN NONTRADABLE ASSETS

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November 1994

ABSTRACT

Foreign banks play a large role in the loan sales market. We examine this role using individual bank data on foreign-owned banks in the United States. We find that the motives for loan sales and purchases differ between U.S. and foreign-owned banks and between foreign banks of different regions. The evidence is consistent with foreign banks' using the market for diversification.

I. Introduction

Amidst the trade in traditional goods, such as autos, rice, and Euroyen futures, nations along the Pacific Rim also trade an asset that quietly challenges banking everywhere: loans. Increasingly, banks of all sizes are selling their commercial and industrial loans. These sales take place without guarantees from the U.S. government or from the selling bank, and without being bundled into securities. The effect is that loans are removed both from the U.S. market and from the world banking system at large. The extensive trade in what once was thought a closely held asset confronts bank managers, regulators, and policymakers with the need to rethink the role banks play in the economy and the role government plays in the banking sector.[1]

To fully comprehend the loan sales market and its implications for financial intermediation, we need to understand the international side of the question. Large banks surveyed by the Federal Reserve in 1993 indicated that more than 85 percent of their loan sales went to foreign banks or to U.S. branches and agencies of foreign banks. With foreign banks approaching a dominant stance in the loan sales market, recognizing this force is key to understanding market pressures and the effect of regulations -- the need to diversify, binding capital requirements, or a shift in regional economies -- on the loan sales market. This, in turn, is a step toward understanding the basic institutional and technological changes that have allowed loan sales to become a feasible contract, and thus a suitable solution for these problems.

The loan sales market is also important in assessing the true position of international banks. Terrell (1993) reports that at the end of 1991:IQ, U.S. branches and agencies of foreign banks held $143.7 billion of commercial and industrial (C&I) loans to U.S. companies. Offshore branches of foreign banks held another $78.7 billion. All told, foreign banks held 32.8 percent of the U.S. C&I loan market. McCauley and Seth (1992) suggest that foreign bank penetration

[1] The loan sales market may also be the key for reconciling the results of studies that suggest banking is a declining industry, such as Gorton and Rosen (1992), with studies that suggest banking is still viable, such as Boyd and Gertler (1994).

of the U.S. C&I loan market is even higher, possibly as much as 45 percent of the total market at the end of 1991. These estimates, however, miss the distinction between loans held and loans originated and thereby overstate the foreign-bank involvement.

Operationally, because of data limitations we must approach international trade in loans in a roundabout manner. Using the available U.S. data, we examine how foreign-owned banks differ in their loan sales activity and how foreign conditions influence the market. By characterizing the determinants of loan sales and purchases, we hope to distinguish the important influences and motives for different types of banks. We use the individual bank data from the Federal Financial Institutions Examination Council's (FFIEC) Quarterly Reports of Condition and Income (call reports) to estimate the determinants of loan sales and purchases. The sample period includes the recent recession and downturn in the loan sales market and thus provides an opportunity to take a deeper look at these issues.

Our work builds on previous studies by Haubrich and Thomson (1993) and Demsetz (1993), once again using Tobit analysis. This explicitly takes into account the many banks that do not sell (or buy) loans without ignoring the information about the volume of those who do participate. Unfortunately, it also makes correcting for heteroskedasticity and autocorrelation more difficult than for linear regression.

The remainder of the paper proceeds as follows. The next section describes the basic details of the loan sales market, along with a simple theory we use to organize our thoughts on the subject. Section 3, the heart of the paper, presents the empirical results. Conclusions and suggestions for future work appear in section 4.

2. The Loan Sales Market

A bank sells a loan by promising its payment stream to the buyer.[2] In the most common type of loan sale (the participation), the original contract between the bank and the borrower stays in place, and the bank continues to collect payments, oversee the collateral, and examine the books. In many cases (termed silent participations), the borrower does not even know the loan has been sold.

Two legal and accounting issues shape the loan sales market: Banks want to remove the loan from their balance sheet and also desire to avoid federal securities laws. To take the loan off the balance sheet and treat the transaction like an asset sale rather than a borrowing, the bank must show that the risk of the loan has been shifted to the buyer. This means the entire loan must be sold off, that the bank can provide no recourse to the buyer, and that the loan must be sold to maturity. (See Morris [1991] or Gorton and Haubrich [1990] for more detail.)

Banks sell several different types of loans. A newsletter, *Asset Sales Report*, tracks loan sales for nine major banks. As of January 25, 1993, the total balance outstanding for this group was $58 billion--$5 billion in loans under a year and $53 billion in loans with maturities one year or more. Maturity has increased as the market has developed. In the early 1980s, the banks mainly sold short-term (under 90 days) domestic commercial and industrial (C&I) loans made to investment-grade (BBB or better) borrowers. Since then, maturity has lengthened and loans to lower-quality borrowers have predominated. Among large banks, the share of outstanding loans sold that were obligations to investment-grade borrowers had dropped to 37 percent by 1989.

Though many types of banks buy and sell loans, foreign banks have a particularly large share of the market. An August 1993 survey of large banks by the Federal Reserve (discussed in more detail below) indicated that U.S. branches and agencies of foreign banks bought 73 percent

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[2] More detailed information appears in Haubrich (1989), Gorton and Haubrich (1990), and Gorton (1991).

of loans sold and that foreign offices of foreign banks bought an additional 13 percent. Nonbank and even nonfinancial firms also buy loans, so that some loans leave the banking system entirely. Loan purchases by foreign banks and nonbank firms limit the scope of our empirical results, which depend on the bank call reports, and so our results are restricted to domestic banks (and insured domestic offices of foreign banks).

Another aspect of this market is its pricing structure. Prices of highly rated loans closely track commercial paper and the London interbank offered rate (LIBOR). Not surprisingly, yields on lower-rated loans show a greater spread. The August 2, 1993 issue of *Asset Sales Report* lists the spread between the 30-day A1/P1 loan sales yield and commercial paper as 0 basis points. At times, short-term loan sales even sell at a premium. For loans with a lower rating, A2/P2, the spread was 10 basis points.

As a basic framework in which to think about the issues surrounding loan sales, we use a simplified version of the model developed by Pennacchi (1988). [3] This model is a state-preference version of the Miller (1977) debt model as extended to banks by Orgler and Taggart (1983). Corporate income taxation gives a tax advantage to debt, but debt increases agency and bankruptcy costs, providing a determinate debt-to-equity ratio.

Apart from selling loans, banks have two sources of funds: deposits and equity. Deposits have a tax advantage in that their interest is deductible as a business expense, but have an additional cost of reserve requirements. Banks have a constraint on these funding sources, namely a capital requirement that the ratio of debt (such as deposits) to equity not exceed a certain limit. Without loan sales, the bank makes loans until the return on the loan, net of monitoring costs, equals the cost of funds needed to fund the loan.

[3] The interested reader can also find more details in our earlier paper, Haubrich and Thomson (1993). For somewhat different approaches, see Mester (1992), Carlstrom and Samolyk (1995), or Chen, Hung and Mazumdar (1993).

Loan sales introduce a new funding possibility. The bank can now make a loan and sell a fraction of it. This sold fraction is removed from the bank's balance sheet and is, in effect, funded by the loan buyer. Banks *sell* loans when they have a large supply of profitable loans relative to their funding and *buy* loans when they have a large supply of funding relative to their loan opportunities. That is, for a bank with a low supply of cheap core deposits, loan sales represent an alternative to purchasing funds in the competitive national deposit market.

A bank with a good supply of core deposits but with fewer profitable loan originations instead resorts to investing in the money market. Along with the Treasury bills, commercial paper, and bankers acceptances, some of the investment may go to loan purchases.

3. Empirical Results

Our goal in this section is to extend our earlier work on characterizing the determinants of loan sales and purchases--to find out what determines who buys, who sells, and for how much. Here, we take a closer look at foreign banks,, one of the issues left unresolved in our previous study.

Our main data source in this endeavor are the FFIEC's quarterly call reports. Our sample starts in March 1984, just after a major revision of the reports (this means ignoring quarterly loan sales data for December 1983), and ends in March 1993. Loan purchases start later, in 1987:IIQ. Foreign-owned banks are flagged via identifier number "Bank 9360," which counts foreign bank agencies and branches, and U.S. banks with foreign majority ownership.[4]

Figure 1 plots the aggregate level of all loans sold and loan sales by the branches and agencies of foreign banks. Figure 2 plots sales and purchases as a percentage of C&I loans. Note the explosion in the loan sales market between 1986 and 1988, and the subsequent collapse

[4] This identifier also picks up New York State investment companies and Edge Act corporations with a majority foreign ownership, but our sample excludes those types of corporations, both foreign and domestic. A branch can accept deposits from U.S. citizens, but an agency cannot. See Spong (1990), pp.134-35.

from 1989 to 1991. Foreign banks did not participate in this pattern, but did show tremendous growth in 1990. Also note the large difference between sales and purchases--indicating the many loans that flow from the U.S. banking system either overseas or to nonbanks.[5]

Figure 3 shows intriguing evidence of overseas influence on the market, in the similarity between loan sales and the Nikkei index. This suggests the possibility that over the past decade, Japanese banks were major demanders of loans, and that their purchases corresponded to the level of hidden reserves they possessed.[6]

Berger and Udell (1992), Demsetz (1993), and Haubrich and Thomson (1993) suggest that a substantial portion of the run-up and subsequent decline of loan sales volume in late 1980s can be accounted for by the behavior of two banks: Security Pacific National Bank and Trust Company and Bankers Trust of New York. Figure 4 shows that controlling for Security Pacific and Bankers Trust is important in understanding the growth and collapse of this market.

Figure 5 plots loan purchases as a percentage of C&I loans. For domestic banks, this share was relatively flat from 1988 through the end of 1991, with an upward trend from the first quarter of 1992 through the end of 1993. Foreign-controlled banks show a somewhat different pattern, as their loan purchases as a share of C&I loans declined from the second quarter of 1988 through the third quarter of 1991 and increased thereafter.

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[5] One popular explanation links the loan sales market with the mergers and acquisitions (M&A) market. However, Haubrich and Thomson (1993) show that M&A volume was simply too small to account for the level of loan sales. Furthermore, the level of M&As cannot explain either the rise or fall of loan sales volume.

[6] Unlike U.S. banks, Japanese banks are allowed to own equities. Stocks are recorded on the balance sheet at acquisition cost, not at market value. Therefore, capital gains and losses on the Japanese banks' stock portfolio are not reflected in book equity and represent a "hidden reserve." When the international risk-adjusted capital standards were adopted in 1988, Japanese banks were allowed to count 50 percent of the net unrecorded gains on their stock portfolios toward Tier 1 capital.

A. Call Report Data

The empirical work using the call reports runs the dependent variable, loan sales or loan purchases, against a set of independent variables that proxy for individual bank characteristics and market conditions. We first use the entire available sample for loan sales and purchases. We next use a more restricted time period for which we have data on off-balance-sheet items and on highly leveraged transactions. This gives us more explanatory variables but a shorter time frame. Table 1 outlines variable definitions for the econometric work. Table 2 presents summary statistics for domestic banks and foreign-controlled banks for the end of 1992.

To provide a benchmark case, we first ran ordinary least squares. While the parameter estimates were all highly significant, the R^2 is extremely low. This result is not so surprising, because many banks do not sell loans: Of the 488,000 observations, 301,000 had no loan sales. In the interest of space those results are not reported here.

Econometrically correcting for the large number of zero observations for the dependent variable required the use of a limited dependent variable method. We use Tobit, instead of logit or probit, because we do not wish to ignore the information about the quantity of loans sold (or bought).[7] Figure 6 shows the importance of this distinction. The variation in sales comes not from changes in the number of banks selling, but rather in the volume of loans sold by banks in the market. A greater percentage of foreign banks sell loans than the national average; however, the major increase in sales volume coincided with a major *decrease* in the percent selling.

Loan Sales

We estimate the model over the entire sample, a subsample restricted to domestic banks, and a foreign-controlled bank subsample. The full sample results are not significantly different, statistically or economically, from those of the domestic sample. Therefore, in the interest of

[7] For other interesting approaches, see Pavel and Phillis (1987) and Berger and Udell (1992).

space they are not reported here. The interested reader is referred to Haubrich and Thomson (1993) for a detailed discussion of the model and the empirical results.

Table 3 presents the estimated and expected signs for the loan sales equation. The dependent variable, LSRAT (the ratio of loans sold to total assets) is regressed against 19 independent variables. Definitions of the variables used in the study can be found in table 1. Five of these are dummy variables to control for different size classes of banks. Another five dummy variables indicate the banks' regional location (Southeast, Midwest, High Plains, Southwest, and West). Seven variables (CAPRAT, HOTRAT, HOLDCO, TTASS, CHRRAT, NLRAT, and NETIMARG) are introduced to proxy for individual bank characteristics. These variables capture banks' size, capital position, use of the national money market, and position on lending. They act as a natural starting place for an examination of the determinants of loan sales. Finally, TSPRD and BAASPRD are included to proxy for general market conditions.

Our focus is on how the loan sales determinants differ between domestic and foreign-controlled institutions. We first split the sample and compared the results. How differently do foreign banks behave? Panels A and B of table 4 address this question, reporting the results of the Tobit specification run on domestic banks only and on foreign banks.

The first noticeable difference is the effect of size. For domestic banks, the coefficients on the size dummies (DSZ1-DSZ5) and on TTASS (the log of total assets) are negative and significant. The size dummies indicate a positive relationship between size and loan sales. However, the negative coefficient on TTASS suggests that within a particular size class, the larger a bank becomes, the fewer loans it sells. In the foreign bank sample, the dummies indicate that large foreign banks sell relatively fewer loans than do smaller banks. Interestingly, however, the coefficient on total assets also reverses sign, so it appears that within a given size class, larger foreign banks do sell more.

Two other coefficients change sign. The Southeast dummy becomes negative and turns insignificant for foreign banks, as does the net interest margin. Haubrich and Thomson (1993) argue that high net interest margins indicate a bank with a good supply of profitable loan opportunities. Therefore, the positive and significant coefficient on the net interest margin for the domestic subsample suggests that a bank with good lending opportunities makes a lot of loans, some of which it sells and some of which it keeps on its balance sheet. On the other hand, the insignificant coefficient on NETIMARG supports the idea that foreign banks have somewhat different incentives to sell loans. Perhaps they sell loans to parents overseas, and the diversification factor predominates, making the relative supply and demand story less important.

The most striking change, though not involving a sign reversal, occurs on the coefficient for CAPRAT, the capital ratio. At a level of -0.024 for domestic banks, it attains -0.177 for the foreign banks, and the difference is significant at the 1 percent level. The negative and significant relationship between capital and loan sales is consistent with Pennacchi's (1988) theoretical model and with Haubrich and Thomson (1993). A decrease in capital has a much larger effect on loan sales for foreign banks. This may result from a greater concern with capital adequacy among foreign banks, but it also suggests that these banks use the loan sales market more aggressively to adjust their leverage. In addition, to the extent that foreign banks sell these loans to their overseas parent banks or to offshore international bank facilities, the significant effect of capital on loan sales is consistent with the use of this market to reallocate assets within the parent company in order to minimize funding costs (see McCauley and Seth [1992]).

The distinctiveness of foreign banks is confirmed by looking at the shorter period for which we have data on highly leveraged transactions, reported in table 5. The data for highly leveraged transactions exist only from 1991:IQ to 1992:IIIQ. Two aspects of the HLT equations stand out. The coefficient on the capital ratio again becomes larger and economically more significant in the foreign bank equation. It likewise retains its negative sign in the HLT sample,

unlike domestic banks, for which CAPRAT switches signs to positive in moving from the full sample to the HLT sample. Only foreign banks show a statistically significant coefficient on *both* new variables, HLTRAT and OFFRAT. The general importance of HLT activity most likely represents a "merchant banking" stance of several banks, which engage in a variety of highly technical financial activities, including loan sales. More directly, because HLT loans are more apt to be sold, a large presence in the HLT market indicates a propensity to sell loans. The importance of OFFRAT in the foreign bank equation shows that for foreign banks, at least, these are conceptually different activities and suggests that foreign banks which pursue off-balance-sheet activities more aggressively will also sell more loans.

Loan Purchases

The equations for loan purchases are estimated over a shorter sample period because data on purchases are not available until 1987:IIQ. Tobit analysis again is the appropriate estimation technique because most banks did not purchase loans, though foreign-controlled banks were more likely to have done so, as figure 7 indicates.

Table 6 presents the expected and estimated signs for the loan purchase equation. Table 7 again splits the banks, with panel A reporting the Tobit purchase results for domestic banks, and panel B for foreign banks. Once again, notice that the foreign sample is much smaller and therefore less precisely estimated.

Except for some size dummies, the results for domestic banks look almost identical to those for the full sample. Therefore, the full sample results are not presented here (again, the interested reader is referred to Haubrich and Thomson for a detailed discussion of the model). The results for the foreign banks are markedly different from the domestic bank results, especially in the capital and the market measures. CAPRAT changes sign, to positive, and is no longer statistically significant. The market variables, TSPRD and BAASPRD, also lose their significance. Once again, foreign banks respond differently to important motives in a way

consistent with a more single-minded pursuit of diversification. In addition, their exposure to other markets may make our interest-rate proxy less relevant to their true problem.

The ratio of loan sales to assets (LSRAT) for foreign banks drops markedly in significance and its coefficient is considerably smaller, 0.073, than for the domestic bank sample (1.816). This probably reflects the larger size and greater involvement of foreign banks in trading activities. Another reason may be the use of loan purchases by foreign banks to build loan volume and market share.

The results for the HLT sample mirror most of these changes, as the shift in CAPRAT and the loss of significance of market variables in table 8 make clear. In addition, the charge-off ratio changes sign and becomes insignificant. For domestic banks, the negative charge-off coefficient clearly points to a "comparative advantage" explanation for loan purchases. Some banks excel at identifying and investing in loans; the positive coefficient on net loans and leases supports this. Foreign banks as a group, however, are probably not in this class. They may find it more difficult to acquire the expertise and, as mentioned before, the diversification motive may predominate, swamping the differences in relative ability. For the HLT variables themselves, even with the smaller sample size, the foreign bank equation shows significant coefficients for both off-balance-sheet volume and highly leveraged transactions.

B. Equity Influences

Earlier, figure 3 suggested a connection between loan sales and Japanese stock prices. The connection makes sense, because stock prices affect the level of "hidden reserves" that augment the capital position of Japanese banks. With a strong capital position, the banks could lend to a great extent, putting them in the market for U.S. loans. As hidden reserves fall, bank lending declines, depressing the market for loans.

Table 9 investigates this possibility a bit more systematically. It reports yet another Tobit regression, adding stock market indices for Japan, Hong Kong, Seoul, and Singapore. It also adds dummies for the home country of foreign-controlled banks in the United States--Britain, Canada, Latin America, Japan, other East Asia, and other Asia.

Table 9 reports some intriguingly paradoxical results. Despite the large presence of the Japanese banks in the loan sales market, the dummy for Japan enters with a negative sign: Everything else equal (which it isn't), Japanese banks sell fewer loans. This is perhaps less of a paradox than it initially appears. It suggests that many countries do not repatriate loans directly from their U.S. affiliate, but buy them in the larger market. The split between the negative correlation of Japanese, European, and other East Asian banks and the positive correlation of Canadian and Latin American banks may bear this out, as the New World banks may find it easier to obtain the information necessary to originate loans in the United States. The other banks find it easier to buy loans originated by other banks.

Additional insight into the Japanese-owned bank results can be found in McCauley and Seth (1992). In looking at the holdings of U.S. commercial loans by on- and offshore affiliates of foreign banks, these authors found that the Japanese banks held most of their U.S. corporate loans on the books of their onshore affiliates. Therefore, Japanese-owned banks in the United States are less likely to use the loan sales market to transfer assets to offshore banking facilities than are other foreign bank subsidiaries. Clearly, offshore booking of C&I loans by foreign banks accounts for some of the difference between the volume of loans sold and purchased by domestically chartered banks in the United States.

Despite the apparent correlation of aggregate values in figure 3, loan sales on the individual bank level show a *negative* relation with the Nikkei index. Statistically, the coefficient is highly significant, but no general pattern emerges across the other indices. The message of

figure 3, then, is debunked. The most likely explanation is that these market indices correlate with macroeconomic and trade variables that influence the level of loan sales.

5. Conclusion

Loan sales prefigure major changes in the role of banks as intermediaries. Fully comprehending this change requires understanding the forces driving the loan sales market. Foreign banks and their domestic branches play a distinctive role, which we analyze by looking at the determinants of loan sales and purchases.

This micro-level approach yields several insights missed by considering aggregate levels. For example, despite the large presence of Japanese banks in the market, everything else equal, Japanese banks sell fewer of the loans than do domestic banks. Likewise, despite an impressive casual correlation between the Nikkei index and loan sales, on an individual bank level, the relation is actually negative.

Foreign banks often respond differently than do domestic banks to the determinants of loan sales and purchases. In some ways, most notably with respect to capital, they show themselves to be more sensitive than domestic banks. In other ways, such as charge-offs and bond market conditions, they show themselves to be less sensitive. It would make little sense to fit the many disparate results to a Procrustean bed, but the evidence broadly fits a consistent interpretation of the market. Foreign banks use loan sales as a diversification tool, perhaps having more to gain. This strategy makes them less sensitive to nuances that U.S. banks find more important, such as the term structure or their relative expertise in originating loans.

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TABLE 1: Variable Definitions

LSRAT	The ratio of loans sold to total assets.
LBRAT	The ratio of loans purchased to total assets.
DUMSE	Dummy variable for banks located in the Southeast. Equals 1 if the bank is in the Richmond or Atlanta Federal Reserve District.
DUMMW	Dummy variable for banks located in the Midwest. Equals 1 if the bank is in the Cleveland, Chicago, or St. Louis Federal Reserve District.
DUMHP	Dummy variable for banks located on the High Plains. Equals 1 if the bank is in the Minneapolis or Kansas City Federal Reserve District.
DUMSW	Dummy variable for banks located in the Southwest. Equals 1 if the bank is in the Dallas Federal Reserve District.
DUMWE	Dummy variable for banks located in the West. Equals 1 if the bank is in the San Francisco Federal Reserve District.
DSZ1	Dummy variable for size. Equals 1 if total assets are less than $50 million, and 0 otherwise.
DSZ2	Dummy variable for size. Equals 1 if total assets are between $50 million and $100 million, and 0 otherwise.
DSZ3	Dummy variable for size. Equals 1 if total assets are between $100 million and $500 million, and 0 otherwise.
DSZ4	Dummy variable for size. Equals 1 if total assets are between $500 million and $1 billion, and 0 otherwise.
DSZ5	Dummy variable for size. Equals 1 if total assets are between $1 billion and $5 billion, and 0 otherwise.
CAPRAT	The ratio of bank capital to total assets.
HOTRAT	The ratio of "hot" funds to total assets, that is, deposits above $100,000, brokered deposits, foreign deposits, and Fed funds purchased.

HOLDCO	A dummy variable that equals 1 if the bank is part of a holding company, 0 if it is not.
TTASS	The log of total assets.
CHRRAT	The ratio of total charge-offs net of recoveries (a measure of losses on loans) to total assets.
NLRAT	The ratio of net loans and leases to total assets.
NETIMARG	The net interest margin of the bank: total interest income less total interest costs all divided by total assets.
TSPRD	The spread between 30-year Treasury bonds and 90-day Treasury bills at the beginning of each quarter.
BAASPRD	The spread between Standard & Poor's Baa bond portfolio and 90-day Treasury bills.
OFFRAT	The ratio of off-balance-sheet activities, exclusive of loan sales, to total assets.
HLTRAT	The ratio of loans for highly leveraged transactions to total assets.
DUMBRI	Dummy variable equal to 1 if foreign parent is located in the British Isles, 0 otherwise.
DUMCAN	Dummy variable equal to 1 if foreign parent is located in Canada, 0 otherwise.
DUMEUR	Dummy variable equal to 1 if foreign parent is located in continental Europe, 0 otherwise.
DUMLAT	Dummy variable equal to 1 if foreign parent is located in Latin America, 0 otherwise.
DUMJAP	Dummy variable equal to 1 if foreign parent is located in Japan, 0 otherwise.
DUMOAS	Dummy variable equal to 1 if foreign parent is located in the Middle East, zero otherwise.
DUMOEAS	Dummy variable equal to 1 if foreign parent is located in a Pacific Rim nation exluding Japan, or in India, zero otherwise.

JAPIND	The NIKKEI 225 Stock Average. Price-weighted average of 225 stocks listed in the first section of the Tokyo Exchange (account for 60 percent of market value of listed stocks).
HKONGIND	The Hong Kong Hang Seng Stock Index. Capitalization-weighted index of 33 highly capitalized stocks from the Hong Kong Stock Exchange.
SEOULIND	The Seoul Composite Index. Capitalization-weighted index of all listed companies on the Korea Stock Exchange.
SINGIND	The Singapore SES All-Singapore Index. Capitalization-weighted index of all shares trading on the Singapore Stock Exchange.

TABLE 2: Summary Statistics as of Year-End 1992

A. Domestic Banks

Total Assets ($ millions)	Number of Banks	Total Assets[a]	Loan Sales[a]		Loan Purchases[a]	
$0 < X < 50$	5490	147.93	1.34	(0.91)[b]	1.21	(0.82)[b]
$50 \leq X < 100$	2764	195.77	1.12	(0.57)	0.64	(0.33)
$100 \leq X < 500$	2488	489.33	4.02	(0.82)	1.85	(0.38)
$500 \leq X < 1000$	241	169.45	1.04	(0.61)	0.58	(0.34)
$1000 \leq X < 5000$	251	568.32	3.82	(0.67)	3.37	(0.59)
$5000 \leq X$	98	1748.29	97.60	(5.58)	11.99	(0.69)

B. Foreign Banks

Total Assets ($ millions)	Number of Banks	Total Assets[a]	Loan Sales[a]		Loan Purchases[a]	
$0 < X < 50$	4	0.11	0.001	(0.91)[b]	0.00056	(0.51)[b]
$50 \leq X < 100$	8	0.59	0.010	(1.69)	0.00	(0)
$100 \leq X < 500$	37	9.79	0.045	(0.46)	0.041	(0.42)
$500 \leq X < 1000$	9	6.59	0.062	(0.94)	0.04	(0.61)
$1000 \leq X < 5000$	13	26.18	1.36	(5.19)	0.15	(0.57)
$5000 \leq X$	13	119.50	3.32	(2.78)	0.68	(0.57)

a. Total assets, loan sales, and loan purchases are in billions of dollars.
b. Numbers in parentheses are sales and purchases as a percentage of total assets.
SOURCE: FFIEC Quarterly Reports of Condition and Income, December 1992.

TABLE 3: Estimated and Expected Signs
Loan Sales--Tobit Regressions

Proxy Variable	Expected Sign	Haubrich & Thomson	Domestic Banks	Foreign Banks
DSZ1	?	-	-	+†
DSZ2	?	-	-	+†
DSZ3	?	-	-	+†
DSZ4	?	-	-	+†
DSZ5	?	-	-	+*†
DUMSE	?	+	+	-*†
DUMHP	?	+	+	+†
DUMMW	?	+	+	+†
DUMSW	?	+	+	NA[a]
DUMWE	?	+	+	+†
CAPRAT	-	-	-	-†
HOTRAT	+	+	+	+†
HOLDCO	+	+	+	+†
TTASS	?	-	-	+
CHRRAT	-	-*	-*	-*
NLRAT	+	+	+	+†
TSPRD	-	-	-	-
BAASPRD	+	+	+	-
NETIMARG	+	+	+	-*‡

NOTES: a. The DUMSW was excluded from the foreign bank Tobits to avoid a singular matrix.
* Insignificant at the 5 percent level.
† Significantly different from the domestic bank sample at the 1 percent level.
‡ Significantly different from the domestic bank sample at the 5 percent level.
SOURCES: Authors' calculations and Haubrich and Thomson (1993).

TABLE 4: Loan Sales, Full Sample
A. Tobit Regressions, Domestic Banks Only

Total Values = 484,874
Left Censored Values = 299,627
Log Likelihood for Normal -132,370

Variable	Estimate	Std Err	t Stat	PR>t
Intercept	-0.249	0.0169	-14.8	0.0000
DSZ1	-0.199	0.0076	-26.2	0.0000
DSZ2	-0.201	0.0069	-29.3	0.0000
DSZ3	-0.172	0.0063	-27.3	0.0000
DSZ4	-0.118	0.0064	-18.7	0.0000
DSZ5	-0.087	0.0059	-14.8	0.0000
DUMSE	0.011	0.0023	4.6	0.0000
DUMHP	0.114	0.0023	50.3	0.0000
DUMMW	0.079	0.0022	36.0	0.0000
DUMSW	0.108	0.0024	45.0	0.0000
DUMWE	0.080	0.0027	29.6	0.0000
CAPRAT	-0.024	0.0107	-2.2	0.0364
HOTRAT	0.087	0.0040	21.9	0.0000
HOLDCO	0.057	0.0011	52.7	0.0000
TTASS	-0.007	0.0010	-7.3	0.0000
CHRRAT	-0.078	0.0560	-1.4	0.1616
NLRAT	0.344	0.0035	98.9	0.0000
TSPRD	-0.014	0.0013	-11.2	0.0000
BAASPRD	0.017	0.0013	13.3	0.0000
NETIMARG	0.078	0.0247	3.2	0.0016
SIGMA	0.25637	0.0004		

TABLE 4: Loan Sales, Full Sample
B. Tobit Regressions, Foreign Banks Only

Total Values = 3,071
Left Censored Values = 1,509
Log Likelihood for Normal -106.19

Variable	Estimate	Std Err	t Stat	PR>t
Intercept	-0.952	0.1409	-6.8	0.0000
DSZ1	0.116	0.0509	2.3	0.0233
DSZ2	0.114	0.0436	2.6	0.0089
DSZ3	0.064	0.0325	2.0	0.0483
DSZ4	0.071	0.0260	2.7	0.0066
DSZ5	0.020	0.0167	1.2	0.2289
DUMSE	-0.003	0.0175	-0.2	0.8497
DUMHP	0.075	0.0202	3.7	0.0002
DUMMW	0.102	0.0111	9.3	0.0000
DUMSW	NA	NA	NA	NA
DUMWE	0.038	0.0090	4.2	0.0000
CAPRAT	-0.177	0.0594	-3.0	0.0028
HOTRAT	0.038	0.0159	2.4	0.0169
HOLDCO	0.091	0.0276	3.3	0.0009
TTASS	0.040	0.0086	4.6	0.0000
CHRRAT	-0.182	0.4395	-0.4	0.6792
NLRAT	0.219	0.0226	9.7	0.0000
TSPRD	-0.040	0.0098	-4.1	0.0000
BAASPRD	0.040	0.0100	4.0	0.0001
NETIMARG	-0.270	0.2551	-1.1	0.2904
SIGMA	0.1653	0.00306		

SOURCE: Authors' calculations.

TABLE 5: Loan Sales, HLT Sample
A. Domestic Banks Only

Total Values = 71,089
Left Censored Values = 45,537
Log Likelihood for Normal 879.41

Variable	Estimate	Std Err	t Stat	PR > t
Constant	-0.224	0.0238	-9.4	0.0000
DSZ1	-0.103	0.0089	-11.5	0.0000
DSZ2	-0.101	0.0080	-12.6	0.0000
DSZ3	-0.090	0.0073	-12.3	0.0000
DSZ4	-0.058	0.0070	-8.1	0.0000
DSZ5	-0.049	0.0064	-7.6	0.0000
DUMSE	0.011	0.0027	4.1	0.0000
DUMHP	0.068	0.0027	25.5	0.0000
DUMMW	0.052	0.0025	20.6	0.0000
DUMSW	0.038	0.0030	12.5	0.0000
DUMWE	0.040	0.0031	12.8	0.0000
CAPRAT	0.032	0.0118	2.7	0.0062
HOTRAT	0.102	0.0049	20.8	0.0000
HOLDCO	0.024	0.0013	18.3	0.0000
TTASS	-0.008	0.0012	-6.8	0.0000
CHRRAT	1.972	0.0697	28.3	0.0000
NLRAT	0.126	0.0041	30.5	0.0000
OFFRAT	0.000	0.0003	0.1	0.8441
HLTRAT	0.145	0.0450	3.2	0.0012
TSPRD	-0.036	0.0031	-11.6	0.0000
BAASPRD	0.058	0.0045	12.8	0.0000
NETIMARG	0.885	0.0568	15.5	0.0000
SIGMA	0.113	0.0005		

TABLE 5: Loan Sales, HLT Sample
B. Foreign Banks Only

Total Values = 532
Left Censored Values = 299
Log Likelihood for Normal 251.70

Variable	Estimate	Std Err	t Stat	PR > t
Constant	-0.500	0.1233	-4.0	0.0001
DSZ1	0.077	0.0406	1.9	0.0567
DSZ2	0.096	0.0339	2.8	0.0047
DSZ3	0.040	0.0248	1.6	0.1091
DSZ4	0.036	0.0199	1.8	0.0686
DSZ5	0.006	0.0129	0.4	0.6429
DUMSE	-0.028	0.0138	-2.0	0.0417
DUMHP	-0.020	0.0213	-0.9	0.3455
DUMMW	0.030	0.0094	3.1	0.0014
DUMWE	-0.018	0.0084	-2.1	0.0304
CAPRAT	-0.311	0.0883	-3.5	0.0004
HOTRAT	0.085	0.0140	6.0	0.0000
HOLDCO	0.077	0.0223	3.4	0.0005
TTASS	0.015	0.0065	2.3	0.0198
CHRRAT	1.360	0.3053	4.4	0.0000
NLRAT	0.047	0.0194	2.4	0.0152
OFFRAT	0.001	0.0004	3.3	0.0009
HLTRAT	0.074	0.0247	2.9	0.0029
TSPRD	-0.020	0.0147	-1.3	0.1824
BAASPRD	0.037	0.0214	1.7	0.0813
NETIMARG	0.509	0.2939	1.7	0.0836
SIGMA	0.048	0.0023		

SOURCE: Authors' calculations.

TABLE 6: Estimated and Expected Signs
Loan Purchases, Tobit Regressions

Proxy Variable	Expected Sign	Haubrich & Thomson	Domestic Banks	Foreign Banks
DSZ1	?	-	+	+*
DSZ2	?	-	+	-*
DSZ3	?	-	+*	-*
DSZ4	?	+*	+	-*†
DSZ5	?	+	+	-*†
DUMSE	?	+	+	-*†
DUMHP	?	+	+	+*†
DUMMW	?	+	+	+†
DUMSW	?	+	+	NA[a]
DUMWE	?	+	+	-†
CAPRAT	+	-	-	+*
HOTRAT	-	-	-	-†
HOLDCO	+	+	+	+‡
TTASS	?	+	+	+‡
CHRRAT	-	-	-	-*†
NLRAT	+	+	+	+†
TSPRD	+	+	+	-*
BAASPRD	-	-	-	-*
NETIMARG	-	-	-	-*
LSRAT	+	+	+	+†

NOTES: a. DUMSW was excluded to avoid a singular matrix.
* Insignificant at the 5 percent level.
† Significantly different from the domestic bank sample at the 1 percent level.
‡ Significantly different from the domestic bank sample at the 5 percent level.
SOURCES: Authors' calculations and Haubrich and Thomson (1993).

TABLE 7: Loan Purchases, Full Sample
A. Tobit Regressions, Domestic Banks Only

Total Values = 299,384
Left Censored Values =207,693
Log Likelihood for Normal -19,913

Variable	Estimate	Std Err	t Stat	PR>t
Intercept	-0.280	0.0132	-21.1	0.0000
DSZ1	-0.010	0.0057	-1.6	0.1045
DSZ2	-0.010	0.0051	-1.9	0.0579
DSZ3	-0.003	0.0046	-0.7	0.5050
DSZ4	0.023	0.0045	5.1	0.0000
DSZ5	0.048	0.0041	11.7	0.0000
DUMSE	0.043	0.0019	23.4	0.0000
DUMHP	0.091	0.0018	49.4	0.0000
DUMMW	0.068	0.0018	38.8	0.0000
DUMSW	0.083	0.0020	41.6	0.0000
DUMWE	0.055	0.0022	25.3	0.0000
CAPRAT	-0.105	0.0087	-12.0	0.0000
HOTRAT	-0.024	0.0031	-7.5	0.0000
HOLDCO	0.040	0.0009	45.8	0.0000
TTASS	0.008	0.0008	10.9	0.0000
CHRRAT	-2.430	0.0614	-39.6	0.0000
NLRAT	0.064	0.0026	24.4	0.0000
TSPRD	0.009	0.0014	6.6	0.0000
BAASPRD	-0.010	0.0014	-7.0	0.0000
NETIMARG	-0.998	0.0300	-33.2	0.0000
LSRAT	1.816	0.0015	409.5	0.0000
SIGMA	0.143	0.0003		

TABLE 7: Loan Purchases, Full Sample
B. Tobit Regressions, Foreign Banks Only

Total Values = 2,121
Left Censored Values = 1,359
Log Likelihood for Normal 609.09

Variable	Estimate	Std Err	t Stat	PR>t
Intercept	-0.153	0.0567	-2.7	0.0069
DSZ1	0.022	0.0196	1.1	0.2717
DSZ2	-0.006	0.0169	-0.4	0.7053
DSZ3	-0.009	0.0126	-0.7	0.4869
DSZ4	-0.010	0.0101	-0.9	0.3470
DSZ5	-0.012	0.0066	-1.9	0.0587
DUMSE	-0.003	0.0069	-0.5	0.6409
DUMHP	0.010	0.0083	1.2	0.2353
DUMMW	0.016	0.0041	4.0	0.0001
DUMSW	NA	NA	NA	NA
DUMWE	-0.014	0.0038	-3.6	0.0003
CAPRAT	0.007	0.0157	0.4	0.6780
HOTRAT	-0.030	0.0070	-4.2	0.0000
HOLDCO	0.053	0.0164	3.2	0.0012
TTASS	0.006	0.0033	1.9	0.0612
CHRRAT	-0.514	0.1902	-2.7	0.0069
NLRAT	0.018	0.0083	2.2	0.0291
TSPRD	-0.005	0.0056	-0.8	0.4161
BAASPRD	0.004	0.0057	0.8	0.4529
NETIMARG	-0.523	0.1086	-4.8	0.0000
LSRAT	0.073	0.0195	3.7	0.0002
SIGMA	0.051	0.0014		

SOURCE: Authors' calculations.

TABLE 8: Loan Purchases, HLT Sample
A. Domestic Banks Only

Total Values = 71,089
Left Censored Values = 49,155
Log Likelihood for Normal 9,765

Variable	Estimate	Std Error	t-stat	PR > t
Constant	-0.028	0.0149	-1.9	0.0593
DSZ1	-0.025	0.0054	-4.7	0.0000
DSZ2	-0.027	0.0048	-5.5	0.0000
DSZ3	-0.025	0.0044	-5.8	0.0000
DSZ4	-0.010	0.0042	-2.5	0.0133
DSZ5	-0.6E-4	0.0038	-0.02	0.9872
DUMSE	0.023	0.0018	13.0	0.0000
DUMHP	0.053	0.0018	30.5	0.0000
DUMMW	0.040	0.0017	23.7	0.0000
DUMSW	0.034	0.0019	17.4	0.0000
DUMWE	0.033	0.0020	15.9	0.0000
CAPRAT	-0.059	0.0084	-7.1	0.0000
HOTRAT	0.027	0.0030	9.0	0.0000
HOLDCO	0.020	0.0008	23.8	0.0000
TTASS	0.002	0.0007	2.1	0.0396
CHRRAT	-0.250	0.0477	-5.2	0.0000
NLRAT	0.045	0.0025	18.2	0.0000
OFFRAT	0.002	0.0007	2.3	0.0216
HLTRAT	0.096	0.0250	3.8	0.0001
LSRAT	0.152	0.0045	34.0	0.0000
TSPRD	0.021	0.0021	10.0	0.0000
BAASPRD	-0.030	0.0030	-10.0	0.0000
NETIMARG	-0.490	0.0422	-11.6	0.0000
SIGMA	0.066	0.0003		

TABLE 8: Loan Purchases, HLT Sample
B. Foreign Banks Only

Total Values = 532
Left Censored Values = 376
Log Likelihood for Normal 213.13

Variable	Estimate	Std Err	t Stat	PR > t
Constant	0.050	0.0712	0.7	0.4783
DSZ1	-0.032	0.0223	-1.4	0.1489
DSZ2	-0.044	0.0192	-2.3	0.0211
DSZ3	-0.028	0.0140	-1.9	0.0486
DSZ4	-0.023	0.0112	-2.1	0.0399
DSZ5	-0.014	0.0075	-1.9	0.0621
DUMSE	-0.4E-3	0.0073	-0.1	0.9521
DUMHP	0.011	0.0105	1.0	0.2953
DUMMW	0.014	0.0053	2.5	0.0110
DUMWE	0.003	0.0050	0.6	0.5371
CAPRAT	-0.131	0.0500	-2.6	0.0086
HOTRAT	-0.007	0.0087	-0.8	0.4403
HOLDCO	0.023	0.0138	1.6	0.101
TTASS	-0.005	0.0036	-1.5	0.1364
CHRRAT	0.273	0.1797	1.5	0.1282
NLRAT	-0.003	0.0115	-0.3	0.7874
OFFRAT	0.8E-3	0.0002	3.6	0.0003
HLTRAT	0.033	0.0146	2.2	0.0254
LSRAT	0.007	0.0483	0.1	0.8814
TSPRD	-0.002	0.0089	-0.2	0.8326
BAASPRD	0.005	0.0131	0.4	0.7077
NETIMARG	-0.159	0.1946	-0.8	0.4131
SIGMA	0.025	0.0016		

SOURCE: Authors' calculations.

TABLE 9: Foreign Stock Markets and Loan Sales

Total Values = 168,258
Left Censored Values = 107,149
Log Likelihood for Normal -71,505

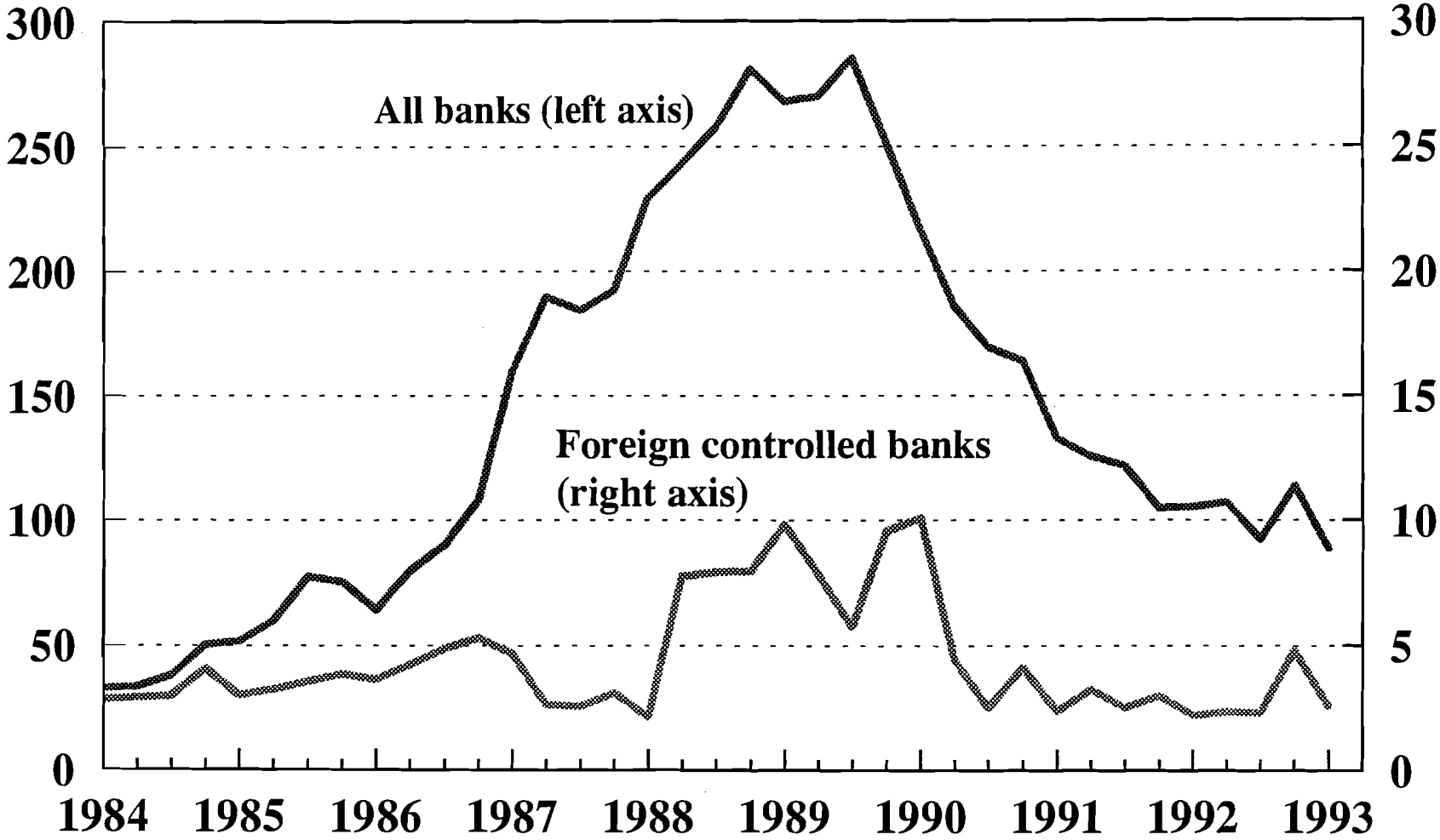
Variable	Estimate	Std Err	t Stat	PR > t
Constant	-0.303	0.0504	-6.0	0.0000
DSZ1	-0.283	0.0194	-14.6	0.0000
DSZ2	-0.282	0.0173	-16.4	0.0000
DSZ3	-0.246	0.0154	-16.0	0.0000
DSZ4	-0.153	0.0150	-10.3	0.0000
DSZ5	-0.119	0.0135	-8.8	0.0000
DUMSE	0.026	0.0060	4.3	0.0000
DUMMW	0.142	0.0056	25.3	0.0000
DUMHP	0.193	0.0059	32.6	0.0000
DUMSW	0.123	0.0067	18.4	0.0000
DUMWE	0.125	0.0068	18.4	0.0000
CAPRAT	0.004	0.0275	0.1	0.8977
HOTRAT	0.225	0.0121	18.7	0.0000
HOLDCO	0.081	0.0030	27.2	0.0000
TTASS	-0.012	0.0027	-4.4	0.0000
CHRRAT	0.006	0.1522	0.0	0.9707
NLRAT	0.448	0.0092	48.6	0.0000
RECESS	-0.023	0.0096	-2.4	0.0145
TSPRD	-0.048	0.0183	-2.6	0.0087
BAASPRD	0.025	0.0153	1.6	0.0993
NETIMARG	0.082	0.0549	1.5	0.1377
DUMBRI	0.008	0.0370	0.2	0.8295
DUMCAN	0.051	0.0296	1.7	0.0864
DUMEUR	-0.081	0.0298	-2.7	0.0067
DUMJAP	-0.085	0.0286	-3.0	0.0029
DUMLAT	0.049	0.0437	1.1	0.2609
DUMOAS	0.033	0.0628	0.5	0.5944
DUMOEAS	-0.272	0.0460	-5.9	0.0000
JAPIND	-0.3E-5	0.7E-6	-4.8	0.0000
HKONGIND	0.2E-4	0.5E-5	3.2	0.0015
SEOLIND	0.2E-3	0.2E-4	8.2	0.0000
SINGIND	-0.3E-3	0.8E-4	-3.8	0.0001
SIGMA	0.392	0.0011		

SOURCE: Authors' calculations.

Figure 1

LOAN SALES

Billions of dollars

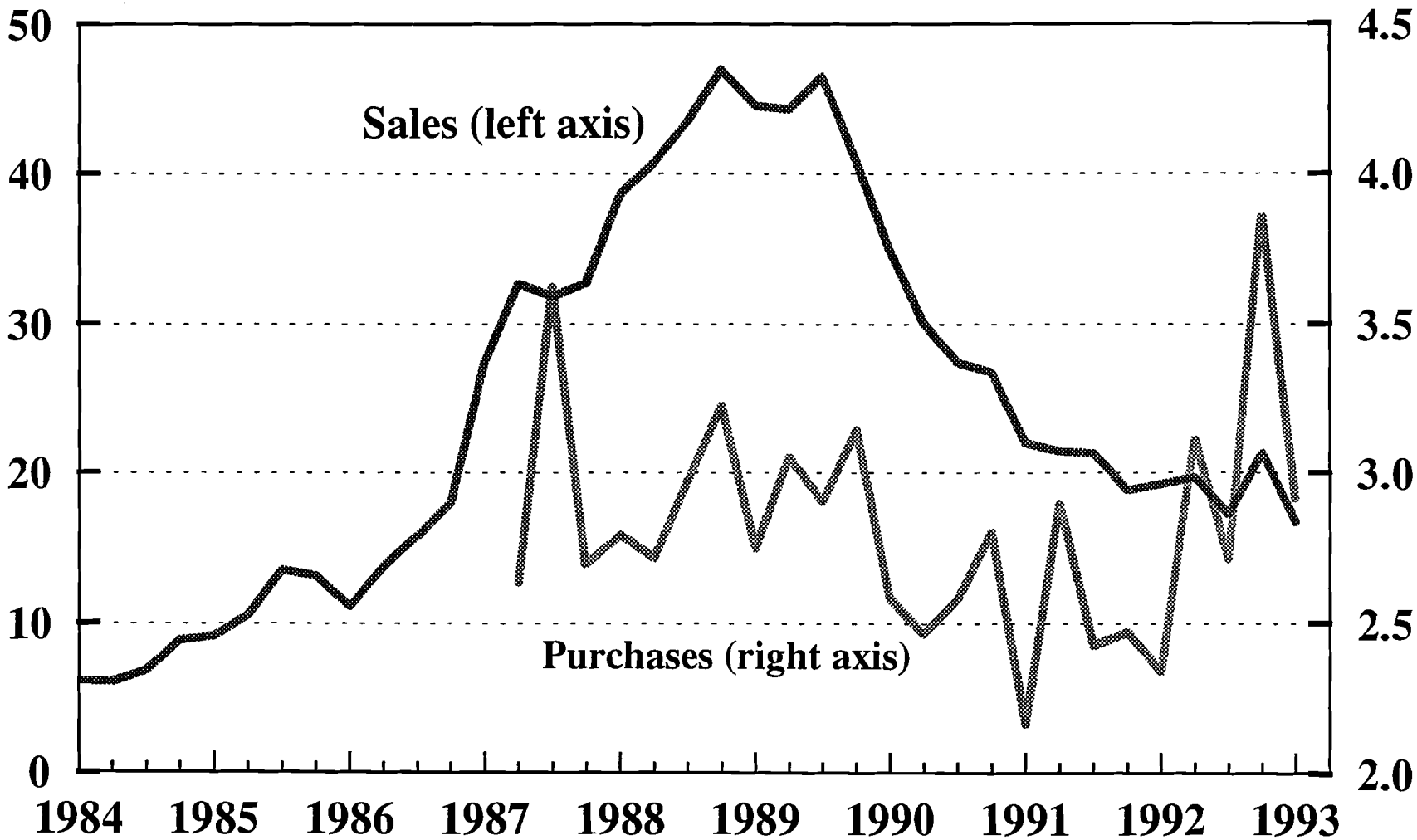


Source: FFIEC Quarterly Reports of Condition and Income.

Figure 2

LOAN SALES AND PURCHASES

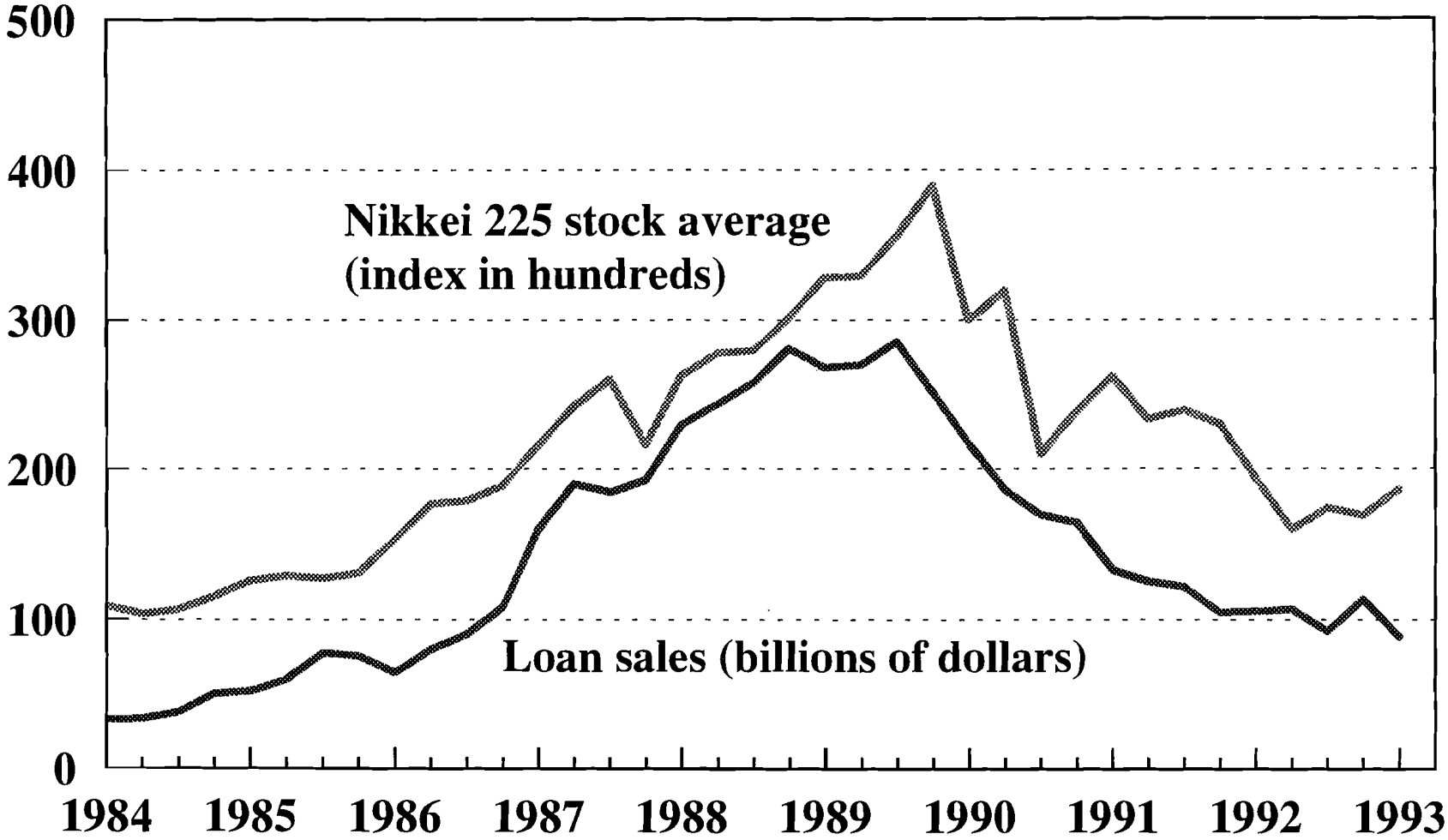
As a percentage of C&I loans



Source: FFIEC Quarterly Reports of Condition and Income.

Figure 3

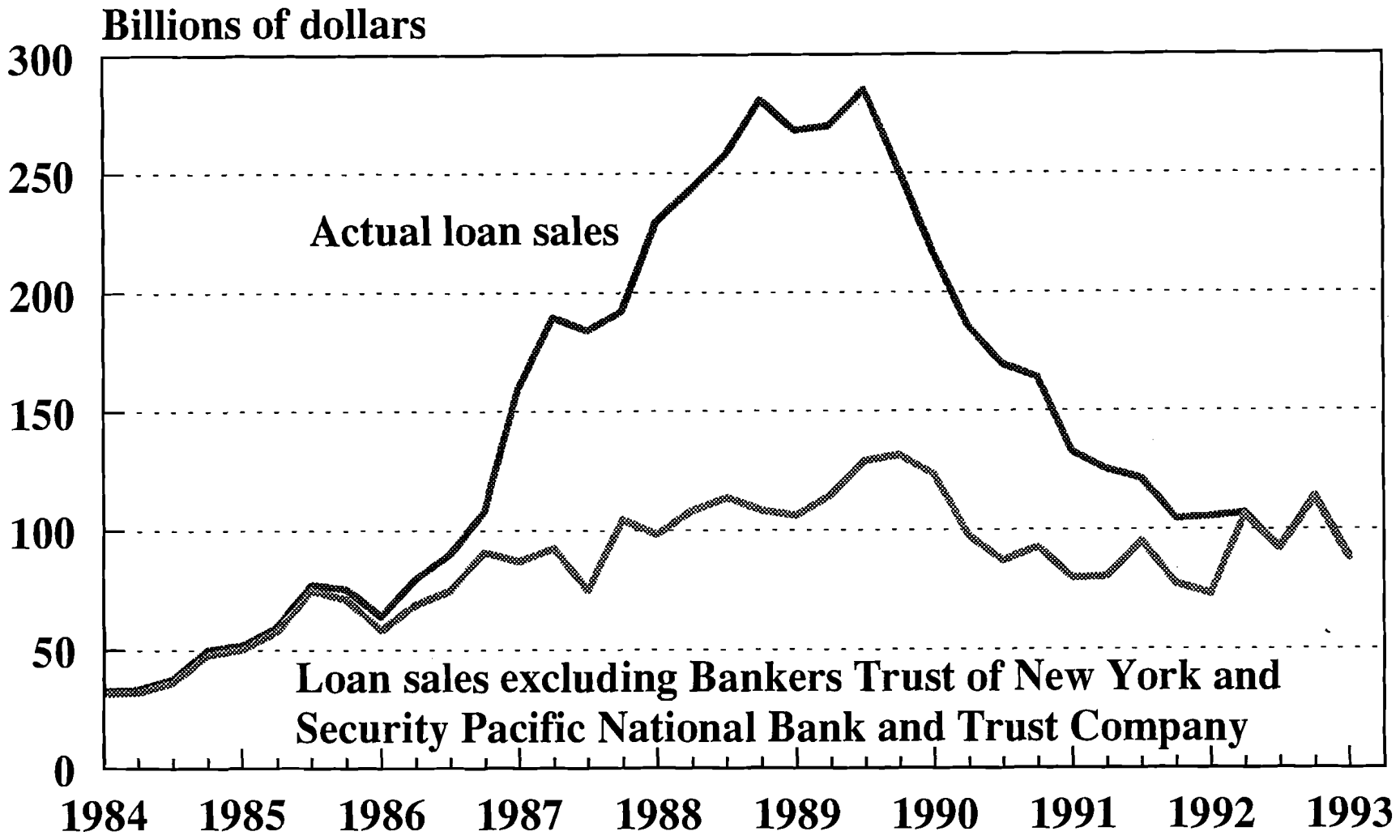
LOAN SALES AND NIKKEI INDEX



Sources: FFIEC Quarterly Reports of Condition and Income and Chicago Mercantile Exchange.

Figure 4

LOAN SALES

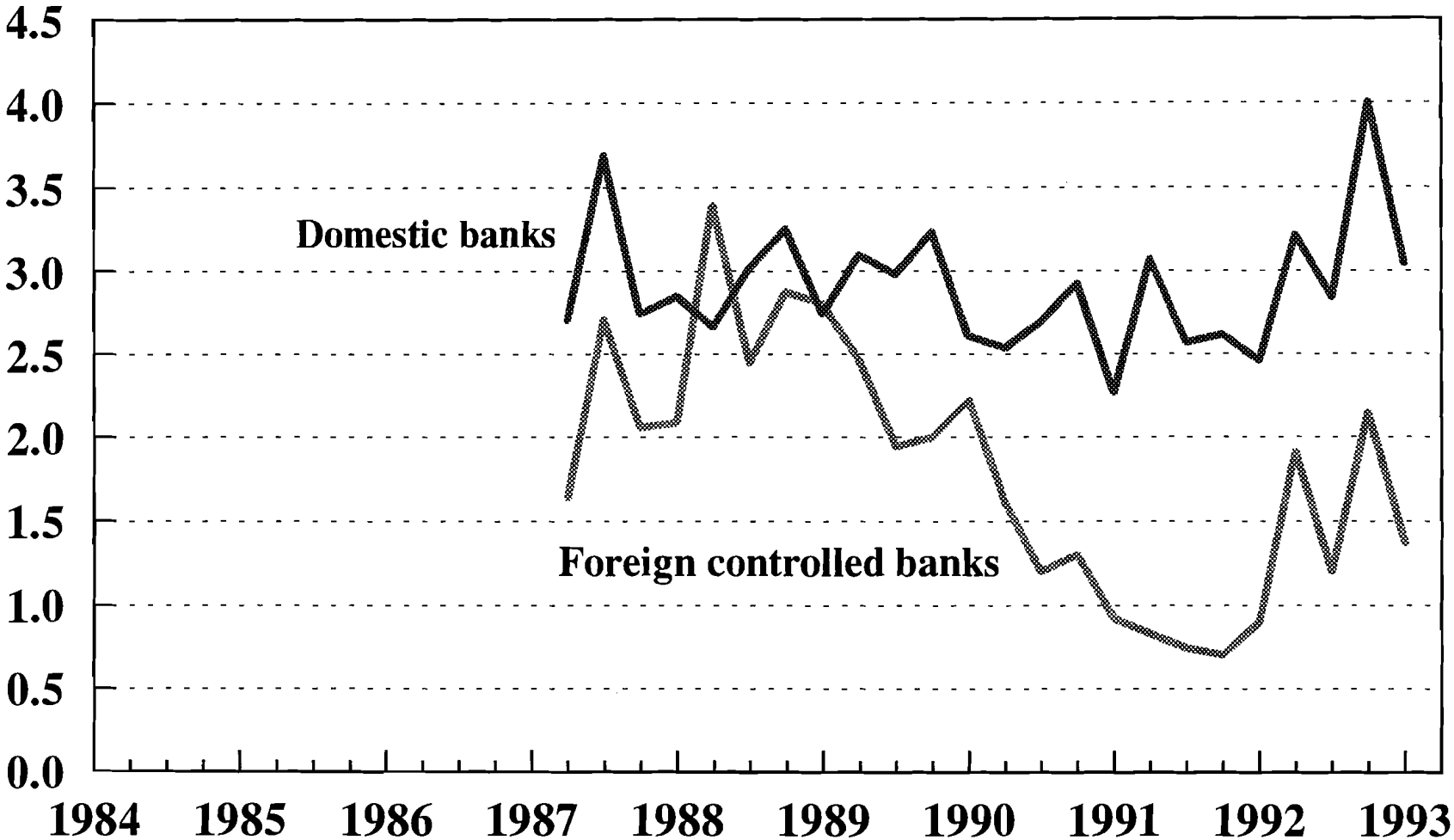


Source: FFIEC Quarterly Reports of Condition and Income.

Figure 5

LOAN PURCHASES

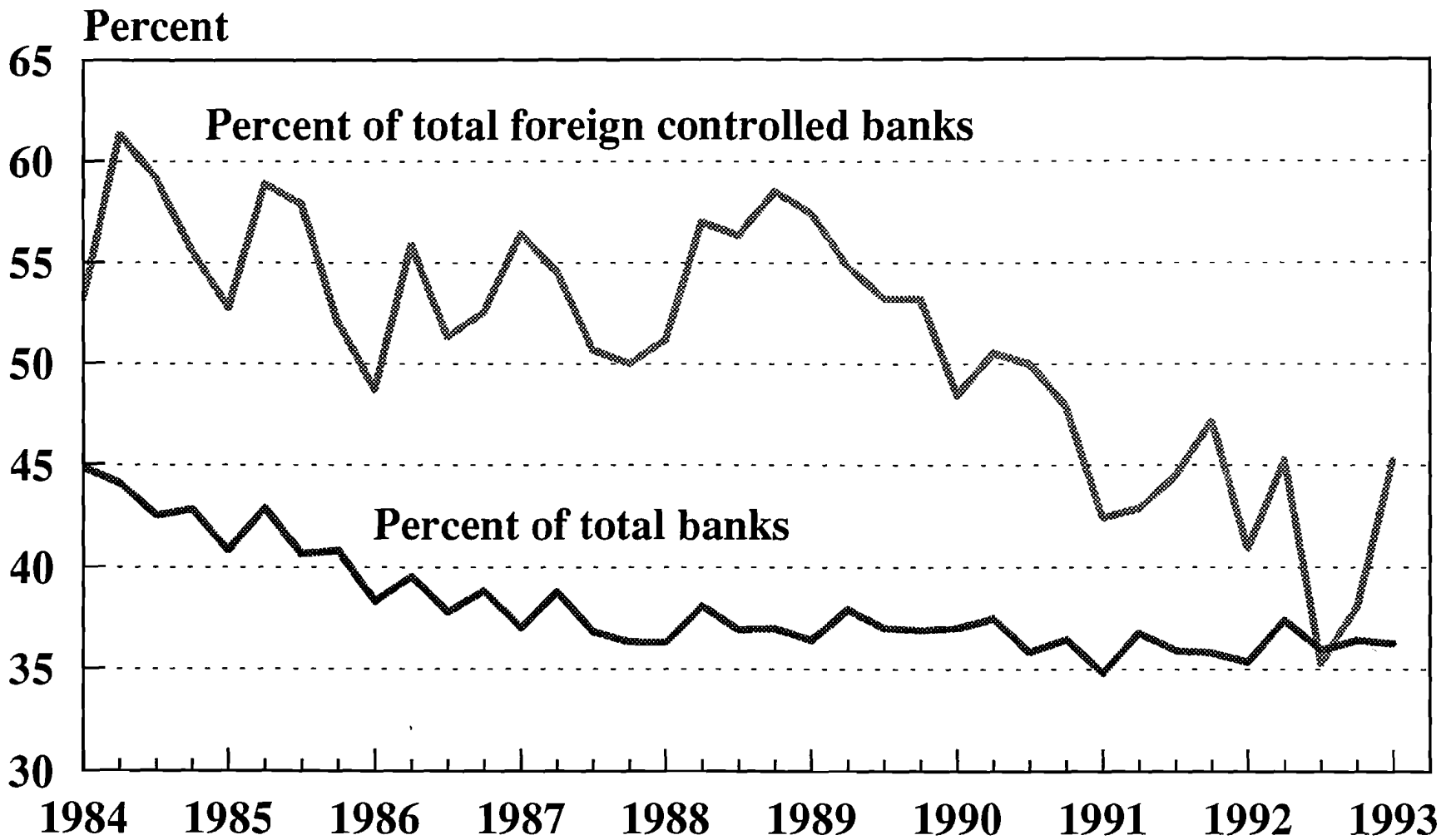
As a percentage of C&I loans



Source: FFIEC Quarterly Reports of Condition and Income.

Figure 6

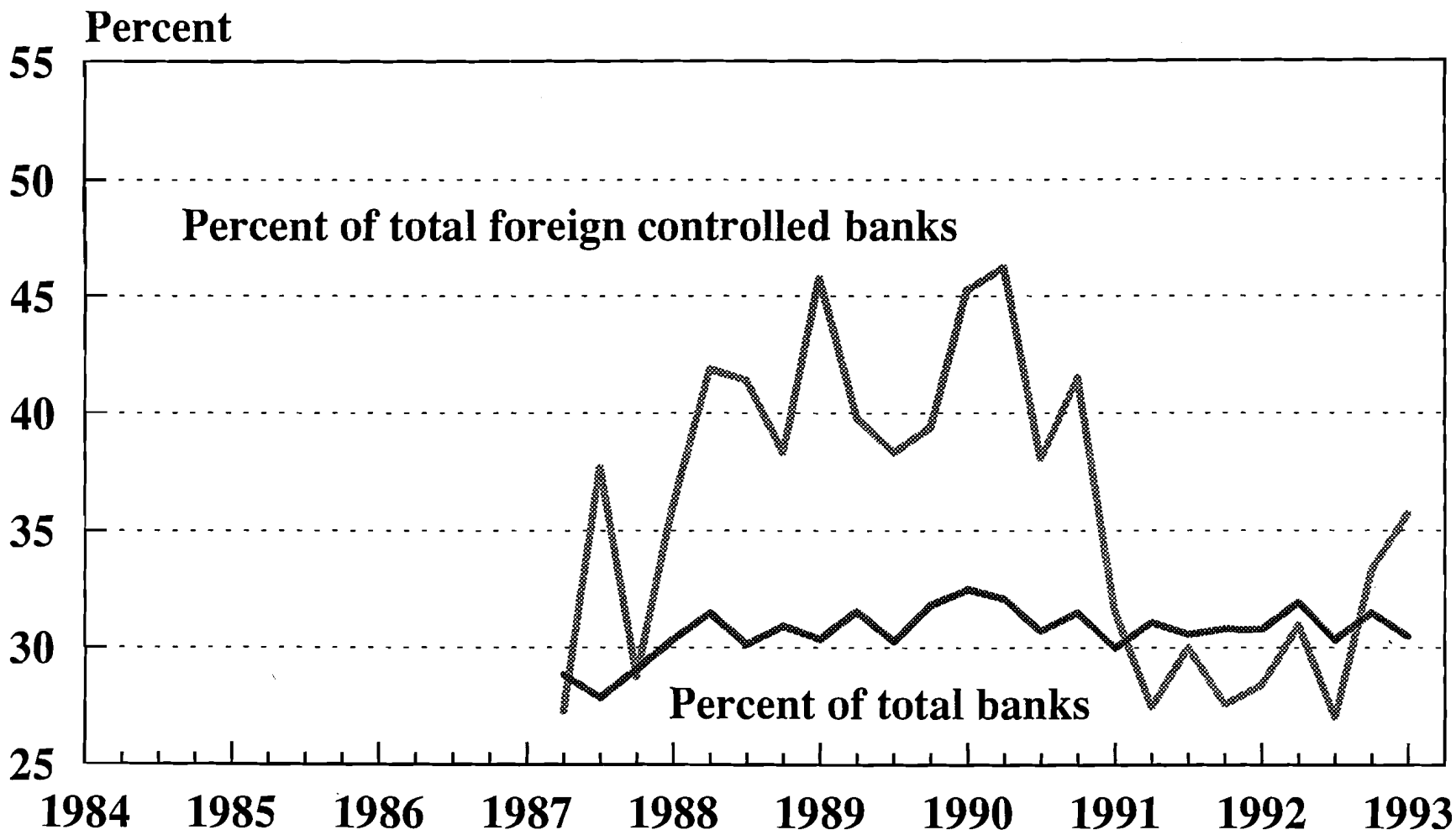
BANKS MAKING LOAN SALES



Source: FFIEC Quarterly Reports of Condition and Income.

Figure 7

BANKS MAKING LOAN PURCHASES



Source: FFIEC Quarterly Reports of Condition and Income.