

Retail banking

SUMMARY

Since 1982, retail banking labor productivity growth rates, although decreasing, have remained higher than those of the US private sector. In the early 1980s, significant changes in the banking industry increased competitive intensity, spurring banks to eliminate excess labor. Labor reductions and scale effects in payment transactions have helped maintain high labor productivity growth levels.

From 1995 to 1999, retail banking presented a paradox.¹ Despite a substantial acceleration in IT investments, labor productivity growth rates continued to decrease. The majority of post-1995 IT capital investments were associated with banks' focus on increasing revenues. The largest portion of these investments, customer information management and support, and sales automation, will facilitate banks' shift from product-centric to customer-centric organizations. Industry consolidation, new channels, and increased product range also contributed to the massive growth in IT capital in the late 1990s. Together, these strategies further raised systems' complexity and information transaction volume, increasing processing power requirements.

Retail banking IT capital investments should be analyzed in the context of a period in which banks enjoyed high levels of profitability. The increase in profits was primarily driven by the growth of noninterest income², due in part to the buoyancy of financial markets. Low levels of loan provision expenses and favorable interest rate margins also contributed to banking's strong performance. Large profits provided the resources for significant IT investments, which overcame banks' efforts to reduce costs.

The lower-than-expected productivity benefits from IT capital investments can be attributed to several factors: banks made some unnecessary investments in PCs (banks purchased PCs with more capability than needed by average users); some initiatives did not yield expected benefits (some CRM³ projects, and selected mergers); banks faced unanticipated complexity costs (due to large and complex systems requiring additional processing power, and mergers), and some benefits to

¹ Hereafter referred to as the "IT paradox."

² Noninterest income, in addition to fiduciary fees and service charges on deposits, includes "other noninterest income," which is highly correlated with the financial markets (e.g., investment banking fees, servicing fees, venture capital revenue, and gains on assets sold).

³ CRM, or customer relationship management, is defined broadly as the management of customer interactions using customer data and information technology to increase the value and number of profitable customer relationships. CRM generally includes IT tools for the following areas: marketing, sales, and customer service and support.

customers may not have been fully measured. (MGI's measure may not fully capture quality increases in output.)

In the future, MGI believes retail banking labor productivity will continue to grow at high levels due to scale benefits from electronic payment transactions (e.g., debit cards) and management's increasing pressure to reduce costs as the economy continues to slow down. Cost reduction initiatives will result in a decline in banks' IT budgets, decreasing the rate of IT capital growth.

There are some additional opportunities for banks to accelerate labor productivity. They can deploy lean manufacturing processes and technologies, continue to migrate customers to more efficient channels like Voice Response Unit (VRU) call centers and ATMs, and shift customers from paper checks to on-line transactions and electronic payments. The latter change could yield significant productivity benefits. For example, a shift of 25 percent of paper checks to electronic checks over 5 years would yield an additional 1.8 percent annual productivity increase in the sector. This would contribute .03 percent to aggregate US productivity growth. However, slow consumer adoption of on-line transactions, along with regulatory and economic barriers, has limited progress on this front.

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INTRODUCTION

The retail banking sector has experienced significant changes in the last 20 years. To understand the overall industry and to provide the context for our analysis, we will first provide an industry overview – including industry size, structure, regulatory changes, and competition – and then describe the importance of this sector in the context of the broader questions this MGI study seeks to answer.

Industry profile

Retail banking is an IT-intensive sector with higher labor productivity than the overall US economy. It represents 1.4 percent of total private sector employment, 2 percent of GDP and 4.5 percent of US private sector IT investment (Exhibit 1).

In 1999, a retail banking employee produced approximately \$102,000 of value-added, while the average US employee produced \$71,461. In 1996, IT nominal capital per employee was \$15,835,⁴ almost three times the US private sector average (\$6,177).

Retail banking, as defined by MGI, includes the products and services that commercial banks, savings institutions, and credit unions provide to retail customers and small businesses. The main services provided to retail banking customers are payment transactions, deposits, consumer loans, and trust management. Services to medium and large businesses (e.g., wholesale banking, commercial loans) are not included in MGI's retail banking measure.

Retail banking employees of commercial banks, savings institutions, and credit unions represent 83 percent of total labor within the Standard Industrial Classification (SIC) definition of Depository Institutions. (Exhibit 2 maps MGI's definition of retail banking against relevant SIC 60 codes.)

¶ **Commercial banks.** The retail portion of commercial bank institutions employs 77 percent of the total labor in retail banking. In 2000, there were 8,315 Federal Deposit Insurance Corporation (FDIC) insured commercial banks in the US. The largest commercial banks in terms of assets were: Bank of America, N. A., The Chase Manhattan Bank, Citibank, N. A., First Union, N.A., and Morgan Guaranty Trust Company of New York.

⁴ United States Government Bureau of Economic Analysis (BEA) data for SIC 60-Depository Institutions.

- ¶ **Savings institutions.** Savings institutions, also known as thrifts, represent 13 percent of retail banking labor and include savings banks and savings and loan associations (S&Ls). There were 1,590 savings institutions in 2000. The largest are Washington Mutual Fund and World Savings Bank.
- ¶ **Credit unions.** Ten percent of retail banking labor resides in credit unions,⁵ which are cooperatives owned and controlled by the individuals who use their services. There are more than 11,000 credit unions in the US. The largest serve the employees of the Navy, the Pentagon, and the Boeing Company.

Retail banking has been subject to several waves of regulatory changes since the early 1980s. (See Exhibit 3 and Appendix 1 for further details.) Regulatory changes contributed to employment shifts in the 1980s. Interest rate deregulation increased competitive intensity and drove labor force reductions in retail banking. During the mid-1980s, the S&L crisis led to the elimination of half of all S&L institutions, which further decreased employment. By the mid-1990s this trend started to reverse, and by 1997 employment was increasing, as more labor was needed to support new retail banking channels and services (e.g., call centers, on-line banking).

Competition has decreased retail banking's market share of household assets and consumer loans. For deposits, retail banking competes with money market funds and the equity market. Bank deposits and CDs' share of household liquid assets have decreased from 48.2 percent in 1987 to 20.1 percent in 1999 (Exhibit 4). For consumer lending, retail banks compete with credit card companies, leasing companies and other nonbank financial institutions. Banks have been losing credit card market share to personal credit institutions, such as credit card companies (Exhibit 5).

Importance of retail banking industry to the overall question

Retail banking presents an IT paradox. Despite the large investments in information technology, retail banking labor productivity growth has slowed since 1995 (Exhibit 6). Retail banking's labor productivity growth rate decreased from 5.5 percent during 1987-95 to 4.1 percent during 1995-99. Simultaneously, the IT capital intensity growth rate increased from 11.4 percent in 1987-95 to 16.8 percent in 1995-99, nearly a 50 percent increase.

The retail banking case is relevant to MGI's overall study because it helps us develop explanations for why, in some cases, IT intensity growth increases

⁵ While credit unions are part of retail banking, they are not included in MGI measure due to lack of data.

without yielding labor productivity acceleration. The analysis that follows seeks to answer several questions:

- ¶ Did IT investments actually cause productivity improvements?
- ¶ If and where the investments did not enhance productivity, why were they made?
- ¶ Are some of the benefits not captured in the productivity measures?
- ¶ What factors influence the IT investment decisions and the role IT plays in improving labor productivity?
- ¶ How can IT help to increase future labor productivity?

Beyond the IT paradox, retail banking's historical performance sheds light on the impact of competition, regulatory changes, and technology on labor productivity. (See Appendix 2 for details.)

LABOR PRODUCTIVITY PERFORMANCE

MGI calculates labor productivity using a physical measure of output per hour worked. Since developing price deflators for retail banking activities would be extremely complex because of the lack of price transparency and data availability, MGI uses a physical output measure. To adjust for vertical integration and create a ratio comparable to value-added per hour, MGI has included in its measure of labor inputs the labor that retail banking outsourced to subcontractors such as First Data Corporation, Finserv, and call center service providers.

Retail banking's main activities (payment transactions, deposits, lending, and trust management) are decomposed into payment and information transactions, savings and time accounts, personal loans, real estate loans, and trust management. For each of these categories, physical measures are defined and then aggregated based on their revenue share. Labor input is defined in terms of hours and includes outsourced labor. (See Appendix 3 for methodological details and data sources.)

From 1987 to 1999, MGI's labor productivity growth measure is:

- ¶ Directionally similar to the labor productivity figures calculated using data from the Bureau of Economic Analysis (BEA). The data used was

value-added per person employed in production (PEP).⁶ Both MGI and BEA data show a deceleration in labor productivity after 1995.

- ¶ Consistently higher than BEA data by approximately 3 percentage points per year (Exhibit 7).

MGI's results from 1987 to 1999 differ from those calculated using BEA data because of the following:

- ¶ **Differences in scope.** MGI measures the retail banking sector, while the BEA measures depository institutions (Exhibit 2). The BEA's output figures are primarily based on the physical output measure for commercial banks developed by the Bureau of Labor Statistics (BLS). The BEA and BLS measures are not identical because of adjustments the BEA makes to include depository institutions.
- ¶ **Differences in methodology.** There are three methodological differences between MGI output series and BEA/BLS⁷ real value-added series. (See Appendix 3 and the Measurement Appendix chapter for further details on measurement.)
 - In the output measure, MGI includes transactions that BEA/BLS do not include, for instance, information transactions and debit card transactions.
 - MGI uses revenue weights to aggregate output. BEA/BLS's measure aggregates output using labor weights. Labor and revenue weights tend to be very similar for the five groups of activities measured; therefore, this difference in methodology does not significantly impact the results.
 - MGI uses the Fisher method to aggregate, while BEA/BLS use the Laspeyres method. The Fisher method is preferred by MGI, since it is the method BEA uses to aggregate output. Additionally, the Fisher method is considered "ideal" because it better approximates the effect of customer substitution while relative prices change.

From 1977 to 1987, MGI's labor productivity growth measure is significantly different from the BEA measure. Before 1987, the BEA did not use BLS physical output data to calculate depository institutions' real value-added figures. Instead, the BEA's real value-added estimates were derived primarily through the

⁶ To compare MGI's output per hour measure to BEA's data on value-added per PEP (as opposed to output per PEP), MGI's labor measure was adjusted for vertical integration to include outsourced labor, which is the main intermediate input in retail banking.

⁷ Since BEA's real value-added series for depository institutions are based on BLS's output series for commercial banks, hereafter BEA's real value-added series will be referred to as "BEA/BLS series."

extrapolation of labor input data. This calculation implicitly assumes no labor productivity growth since the change in the ratio of value-added to labor is always zero.⁸

EXPLAINING THE IT PARADOX

MGI has sought to understand what lies beneath the aggregate figures, which suggest that retail banking institutions have made large investments in IT capital that have not yielded proportional labor productivity benefits. Our approach to this undertaking was two-fold. First, we tapped into McKinsey's cadre of experts who serve retail banking institutions and have a perspective on the drivers of and returns on IT spending. Second, we spoke with the bankers themselves, both CIOs and other executives at major national and regional retail banks. Industry participants confirmed a general dearth of productivity enhancement (or financial benefit) associated with most investments.⁹ The following analysis draws heavily upon our discussions with those who experienced the IT paradox firsthand.

Nature and goals of IT investments

In the late 1990s, retail banks focused on growth and customer cross-selling and retention strategies, and these goals led to large investments in IT capital. From 1995 to 1999, three IT equipment categories contributed to the acceleration in IT capital: PCs contributed 50 percent to the acceleration in IT capital, mainframes and servers contributed 18 percent, and prepackaged software contributed 14 percent (Exhibit 8).

Investment in these three equipment categories grew as a result of banks' investments in several IT initiatives: customer support, call management systems, analytic and sales tools, other CRM tools, customer data and systems integration, on-line banking, product proliferation, and Y2K (Exhibit 9). These initiatives increased both systems complexity and the volume of transactions, requiring additional processing power in back-office operations (mainframes). There are five main business strategies that banks pursued during the late 1990s that led to these IT initiatives:

Customer information management, support and sales automation. Banks' focus on integrating, capturing, and managing customer information, implementing customer support software, and developing analytic tools to increase

⁸ Labor productivity figures calculated using BEA data are not exactly zero because the BEA made other adjustments to its real value-added figures.

⁹ This does not mean there have been no productivity benefits from IT. Benefits were found in areas such as VRU systems in call centers and in check imaging. However, the impact of these benefits was far too small to reverse the paradox we are trying to explain.

cross-selling and up-selling created the largest driver of IT investment. This strategic focus will facilitate banks' shift from product-centric to customer-centric organizations. The implementation of tools like customer databases, CRM tools, customer support software, call management systems, analytics to predict customer behavior, and sales support required major systems integration efforts as well as large investments in PCs, servers, and prepackaged software.

Previously, retail banking institutions had been organized around product lines, each acting as a silo. Consequently, customer information did not flow easily across the different product lines. To develop a single, integrated customer view, retail banks began changing their processes and integrated their IT systems. The integration of IT systems increased IT capital and systems complexities.

In addition, front-end operations required additional functionality to use the customer information acquired. Therefore, banks installed PCs in their key channels (e.g., call centers, branches). Rapid changes in operating systems in the late 1990s caused banks to update their servers and PCs frequently, boosting IT capital.

Finally, to up-sell, cross-sell and retain customers, banks implemented customer information databases and tools (e.g., analytics, campaign management, sales automation, and contact management). These new CRM initiatives further increased system complexities and IT capital.

Mergers and acquisitions. Industry consolidation has been a trend in retail banking since the mid 1980s and banks had to make large investments to integrate their complex IT systems. In 1985 there were 14,147 commercial bank institutions and in 1999 there were only 8,581 (a 40 percent reduction). Although the rate of decrease in the number of banks has remained constant in the last 15 years, the size of bank mergers has increased¹⁰ due to interstate deregulation.¹¹ As the size of mergers grew, banks had to invest larger amounts to integrate their IT systems.

Multi-channel approach. The emergence of the Internet as a new channel for on-line services drove investments in IT capital in the late 1990s.

¶ The Internet enabled the emergence of a new type of bank, the “virtual bank,” which operates exclusively on-line. These new entrants had to make large investments in IT to create the infrastructure to compete with traditional banks.

¹⁰ The average merger size, measured in total assets, was \$700 million from 1994-96 and grew to \$1.4 billion from 1997-1999.

¹¹ See “Appendix 1: Regulatory waves in retail banking” for details on the Riegle-Neal Interstate Banking and Branching Efficiency Act (1994).

- ¶ Traditional “brick and mortar” banks invested heavily in on-line banking services to avoid losing market share to new on-line banking players. Online banking services also provided banks with potential cost reduction opportunities (e.g., decreasing the number and size of banks branches, reducing call center inquires), and new revenue streams (e.g., payment transaction revenues).

Product proliferation. In an effort to satisfy customers’ needs, banks increased product customization and offered various product bundling and pricing options. This level of customization heightened programming, maintenance, and testing costs. These bundles and pricing combinations also increased system complexity and the need for additional processing power. Finally, banks began offering insurance and securities products, further increasing complexity.¹²

Disaster avoidance (Y2K). From 1996 to 2000 banks updated their systems to avoid any potential disruptions associated with the new millennium.¹³

Other IT initiatives. In the late 1990s, banks also invested in several smaller IT initiatives, which increased their IT capital stock. Examples included imaging technologies, VRU systems, wireless banking, software upgrades, new PCs in support areas (such as HR, accounting, and finance), check imaging, and Euro compliance.

Although the returns from most of the major IT investments have been disappointing, as we will see in the next section “Explaining the IT paradox,” IT has contributed to an increase in labor productivity in at least two areas:

- ¶ Imaging technologies have allowed banks to decrease labor and storage costs in the check processing area. From 1928 until the mid-1990s, banks used microfilm systems to store and retrieve checks. Check image technology has replaced microfilm systems, reducing storage costs up to 40 percent (including labor) and check retrieval time by 75 percent in selected banks.¹⁴ There is potential for further cost reductions if banks implement centralized, shared operations for archival and retrieval of checks¹⁵.
- ¶ VRUs have allowed banks to decrease labor significantly in call centers. In 1999, 55 percent of call inquiries were served by VRUs. MGI

¹² In addition, banks began offering insurance and securities products. These products are not part of our retail banking scope, as defined by MGI. Therefore, IT investments in these products are not included in our analysis.

¹³ Y2K capital investments comprise 5 percent of total IT investment across 1996-99. Besides capital investments, banks incurred expenses as a result of Y2K that roughly equaled Y2K investments in magnitude.

¹⁴ Source: Tower Group.

¹⁵ There are other areas where imaging technologies have been implemented with less success, such as proof of deposits.

estimates that to answer these calls without VRUs, banks would have had to increase the number of call center agents by 86 percent. This would have decreased labor productivity growth around 1 percent per year since the early 1990s and changed the post-1995 deceleration in productivity from 1.4 percent to 1.6 percent.

Causality analysis

To simplify comparisons across “paradox” cases, MGI developed a framework for explaining IT investments that did not drive productivity enhancement. As with the framework for explaining productivity growth jumps, this paradox framework focuses on operational, industry level, and external factors. The analysis that follows begins in the trenches (at the operational level) and moves up to industry-level and external factors that helped drive the IT paradox operationally (Exhibit 10).

Firm- level factors

The IT paradox was primarily the result of the following “operational,” or firm-level, factors:

Some excessive or unnecessary investment in PCs. According to the BEA, depository institutions spent an average of \$5,253 per employee (equivalent to two new computers) on PCs from 1995 to 1999 while the average US private sector firm spent \$440 per employee during the same time period (Exhibit 11). In real terms,¹⁶ the depository institutions’ investment in PCs grew more than three-fold from 1995 to 1999.

Drivers of demand for PCs include customer information management, support and sales automation tools (see above), and the increased processing and memory requirements of more powerful software. Although some PC purchases were necessary, MGI’s interviewees indicated that there is significant excess PC capacity (processing power) in banking (Exhibit 12). Two dynamics within banks contributed to the over-investment in PCs (Exhibit 13).

- ¶ Banks, for maintenance and deployment purposes, set standards for PC purchases. High-end users requiring very powerful PCs typically defined these standards. Therefore, when banks purchased standard PCs, average users obtained more functionality than needed. This dynamic contributed directly to the surge in computing power possessed by banks, as measured in the real PC capital stock. However, it also likely reduced

¹⁶ The real value of computers accounts for increases in computers’ quality (e.g., processing power).

maintenance expenses for banks by increasing the ability of IT support staff to specialize and efficiently address common problems.

- ¶ There were few strict controls for PC purchases. Purchasing decisions were typically made at the division/department level, and the costs were capitalized, so the impact on banks' immediate profits was minimal. Furthermore, rapid PC price declines led to the perception that PCs were inexpensive.

Some software and hardware investments that did not yield expected benefits.

Typically, top-line (or revenue-oriented) types of projects like CRM and sales automation, and product proliferation are characterized by longer lead times to bear fruit compared to cost reduction projects. Aside from the intrinsic challenge that these types of projects present, retail banks had several additional difficulties in the implementation of these projects. Lack of clear focus and objectives, complexities within the organization, project cancellations (in the case of mergers), and unanticipated complexity costs have all hindered the success of some of the hardware and software investments.

- ¶ **CRM/customer information management and analysis.** The majority of CRM projects have failed to achieve the returns expected (Exhibit 14). Banks have focused their efforts on building a large infrastructure to capture data, implementing analytic tools to predict customer behavior and automating sales and marketing functions. To date, few banks have developed the skills and processes to effectively use the information and tools in place.

Most retail banks invested in CRM projects without performing a comprehensive analysis of expected returns. Moreover, a lack of clarity around CRM objectives exacerbated the limited scrutiny of CRM investments by increasing implementation costs, causing many CRM initiatives to be financial failures to date.

Furthermore retail banks, as multi-channel and multi-product organizations, face large complexities when implementing CRM projects. The challenges are not only technological. While varied product areas may have integrated data, they are still accustomed to working as silos and pursuing their own agendas. Consequently, it has been difficult to develop a consistent customer approach.

Finally, sales automation tools, customer support, call management, sales support and other CRM tools resulted in large integration efforts. The integration of these new software applications and databases to the old banks' legacy systems required new interfaces and additional software

modifications, which raised systems complexity and increased IT development costs.

- ¶ **Mergers.** Mergers caused some existing IT projects to be re-evaluated or terminated. Those projects-in-progress that were not completed consumed significant IT capital with no possible return.

Mergers required significant systems integration and capacity expansion. Banks involved in continuous or large mergers developed complex IT systems, which raised the costs of current operations and future implementations.

- ¶ **Product proliferation.** Product proliferation caused software performance to degrade, necessitating additional processing power to offset performance reductions (Exhibit 15). Complex product bundles also drove IT maintenance and testing budgets.

Unmeasured convenience to consumers. Some consumer benefits such as convenience and quality increase in information transactions may not be fully captured in MGI's or BEA's labor productivity results. However, sensitivity analysis indicates that even if benefits from convenience and quality increases in information transactions are valued at high levels, they are insufficient to eliminate the IT paradox.

Payment transactions like checks and transfers made through on-line banking may be considered more convenient than the traditional process of sending a check through the mail. Since MGI's labor productivity measure assigns equal value to all checks regardless of how they were originated, the value of the convenience may not be fully captured.

Similarly, customers have access to account information through on-line banking and call centers. The completeness and quality of the information has increased in the last 5 years. While MGI measures the number of information transactions (e.g., requests for information on recent transactions, balance inquiries), the value assigned to these transactions has remained constant over time. Therefore, the improvements in completeness and accessibility of information may not be fully captured.

Sensitivity analysis has demonstrated that the convenience value from on-line banking is not large enough to shift the 1995 delta from negative to positive. On-line banking penetration has been low, so the number of consumers benefiting from this channel and its impact on labor productivity is still small (Exhibit 16).

Similar to on-line transactions, information transactions are not a significant portion of the total number of transactions, and therefore the impact of increasing the value of information transactions over time would be small. Assuming

customers' value of the quality of information transactions increased 20 percent per year after 1995, this would not be enough to shift the 1995 delta from negative to positive (Exhibit 17). An increase in the value of the quality of information by 20 percent is equivalent to customers willing to pay 20 percent more for information services, which seems unrealistic.

In the aggregate, even though customers now have access to multiple retail banking channels and the quality of information transactions has increased, customer satisfaction has decreased (Exhibit 18). Falling customer satisfaction calls into question the impact of these benefits on consumers. Furthermore, consumer research shows that retail banking customers are less interested in additional channels and prefer better customer service and a higher level of reliability.

Industry dynamics

The retail banking sector presents an interesting dynamic in which banks simultaneously compete intensely in some lines of business like credit cards, while they are relatively protected in others like checking accounts. While the retail banking industry faces competitive pressures from mutual funds and personal credit institutions (see section "Retail banking sector overview" above for details), it is in no danger of extinction. Even as the average balance on checking accounts has decreased, the number of checking accounts has increased. In 1998, 86.8 percent of American families held at least one checking account.¹⁷ The inconvenience associated with changing accounts makes them relatively "sticky" products and a steady source of income for banks.

These industry dynamics contributed to the IT paradox by simultaneously driving banks to invest in business strategies that would competitively differentiate them and ensuring that they would have the resources to make large investments. Two additional pieces of evidence help illustrate this dynamic:

- ¶ The industry became more concentrated as a result of merger activity. From 1995 to 1999, the top five bank holding companies' share of total US deposits increased from 14.8 percent to 26 percent. Regionally, the level of concentration among bank holding companies also increased (Exhibit 19). This increase enhanced banks' ability to withstand competitive threats in other areas of their business by increasing fees for basic services. Banks' income from service charges on deposits increased from \$16 billion to \$21.5 billion between 1995 and 1999.

¹⁷ Source: Survey of Consumer Finances; Federal Reserve.

- ¶ The industry has been highly profitable since 1993, indicating that in spite of competitive pressures, banks have been able to avoid competing away some returns (Exhibit 20). Retail banking's large profits also highlight the low impact of any excess IT spending on overall performance.

External factors

The two primary exogenous factors that contributed to the IT paradox were capital markets and product market regulation. The buoyancy of capital markets increased banks' profits and provided the resources for large IT investments. Product market regulation had two effects. First, interstate banking deregulation facilitated mergers and increased IT integration costs. Second, banking regulation, by encouraging the use of paper checks, deterred the growth of highly productive electronic transactions. The difficulty in measuring some consumer benefits has also contributed, but to a lesser extent, to the IT paradox.

Capital markets/demand effects. Capital markets helped banks enjoy the large profits that made available the resources necessary for large IT expenditures and to overcome cost reduction efforts. Profits increased primarily because of the large growth in noninterest income, which is correlated to the strong performance in financial markets (Exhibits 21 and 22). The low interest rate levels during the 1990s also helped to boost lending activity. Additionally, strong economic growth in the US helped maintain the low levels of loan provision expenses.

Product market regulation. Two major regulatory factors have contributed to the IT paradox:

- ¶ The Riegle-Neal Interstate Banking and Branching Efficiency Act (1994) allowed bank holding companies to acquire banks in any state beginning in 1997. This led to a wave of large interstate banking mergers, which increased industry concentration and IT spending (Exhibit 23).
- ¶ On-line banking could generate significant productivity benefits if used to conduct electronic funds transfers (EFTs) rather than distribute paper checks. According to the Electronic Fund Transfer Act of 1978 (EFTA) and Regulation E,¹⁹ most EFTs generally have to be executed one business day after the transfer. The Expedited Funds Availability Act of

¹⁸ Other transaction accounts (e.g., money market accounts, and brokerage accounts) are not included in this number.

¹⁹ Electronic Fund Transfer Act (1978) and Regulation E establish the rights, liabilities, and responsibilities of parties involved in EFTs and protect consumers using EFT systems.

1987 (EFAA) and Regulation CC²⁰ established that funds for checks should be available within one to five business days after the day of deposit. This time difference makes checks more attractive as it helps banks earn more revenues from the interest float²¹ and encourages banks to maintain the current paper checking system, at least until banks develop a pricing mechanism to increase the value they capture from electronic transfers. Aside from the economic and regulatory barriers discussed, checks have proven extremely entrenched in the US as customers still prefer checks to other more efficient paying mechanisms (e.g., credit card and debit card).

Unmeasured consumer benefits. The reason some customer benefits may not be fully captured is that it is extremely difficult to quantify the value of either incremental convenience improvements, or increases in the quality of banking services.

OUTLOOK, 2001-05

Whether banks' past IT investments will yield substantial productivity benefits in the future remains unclear. Banking executives believe benefits from past IT investments (e.g., CRM) are forthcoming as it takes time for banks to adapt to the new processes and technology in place. MGI remains skeptical that IT investments will significantly enhance productivity in the future since most banks have not proven their ability to capitalize on these new technologies (Exhibit 24). However, banks can begin to capitalize on IT in several ways: more on-line banking and electronic transactions, lean manufacturing processes and technologies, and migrating customers to more efficient channels (VRU call centers, ATM).

Even though on-line banking and electronic transactions have the potential to improve labor productivity growth by replacing paper checks, economic and regulatory barriers and customer behavior have inhibited this process in the past. It is unlikely that these barriers will be eliminated in the near future.

¶ Consumers generate 61 percent of the checks in the US; a fourth of these checks are payments in stores, and the remaining 35 percent are bill payments to consumers and businesses. MGI estimates that one-third of

²⁰ Expedited Funds Availability Act (1987) and Regulation CC establish time limits for fund availability for checks. Certain "low-risk" checks, such as cashier's checks, government checks, teller's checks, and checks drawn or guaranteed by credit-worthy institutions, must be made available for withdrawal the next business day following the day of deposit. Local checks (checks in the same processing region) must be available for withdrawal within two business days, and nonlocal checks within five business days after the deposit day.

²¹ Interest float is the time between presentation of a check and the actual collection of the funds.

the total checks originated by consumers could be replaced by electronic transactions once on-line penetration increases. The impact of this change would be an increase in labor productivity of 10 percent in the next 5 years, or 1.8 percent per year, everything else remaining constant (Exhibits 25 and 26).

- ¶ The economics of the check payment system, combined with current laws and regulations, will remain an obstacle in the elimination of paper checks in the on-line banking channel. Banks receive \$60 billion annually in income from checking accounts through the fees, interest float on checks, and the checking balances, which are a source of low-cost funds.²² This revenue would decrease if checks were to be replaced by electronic transactions, since this type of transfer greatly reduces the float. (See section “External factors: product market regulation” above for details). Additionally, electronic transfers generally guarantee funds, eliminating potential bank income from insufficient funds charges.

Future labor productivity growth in banking will be affected by any slowdown in US economic growth. As part of cost reduction initiatives, banks’ IT investments will fall, potentially decreasing the rate of IT capital growth and reversing the IT paradox. Management’s increasing pressure to reduce inputs as the economy slows down and scale benefits in transaction processing will maintain retail banking labor productivity growth at high levels.

²² Source: Greensheet

APPENDIX 1: REGULATORY WAVES IN RETAIL BANKING

Interest rate deregulation. Prior to 1980, the interest rate on deposits was regulated and competition in banking was limited. In 1982, the DIDMCA²³ established "NOW accounts," and began the phase-out of interest rate ceilings on deposits. These changes resulted in increased competitive intensity and rapid labor productivity growth. (See Appendix 2, "Explaining the 1982-87 labor productivity jump," for details).

Product deregulation. The product restrictions established by the Glass-Steagall Act²⁴ of 1933 have essentially disappeared. In the late 1980s and early 1990s banks gradually started to provide equity trading services. In the early 1990s they began selling insurance brokerage services. In 1999, the Gramm-Leach Bliley Act allowed banks to acquire insurance underwriters through bank holding companies.

Elimination of geographic barriers. Before 1994, banks were protected by geographic barriers. These barriers were eliminated by the Riegle-Neal Interstate Banking and Branching Efficiency Act (1994), which permitted bank holding companies to acquire banks in any state beginning in 1997. Riegle-Neal facilitated a wave of interstate mergers that increased industry concentration. (See "Explaining the IT paradox" for details.)

Changes in supervision. After the S&L crisis, the FDIC assumed supervision of savings institutions. In 1991, the FDIC also established a risk-based supervision method focused on undercapitalized banks. These changes in supervision, coupled with the elimination of troubled banks²⁵ and savings institutions after the S&L crisis in 1980s, resulted in a "new start" for the retail banking sector. By 1993 balance sheets had been largely cleaned of bad debt and loan provisions had significantly decreased.

²³ Depository Institutions Deregulation and Monetary Control Act (1980).

²⁴ Glass Steagall separated commercial banking from investment banking, establishing them as separate lines of commerce. It also established the Federal Deposit Insurance Corporation (FDIC).

²⁵ Banks were also affected, but to a lesser extent, by the real estate crisis and regional recessions (e.g., oil bust in Texas, defense spending cuts in California, etc.) that led to the S&L debacle.

APPENDIX 2: EXPLAINING THE JUMP IN 1982-87 LABOR PRODUCTIVITY GROWTH

MGI has determined that the period of most rapid labor productivity growth in retail banking was 1982 to 1987. The objectives of this section are to explain the drivers of the increase in the labor productivity growth rate and the factors affecting the duration of the labor productivity jump.

Causality analysis

The increase in competitive intensity from the surge of money market funds and deregulation of the interest rate ceiling on deposits was the main driver of the 1982 labor productivity jump in banking.²⁶ Before 1980, retail banks enjoyed monopoly power on checking accounts and were under only limited pressure to maintain efficient operations. In 1980, the Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA) eliminated interest rate ceilings on deposits, allowing banks to compete with money market funds. As competition for deposits intensified, pressures to reduce costs increased. In the early 1980s banks began laying-off excess labor and consolidating back-office operations, boosting productivity. Although the number of branches increased, the number of employees decreased as branches became smaller. Simultaneously, the growth of electronic transactions (e.g., ATM and credit card) generated productivity benefits because of their small variable labor requirements. Finally, an increase in the number of real estate loans, resulting from declining interest rates after 1982, allowed banks to leverage fixed labor in loan processing and servicing activities (Exhibit A1).

Firm-level factors

At the firm level, the main factors contributing to the 1982 labor productivity jump were banks' improvements in the organization of functions and tasks (OFT) and scale benefits resulting from electronic transactions growth.

OFT/Process redesign. OFT improvements contributed 5.6 percent to the 7.2 percent labor productivity jump. From 1982 to 1987, banks spurred excess labor and consolidated back-office operations. Consequently, labor hours declined by 0.7 percent per year despite the 5.4 percent increase in output (Exhibit A2).

²⁶ Some studies have found large inefficiencies in the banking industry (up to 20 percent of more than total banking industry costs) during the early 1990s. (See Berger and Mester, 1997.) One of the explanations for high inefficiency is that banks had extra capacity generated during the 1980s when banks expanded branches to better compete after deregulation. Our measure of labor productivity shows that although the number of branches increased, total labor decreased as banks consolidated back-office operations. It also shows that competition eliminated less efficient banks and S&Ls. Meanwhile, output increased significantly, boosting labor productivity.

Limited competition in retail banking before the late 1970s resulted in significant excess labor capacity in the industry. Labor hours grew 3.3 percent per year during 1977-82, while output grew only at 2.2 percent. In the late 1970s, competition from money market funds increased pressure on banks to reduce costs and eliminate excess labor.

IT investment contributed to labor reductions through back-office consolidation. During 1977-82 banks invested heavily in IT and more specifically in mainframes (Exhibit A3). These computers enabled process redesign and centralization of back-office operations, reducing labor in branches.

Labor economies of scale. Scale benefits in electronic transactions allowed banks to leverage fixed labor and contributed approximately 1.6 percent of the 7.2 percent jump in labor productivity in 1982.

Electronic payment transactions (ATMs and credit cards) grew almost 5 percentage points faster from 1982 to 1987 than from 1977 to 1982 (Exhibit A4). Since these transactions required limited variable labor, their growth raised labor productivity, and contributed approximately one-third of the 1.6 percent contribution from economies of scale.

Furthermore, the number of real estate loans declined 16 percent per year from 1977 to 1982 and rose 25 percent per year from 1982 to 1987 (Exhibit A5). This 40 percent acceleration in output allowed banks to leverage some fixed labor in loan processing and servicing, and contributed to the remaining two-thirds of the 1.6 percent contribution from scale.

Industry dynamics

The early 1980s was a period of significant regulatory change for the banking sector. Competitive intensity increased as banks lost their virtual monopoly power on checking accounts, interest rate ceilings on deposits were eliminated, and geographic barriers began to erode.

Prior to the late 1970s competition in banking was limited. There were regulatory barriers for branch banking in several states, commercial banks had monopoly power on checks, and interest on deposits was regulated.

In 1980 thirteen states prohibited branch banking of any type, and sixteen allowed only limited branch banking, protecting banks from competition. Commercial banks had maintained a virtual monopoly on checking accounts since the passage of the Glass Steagall Act. Competition in checking accounts started in 1972 when the Consumer's Savings Bank of Worcester, MA, introduced Negotiable Order of Withdrawal (NOW) accounts, which were similar to checking accounts but paid interest. Commercial banks prevented the spread of NOW accounts outside of New England until 1980.

Regulation Q²⁷ of the Federal Reserve Act eliminated interest on demand deposits, and established interest rate ceilings on time and savings accounts. In 1973 interest rate ceilings for large CDs were eliminated, but Regulation Q continued to determine interest rate ceilings for small time and savings accounts until 1980. By the late 1970s, technological innovations and new saving devices created substitutes for bank deposits. The strongest threat came from Money Market Funds (MMF), offering interest rates above those permitted by Regulation Q.

In the late 1970s, market interest rates were above Regulation Q for several years, facilitating the growth of MMFs. Initially, MMFs targeted large clients, but by 1978 MMFs began pooling together money from small investors, allowing them to earn high interest rates on small deposits. From 1978 to 1982 assets under MMFs grew from \$10 billion to \$206 billion.

Banks were unable to compete until, in 1980, Congress passed the DIDMCA, which authorized retail banks to offer NOW accounts, and began the phase out of Regulation Q. Competition increased not only with money market funds but also among commercial banks and thrifts. These two institutions competed aggressively on loans and deposits, decreasing interest margins. Thrifts were less prepared to compete because of deteriorating balance sheets. The increase in cost of funds, caused by the elimination of interest ceilings on deposits among other factors, worsened thrifts' financial situation.

External factors

Three external factors contributed to the 1982 labor productivity jump: product market regulation, technological innovations, and demand effects. From these factors, product market regulation (in this case deregulation) was the main driver of the labor productivity jump since it led to a significant decrease in excess labor by increasing competitive intensity. Technological innovations also contributed to the labor productivity jump and have helped maintain high labor productivity growth levels by creating significant economies of scale in electronic payment transactions. Finally, banking also benefited from decreasing interest rates, which boosted refinancing and the number of new mortgage loans.

Product market regulation. Changes in product-market regulation in banking increased competitive intensity. These changes also are considered to have contributed to the S&L crisis. Commenting on the latter, which indicates that deregulation led to an increase in labor productivity growth, is out of the scope of this analysis.

²⁷ This regulation authorized the Federal Reserve to establish interest ceilings on deposits, with the purpose of limiting competition following the failure of about one-third of US banks, after the Great Depression of the 1930s.

- ¶ The DIDMCA (1980) began the phaseout of interest rate ceilings on deposits in 1980. This act also increased powers of thrifts (saving mutual banks and S&Ls). It was meant to increase retail banks' ability to compete against MMFs and began the phaseout of Regulation Q. The DIDMCA also allowed banks and thrifts to provide NOW accounts, and increased the account limit on deposit insurance from \$40,000 to \$100,000.

The DIDMCA provided more latitude to thrifts institutions, which were losing money because of the rapid increases in interest rates coupled with their asset/liability mismatch.²⁸ Under the belief that the thrift crisis was temporary, interest rates would go down, and thrifts will be able to restructure their portfolios, the DIDMCA reduced net worth requirements for S&Ls and expanded their investment powers.

- ¶ The Garn-St Germain Act (1982) allowed retail banks to offer money market accounts, further decreased capital requirements for thrifts, and liberalized their investment activity. Because the act allowed retail banks to offer money market accounts, banks could successfully compete with money market funds, and deposits increased.

The act also expanded the types of loans and investments thrifts could make, raising the limit on commercial loans to 5 percent and on consumer loans to 30 percent of total assets. It also loosened net worth requirements.²⁹ Finally, Garn-St Germain helped to erode interstate banking limitations by allowing mergers across states in emergency cases.

Technology/innovation. The growth of electronic transactions was the result of past technological innovations that achieved significant penetration during the 1980s. ATM penetration increased during the 1980s, with two effects on labor productivity. First it allowed banks to substitute capital for labor. Second, rapid increases in transaction volume allowed leverage of fixed labor.

Credit card transactions achieved critical mass in the 1980s. As with ATM transactions, growth in credit card transaction volume did not require proportional increases in labor.

²⁸ Interest income comprised primarily by fixed interest from long-term mortgage loans. Interest expense was mainly variable short-term interest.

²⁹ Garn-St Germain eliminated the ratio between what an S&L could lend to a developer and the appraised value of the project for which the loan was made.

Demand factors. During the 1970s the US experienced a period of high inflation, which raised interest rates and decreased real estate lending activity. In the 1980s interest rates declined, boosting real estate consumer loans in commercial banks.

Conclusion

The retail banking labor productivity jump in 1982 was the result of major industry changes, which increased competitive intensity. Deregulation, by eliminating interest rates on deposits and foster competition, helped to reduce large inefficiencies built during banks' period of monopolistic power, and the effects of deregulation have continued until now.³⁰

Technological innovations in electronic transactions (e.g., credit card, ATMs) have increased banks' economies of scale and helped sustain high labor productivity growth levels. Credit card and ATM transactions had double-digit growth rates during the 1980s and most of the 1990s, increasing output with minimal additional labor.

³⁰ Although banks' monopoly power on checking accounts was eliminated and competitive intensity increased, banks still have remained the main providers of checking accounts and have been able to extract revenues from consumers through deposit fees. (See section "Explaining the IT Paradox: industry dynamics" above for details).

APPENDIX 3: LABOR PRODUCTIVITY MEASURE

This appendix describes the data sources and methodology used to calculate the labor productivity series for Retail Banking.

Output measure

MGI's retail banking output measure is a Fisher quantity index of the number of payment and information transactions, savings and time accounts, personal loans, personal real estate loans, and trust accounts (Exhibit A6).

Transactions. Transactions were classified into payment and information transactions. Payment transactions include checks, credit card, point of sale (POS) or debit card, and ATM transactions. Information transactions were measured as the total number of call information inquiries, on-line information inquiries, and ATM information transactions. MGI has used several sources to collect this information (Table A1).

Table A1

Payment transactions	Data source
Checks	<ul style="list-style-type: none"> • International Bank for Settlements • BLS time series
Credit card transactions	<ul style="list-style-type: none"> • Card Industry Directory, Faulker and Gray • Nilson reports
POS transactions	<ul style="list-style-type: none"> • Nilson reports
ATM transactions	<ul style="list-style-type: none"> • Card Industry Directory, Faulker and Gray
Information transactions	Data source
On-line inquiries	<ul style="list-style-type: none"> • Banking Online Report • McKinsey research
Call inquiries	<ul style="list-style-type: none"> • Retail Banking Industry Report, American Banker Association
ATM information inquiries	<ul style="list-style-type: none"> • Card Industry Directory, Faulker and Gray • McKinsey research

Savings and time accounts. Savings and time accounts included statements, passbooks, money market accounts, IRAs, CDs, and club accounts. Post-1980 data for the number of accounts was obtained from the American Banker Association (ABA). Before 1980, the data was calculated by extrapolating the Bureau of Labor Statistics (BLS) index series for the number of time and savings accounts.

Personal loans. Personal loans were measured as the number of revolving (e.g., credit cards) and nonrevolving loans (e.g., auto loans). To estimate the average number of revolving loans, MGI divided the total balance of revolving loans originated by retail banks (including securitization) by the average value of a revolving loan, which was obtained from the Federal Reserve Survey of Consumer Finances. The source for the number of nonrevolving loans was the BLS.

Personal real estate loans. Personal real estate loans were measured by dividing the home equity loan balance in commercial banks' financial statements by the average value of home mortgages. The source of the average value of a personal home mortgage was the Federal Deposit Insurance Corporation (FDIC) and the American Mortgage Association.

Trust accounts. Trusts were measured by the number of trust accounts managed by commercial banks and savings and loan institutions. The source of this data was the FDIC.

Total labor measure

Total labor in retail banking was measured by the number of full-time equivalent (FTE) employees in commercial banks and savings institutions' payroll, plus outsourced FTEs, less the number of workers that performed non-retail activities.

Number/FTEs. The numbers of FTEs in commercial banks and savings institutions was obtained from the BLS.

Outsourced labor. Outsourced labor was found primarily in call centers, transaction processing, and IT services. Outsourced labor was estimated by adding FTEs from the largest transaction processing providers (Finserv and FDC, among others). The number of FTEs in call centers was estimated using ABA reports and annual 10-K reports for the largest banks.

Workers with nonretail activities. The number of workers that perform nonretail activities (e.g., commercial loans or commercial real estate loans) was derived from the Federal Reserve Function Cost Analysis report.

Calculation of physical output categories

MGI has aggregated each of the five physical output categories using revenue share. To estimate the revenue share for transactions, deposits, loans and trusts MGI used the “user opportunity cost” approach.

Revenue from customer deposits. Banks could borrow money from other banks or from depositors. The interbank lending rate is usually higher than the interest rate banks pay to depositors. The difference between these two rates is the “revenue” a bank receives for each dollar a customer deposits.

- ¶ The revenue from transactions is calculated as the difference between the interest a bank would pay for short-term funds and the interest banks pay on checking accounts. Additionally, transaction charges are also part of the transaction revenues. Transaction’s share of total retail banking revenue is 61 percent.
- ¶ The revenue from savings and time accounts is calculated in a similar way. Naturally the revenue from time and savings accounts (on a per dollar basis) is small for banks since the interest rate banks pay on those accounts is higher than the interest they pay on checking accounts. Time and saving’s account’s share of total retail banking revenue is 8 percent.

Revenue from retail loans. Banks’ revenues from retail loans are defined as the difference between the interest rate banks charge when they lend the money to retail customers and the interest rate banks could charge if they lend the money to another bank (assuming similar maturity and risk). The revenue share from personal loans is 12 percent and the revenue share from real estate loans is 7 percent.

Revenue from trusts. Banks’ revenues from trusts were obtained from FDIC data. The revenue share from trusts is 12 percent.

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Retail Banking Exhibits

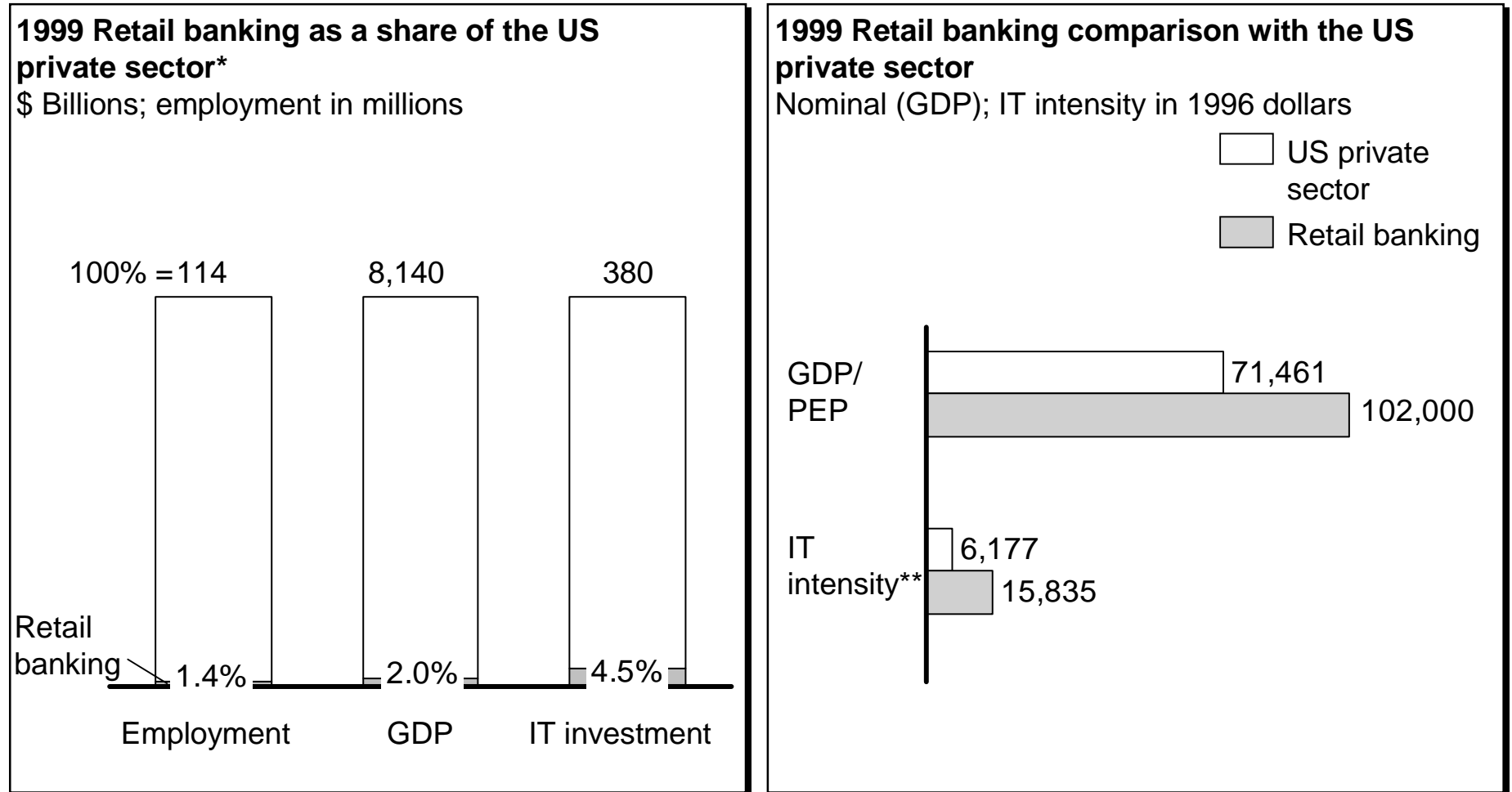
McKINSEY GLOBAL INSTITUTE

Exhibits for Retail Banking Write-up
October 3, 2001

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Exhibit 1

RETAIL BANKING HAS HIGHER LABOR PRODUCTIVITY THAN OVERALL US ECONOMY



* Employment and GDP data for retail banking is calculated from BLS and FDIC data for retail deposits and transactions, lending, and fiduciary activities

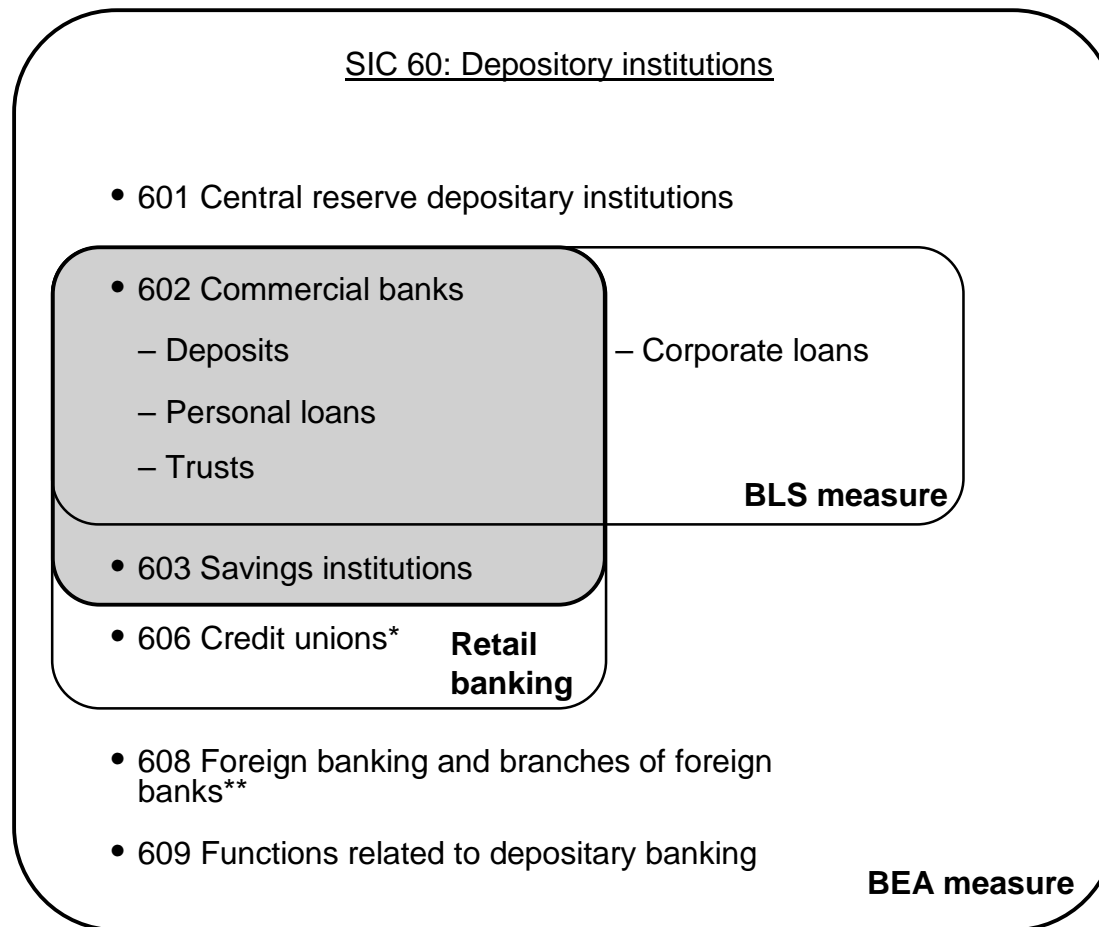
** BEA data for depository institutions for 1996

Source: BEA; BLS; MGI analysis

Exhibit 2

MGI MEASURE OF RETAIL BANKING INCLUDES COMMERCIAL BANKS AND SAVINGS INSTITUTIONS

 MGI focus



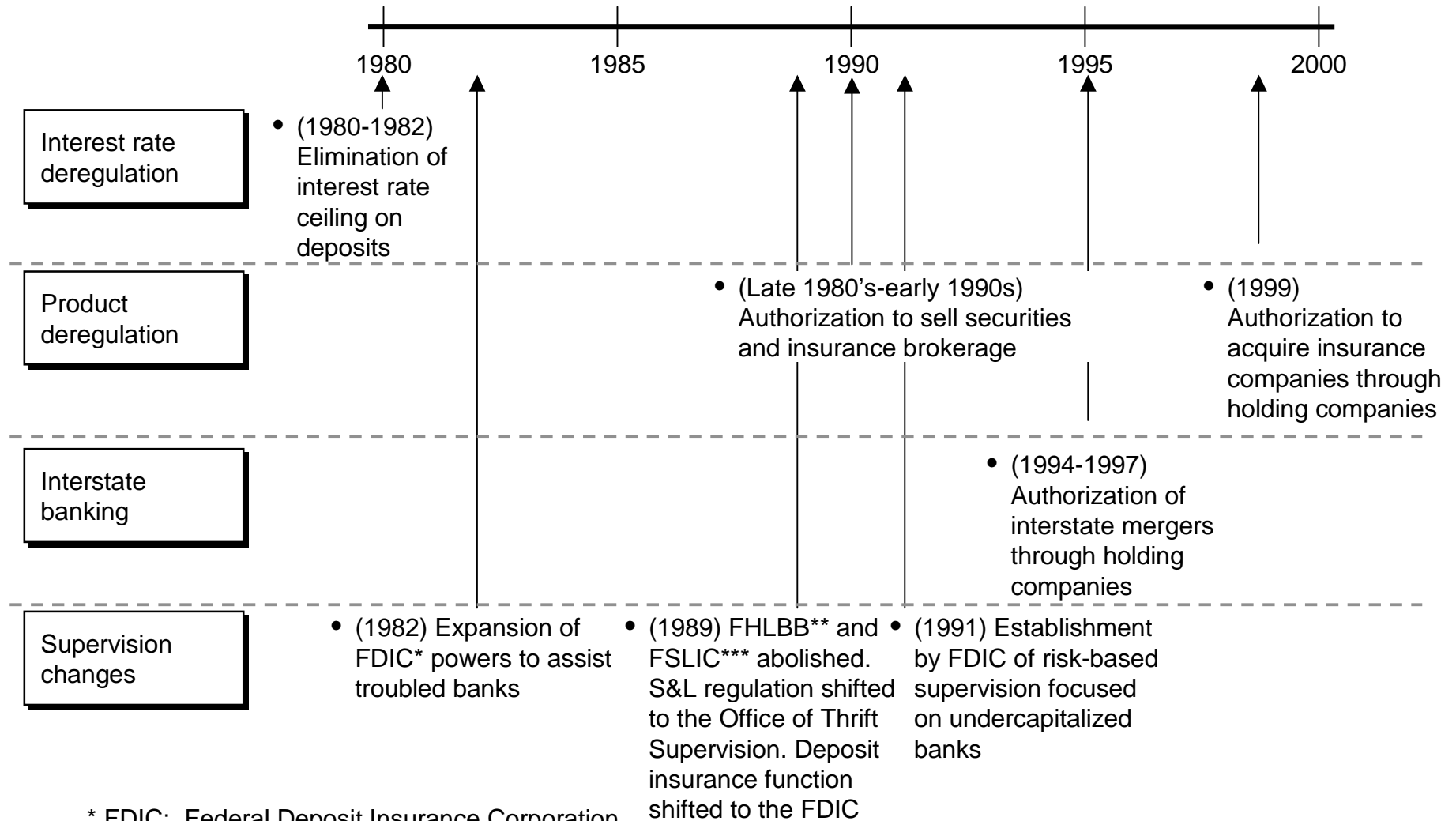
* While credit unions are part of the retail banking sector definition, they are not included in the MGI measure because available data is limited

** Foreign banks accepting retail deposits from the general public are classified under SIC 602-Commercial banks

Source: SIC index; MGI analysis

Exhibit 3

RETAIL BANKING HAS UNDERGONE SEVERAL WAVES OF REGULATORY CHANGES



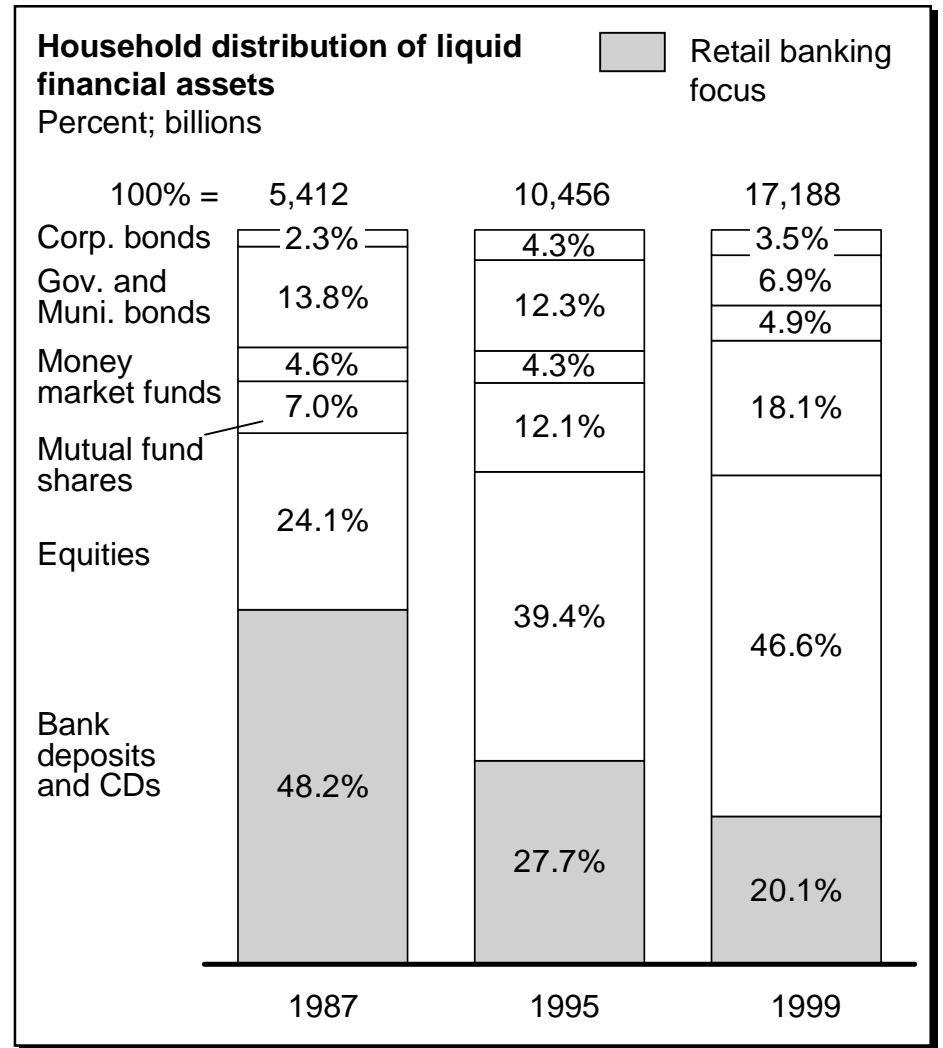
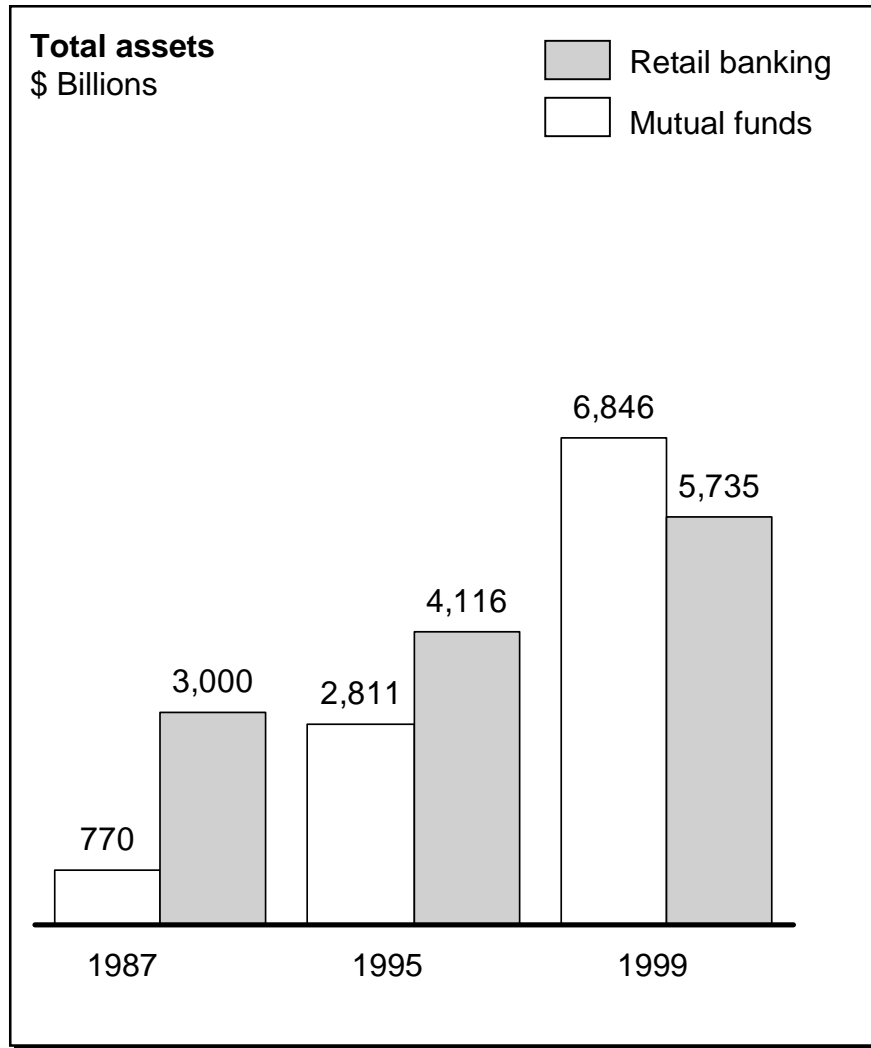
* FDIC: Federal Deposit Insurance Corporation

** FHLBB: Federal Home Loan Bank Board

*** FSLIC: Federal Savings & Loan Insurance Corporation

Exhibit 4

RETAIL BANKING'S SHARE OF FINANCIAL ASSETS HAS DECREASED SINCE 1987

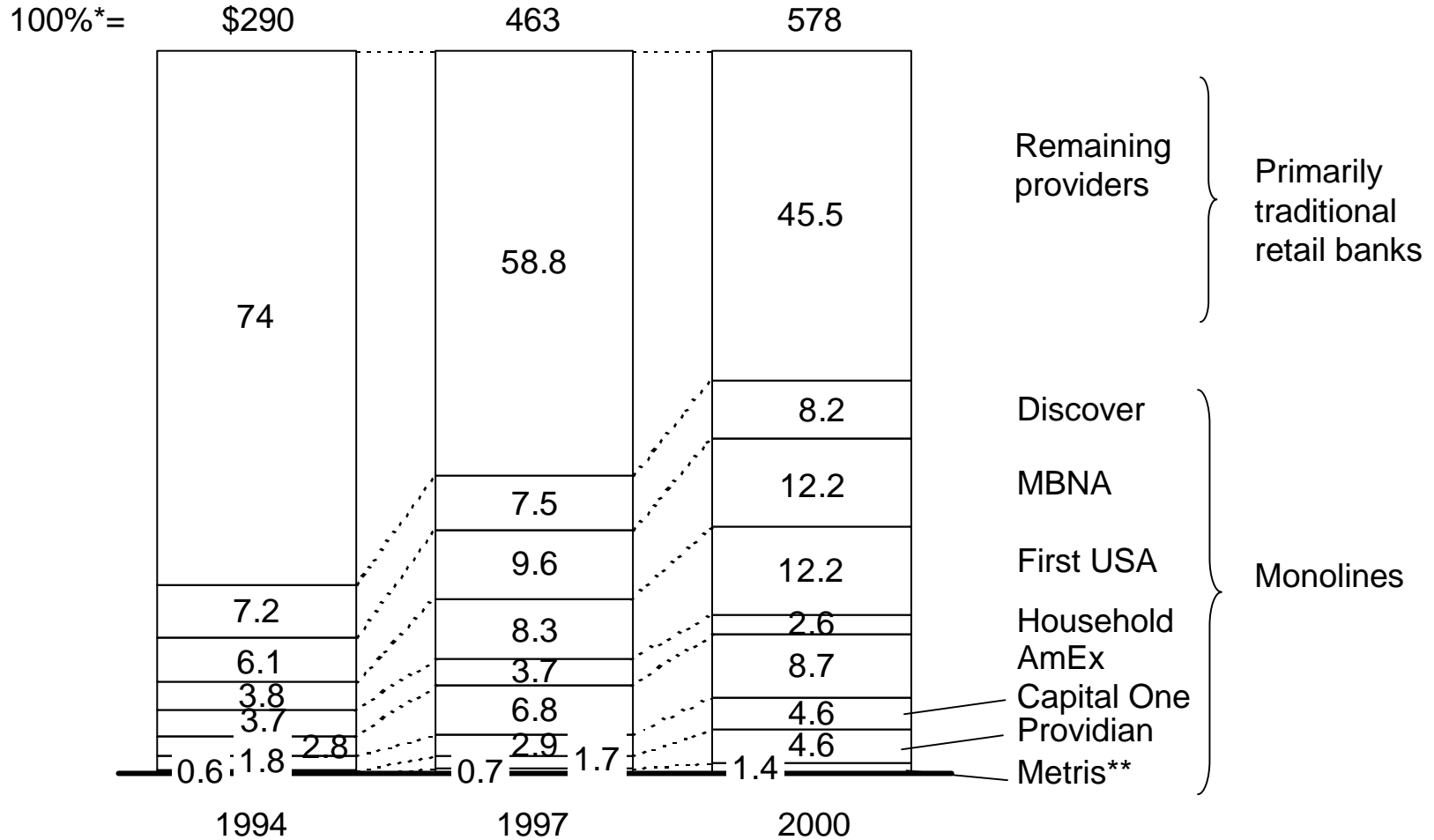


Source: Federal Reserve; ICI

Exhibit 5

TRADITIONAL BANKS HAVE BEEN LOSING MARKET SHARE TO MONOLINES

Percent; \$ Billions



* 100% represents total credit card balances outstanding

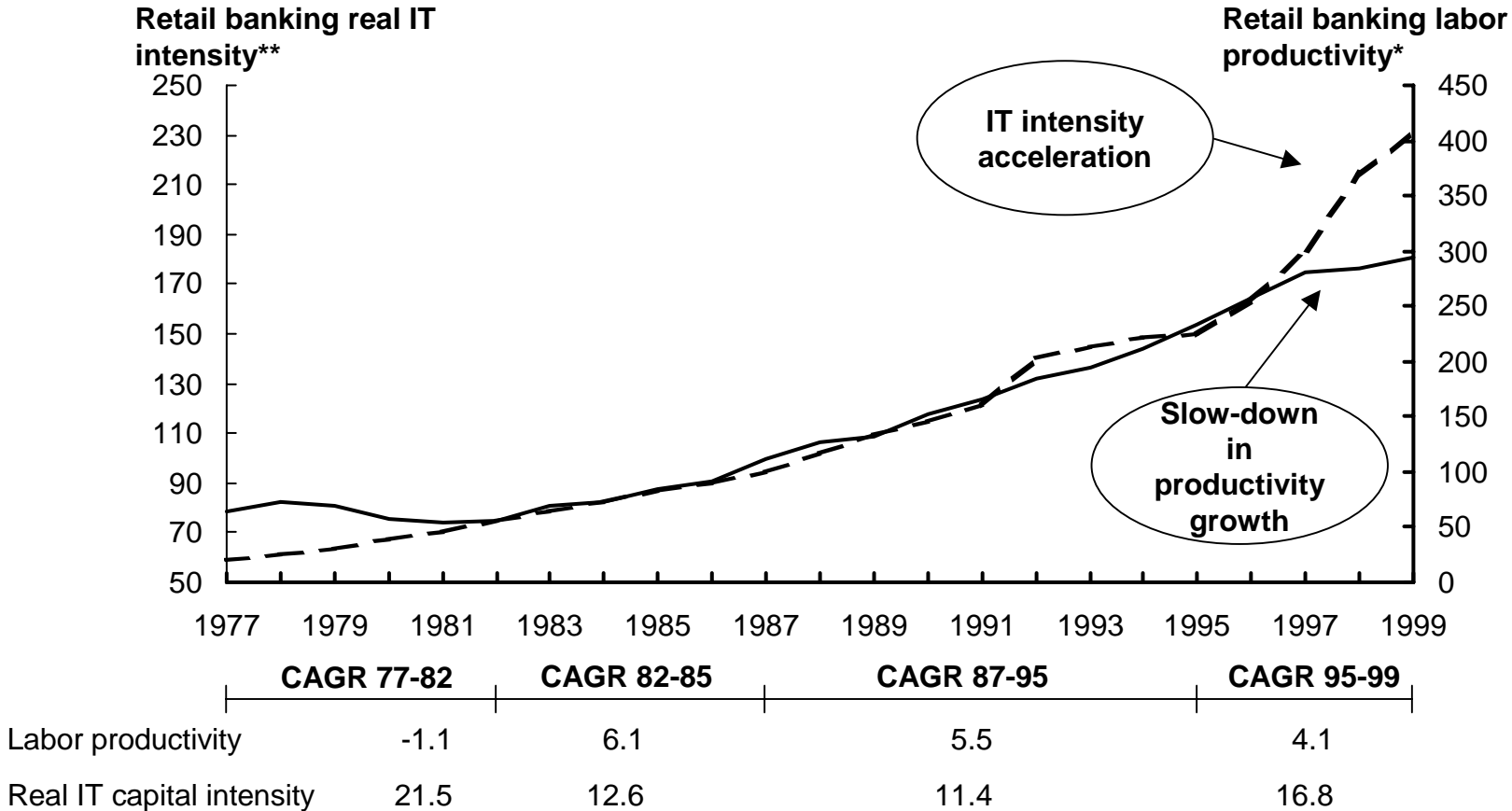
** Metris market share in 1994 was close to zero

Source: Nilson Report

Exhibit 6

SINCE 1995 RETAIL BANKING LABOR PRODUCTIVITY HAS SLOWED AS IT CAPITAL INTENSITY HAS ACCELERATED

Index 1987 = 100



* Labor productivity measured as real output (transactions plus loans plus fiduciary activities), divided by hours worked

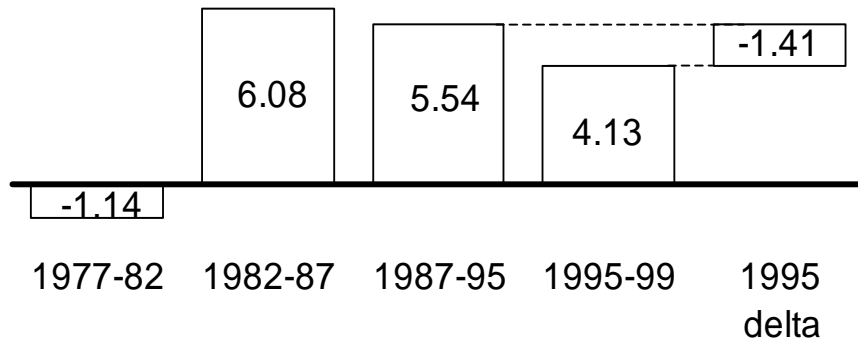
** Real IT intensity measured as real IT capital stock, divided by PEP. Estimated based on BEA data for depository institutions

Source: BEA; MGI analysis

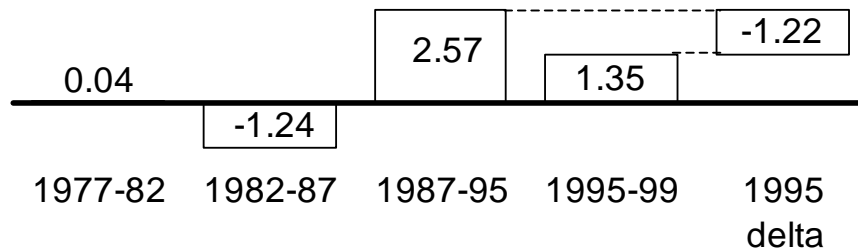
Exhibit 7

RETAIL BANKING LABOR PRODUCTIVITY GROWTH RATES HAVE DECLINED SINCE 1982 CAGR

MGI labor productivity results



Labor productivity results based on BEA data*



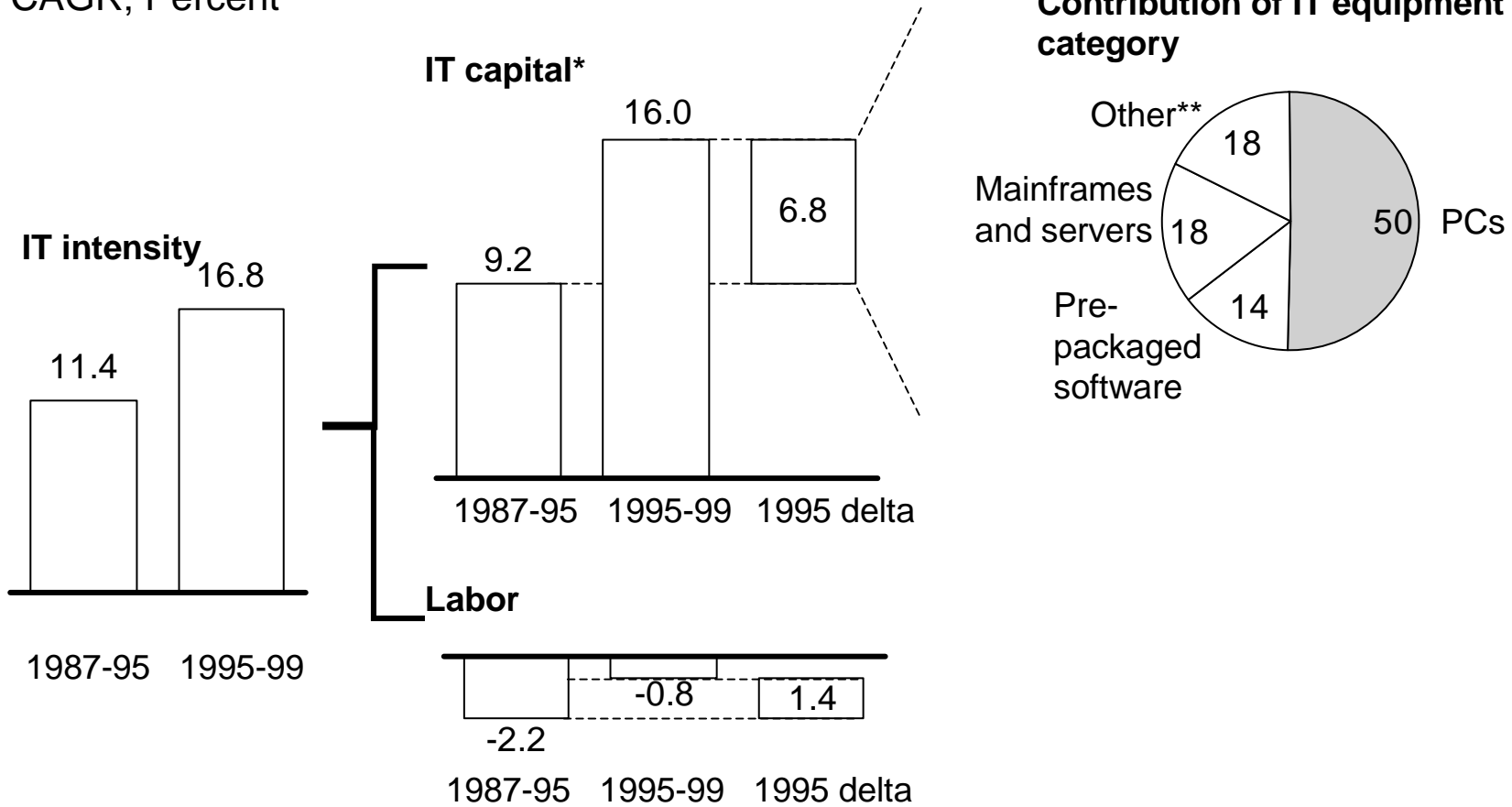
- Retail banking's period of most rapid productivity growth was 1982-87
- Labor productivity growth has been underestimated by official statistics

* BEA results for depository institutions. Note that BEA changed its methodology for calculating real value added for depository institutions in 1987

Exhibit 8

BANKS' STRATEGIES LED TO INVESTMENTS IN THREE IT CATEGORIES

Increase in IT capital by IT equipment category
CAGR; Percent



* IT capital figures represent BEA data for depository institutions

** Other includes custom software (8.1%), computer peripherals (8.8%), computer storage devices (9.1%), computer terminals (5.5%), communications equipment (-17.8%), and other (4.2%)

Source: BEA; BLS; MGI analysis

Exhibit 9

BANKS' STRATEGIES DROVE IT INITIATIVES

Percent

CIO allocation of investment per strategy	Business strategy	Major IT initiatives*	CIO allocation of IT investment per initiative
40	• Customer information management, support and sales automation**	• Customer support, call management, projections and analytics tools, sales support and other CRM tools	15
15	• Mergers and acquisitions	• Customer data and systems integration	40
13	• Multichannel approach**	• On-line banking	13
12	• Product proliferation	• Other new functionality	27
15	• Other applications		
5	• Disaster avoidance	• Y2K investment***	5
Total	100		Total = 100

* Estimates include all direct and indirect IT investments in hardware software and communication equipment, excluding expenses

** Includes investments in additional mainframe processing power due to increases in transaction volume.

*** Y2K investment represents only half of total Y2K costs; the remaining half was an expense

Source: Information Week 500; Tower Group; Retail banking CIO/executive interviews; IDC; MGI analysis

Exhibit 10

SEVERAL FACTORS DROVE RETAIL BANKING IT PARADOX

- ◐ **Somewhat important**
(10-50% of investment)
- X** **Not important**
(<10% of investment)

Retail banking

External factors

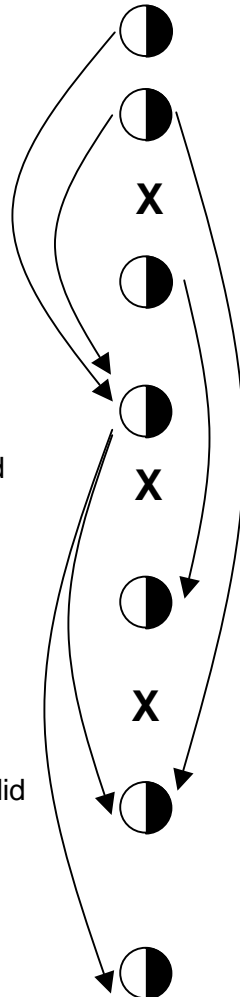
- Capital markets / demand effects
- Product market regulation
- Y2K

Industry-level factors

- Unmeasured consumer benefits
- Low competitive intensity
- Lower than expected demand

Operational explanations for lack of productivity enhancement

- Unmeasured convenience to customers/surplus shift
- Y2K compliance
- Software and hardware that did not yield expected returns
- Excessive/unnecessary investment

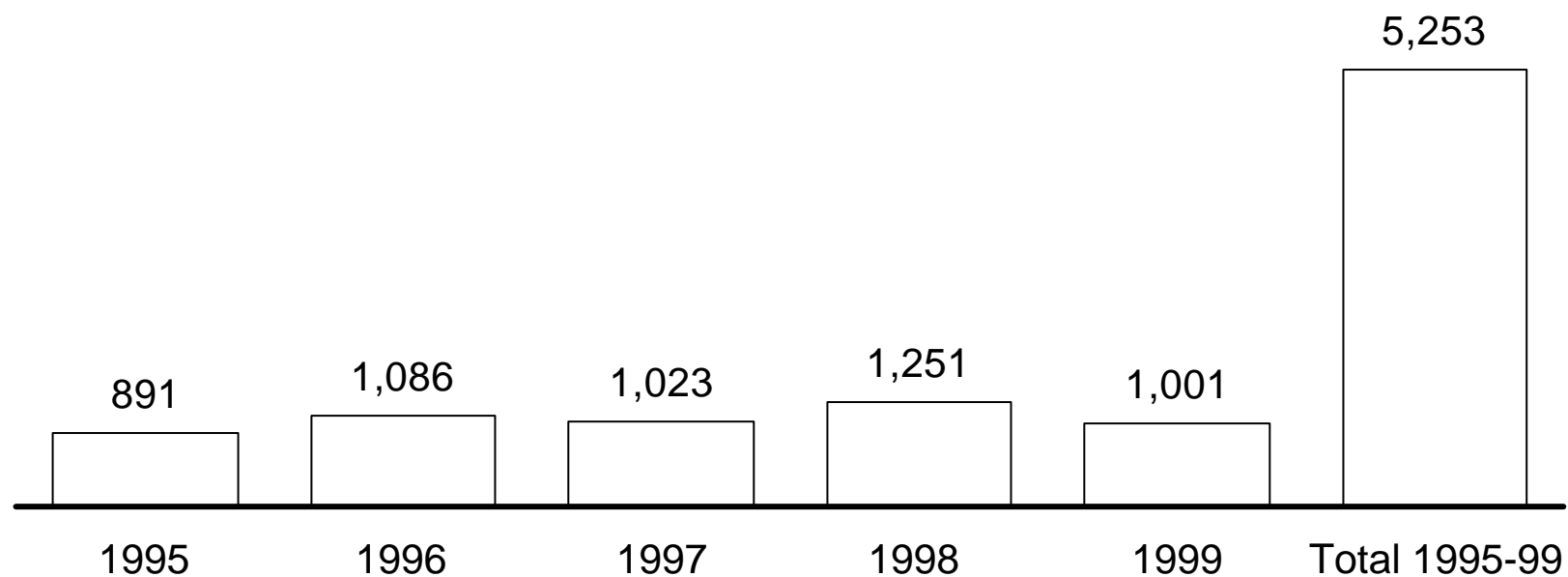


- High returns supported by non-interest income driven, in part, by buoyant financial markets
- Interstate banking deregulation facilitated merger activity.
- The lack of a nationwide electronic payment system limits online savings potential
- Full benefits of online banking, automated call centers difficult to measure
- Industry becomes more concentrated, and more profitable
- “Arms race” benefits consumers (e.g., online banking, call centers)
- Necessary but not designed to enhance productivity
- Disappointing CRM results to date
- Complexity costs associated with bundling/pricing options whose consumer benefits are unclear to date
- Merger integration costs have been significant with returns yet to come
- PCs purchased likely excessive in number and power

Exhibit 11

BANKS* PURCHASED ON AVERAGE TWO PCs PER EMPLOYEE DURING 1995-1999

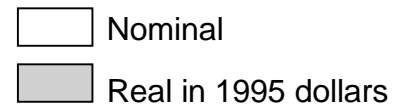
PC investment per employee, nominal dollars



* Data for depository institutions

Source: BEA; MGI analysis

THERE IS EVIDENCE OF EXCESS CAPACITY IN PCs



Interviewee quotes

“Although I am very pleased with the technology we deployed, we have not used all the capacity”

“If there is any place where there is excess capacity, it is damn sure on the desktop. You have a tremendous amount of power that you are using only 1% of”

“[Say I’m a manager.] I requisition a piece of software based on the full functionality it offers. As I cost justify it, I build more functionality into the cost or revenue justification for it. After the purchase, it is an open question whether the IT group has the ability to make that functionality available at the desktop with quality, where it can be a productive asset”

Investment in PCs

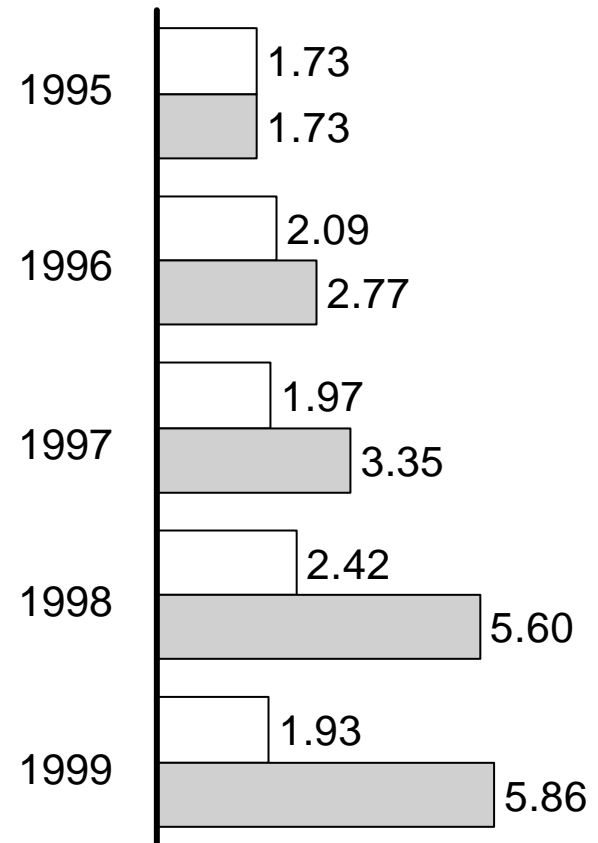
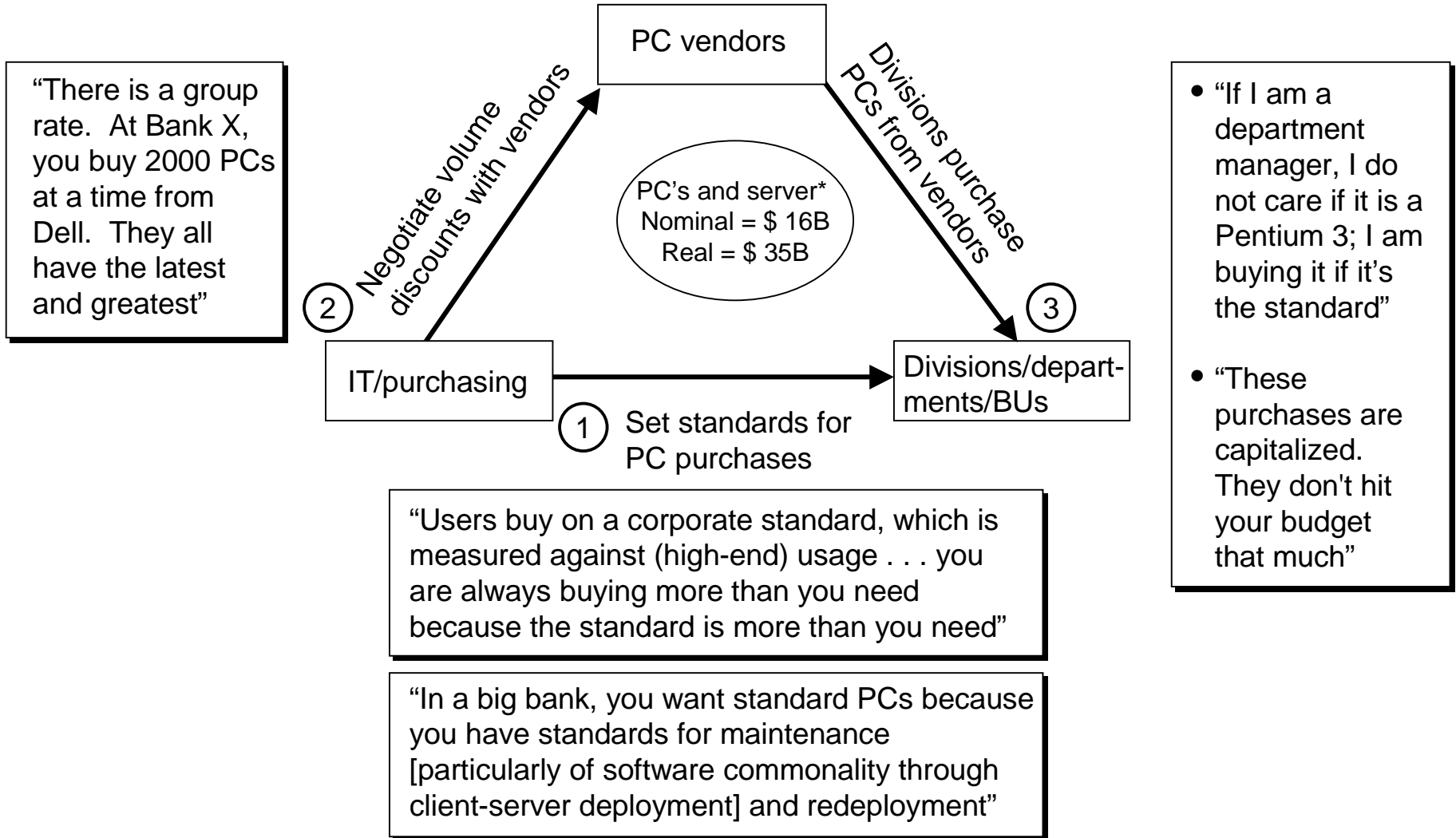


EXHIBIT 13

DYNAMICS OF PC PURCHASING CONTRIBUTED TO OVERINVESTMENT IN PCs

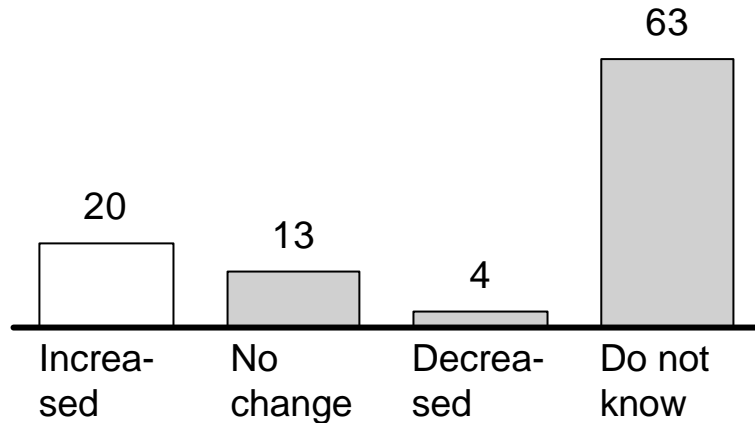
\$ Billions



* Cumulative investment, 1996-1999; real numbers in 1996 dollars

MOST CRM PROJECTS HAVE NOT ACHIEVED EXPECTED RETURNS

Impact of CRM – change in customer profitability
Percent of surveyed banks



80% of surveyed banks have not seen or are unsure whether CRM has increased customer profitability

CRM assessment from Gartner Group

“55 percent of projects that apply technology to selling [have] fail[ed] to deliver measurable benefits. During the next three years, this will grow to 85 percent.”

CRM assessment from CIOs and banking executives

“Even today, the returns on data warehousing are dubious. Okay, technologists, you have built this for us. How do we use it?”

“A lot of the IT investment in retail banking has been in the area of customer acquisition, in a market that is not growing . . . The impact of this investment was stealing share, not growing the overall market . . . Almost by definition, such investments will drive down productivity”

“The way we deploy IT in our firm has created a shift in the way we do processes and practices. Anytime you see that shift or change, productivity will go down as people adjust to those new products”

“The jury is still very much out on CRM”

PRODUCT PROLIFERATION DROVE COMPLEXITY AND HIGHER COSTS

Product proliferation leading to hardware investments

Example

"In 1994/95, there were a couple of credit cards, one at 17% interest, the other at 19%. When I left [last year] there were 43,000 pricing combinations they had to handle and that increased complexity. Each was considered a separate product"

Impact

"The complexity that goes through the software degrades its performance; the only thing that can improve it is to throw more MIPS at it . . . To deal with this we didn't just have to double computing capacity, we had to quadruple it"

Product proliferation leading to non-hardware expenses

Example

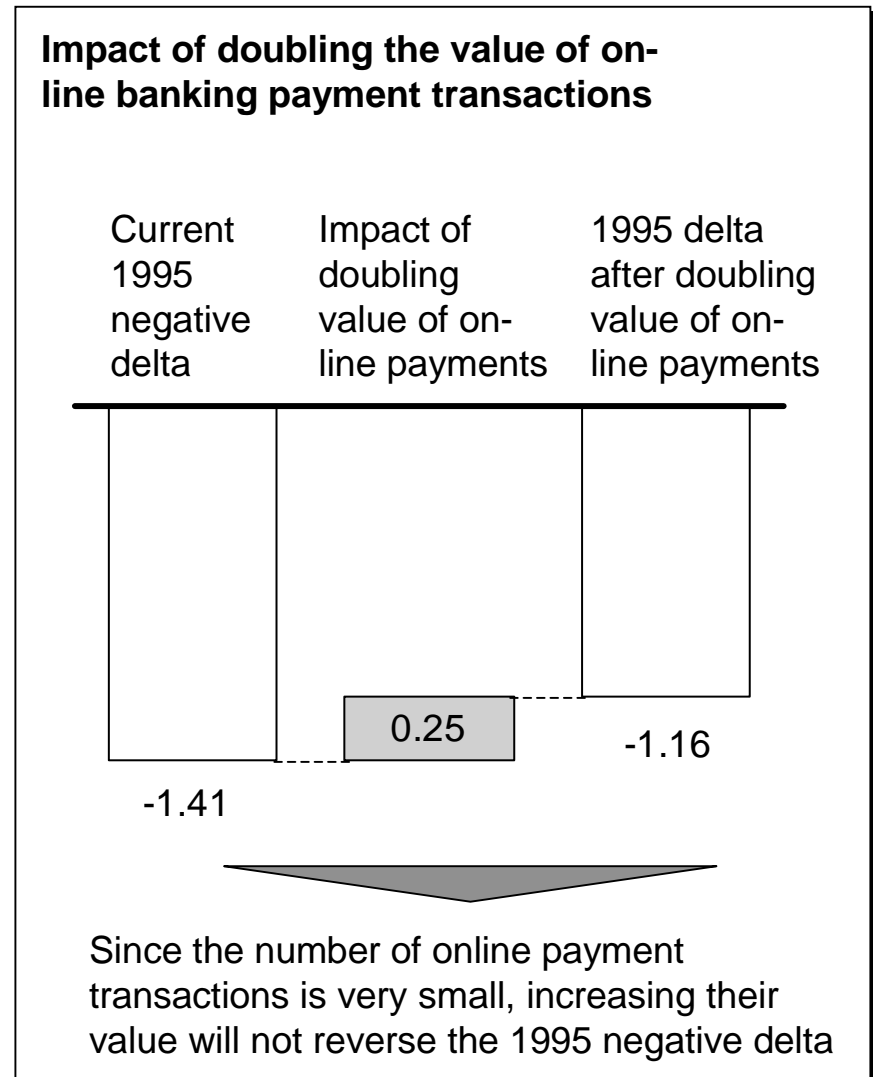
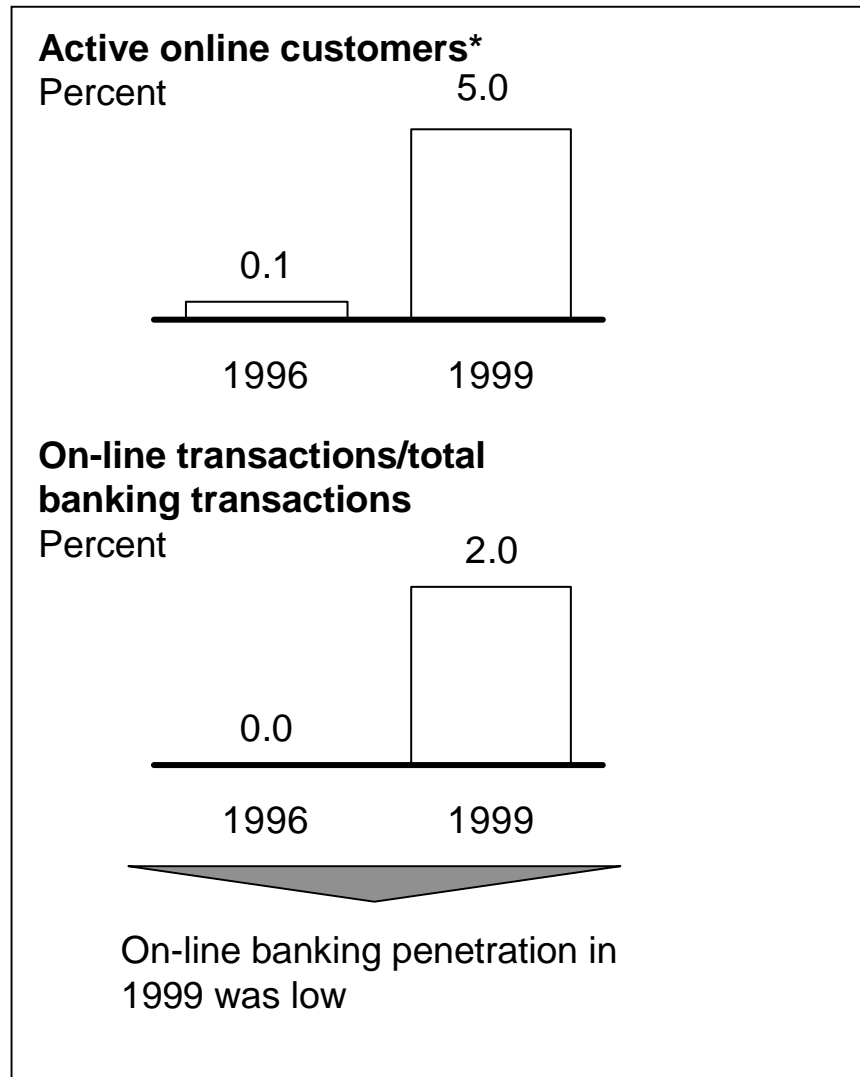
"We are being driven to our product being a commodity; the real value has been the ability to package . . . for example, we are now doing dynamic bundles of our products so customers can chose any combination of products"

Impact

"All those combinations increase complexity. As systems get more complex you have a tremendous testing requirement, every single day a big part of our [maintenance] budget is testing to make sure that the new stuff you're putting in is not impacting [old] code. That's where a lot of spending is going"

Exhibit 16

IMPACT OF ONLINE BANKING ON RETAIL BANKING LABOR PRODUCTIVITY HAS BEEN LOW

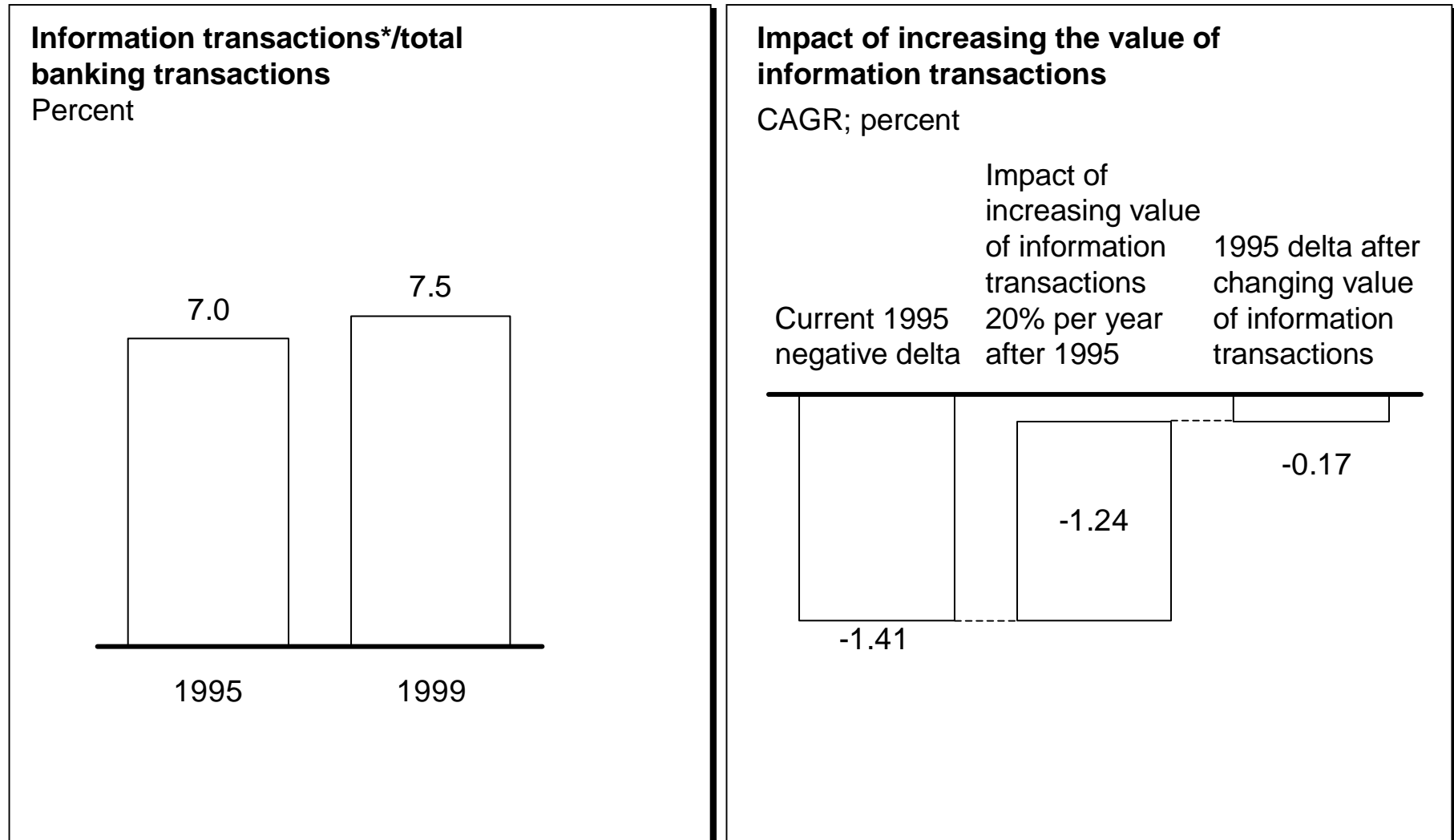


* Active online customers defined as customers who access their on-line account more than once a month

Source: On-line banking review; ABA

Exhibit 17

IMPACT OF INFORMATION TRANSACTION ON RETAIL BANKING LABOR PRODUCTION IS LOW



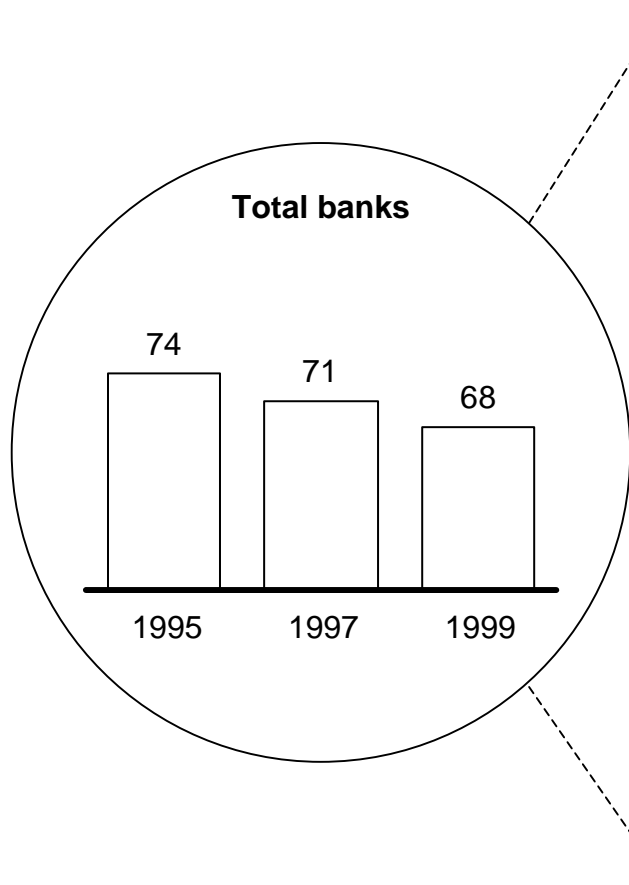
* Information transactions include call inquiries, on-line inquiries, and ATM inquires

Source: On-line banking review; Card Industry Directory; ABA

Exhibit 18

CUSTOMER SATISFACTION INDEX ACROSS THE BANKING INDUSTRY HAS DECREASED

Customer satisfaction index; percent



Consumer want banks to primarily deliver consistently on "the basics"

Importance rank*	Attribute	How banks perform Range = 0-5
1	Resolves problems quickly and correctly	3.3
2	Provides good customer service	3.6
3	Consistent performance	3.5
4	Is easy to do business with	3.5
5	Won't let you down if there is a problem	3.2
6	Provides good value	3.3
7	Reliable	3.7
8	Bank makes effort to build relationships	3.1
9	Caring	3.1
10	Trustworthy	3.7
11	Gives good advice	3.4
12	Has reasonable fees	2.7
13	Serves its customers in a timely manner	3.5
14	Flexible	3.1
15	Consistent service	3.5

* Top 15 differentiated attributes out of a total of 49

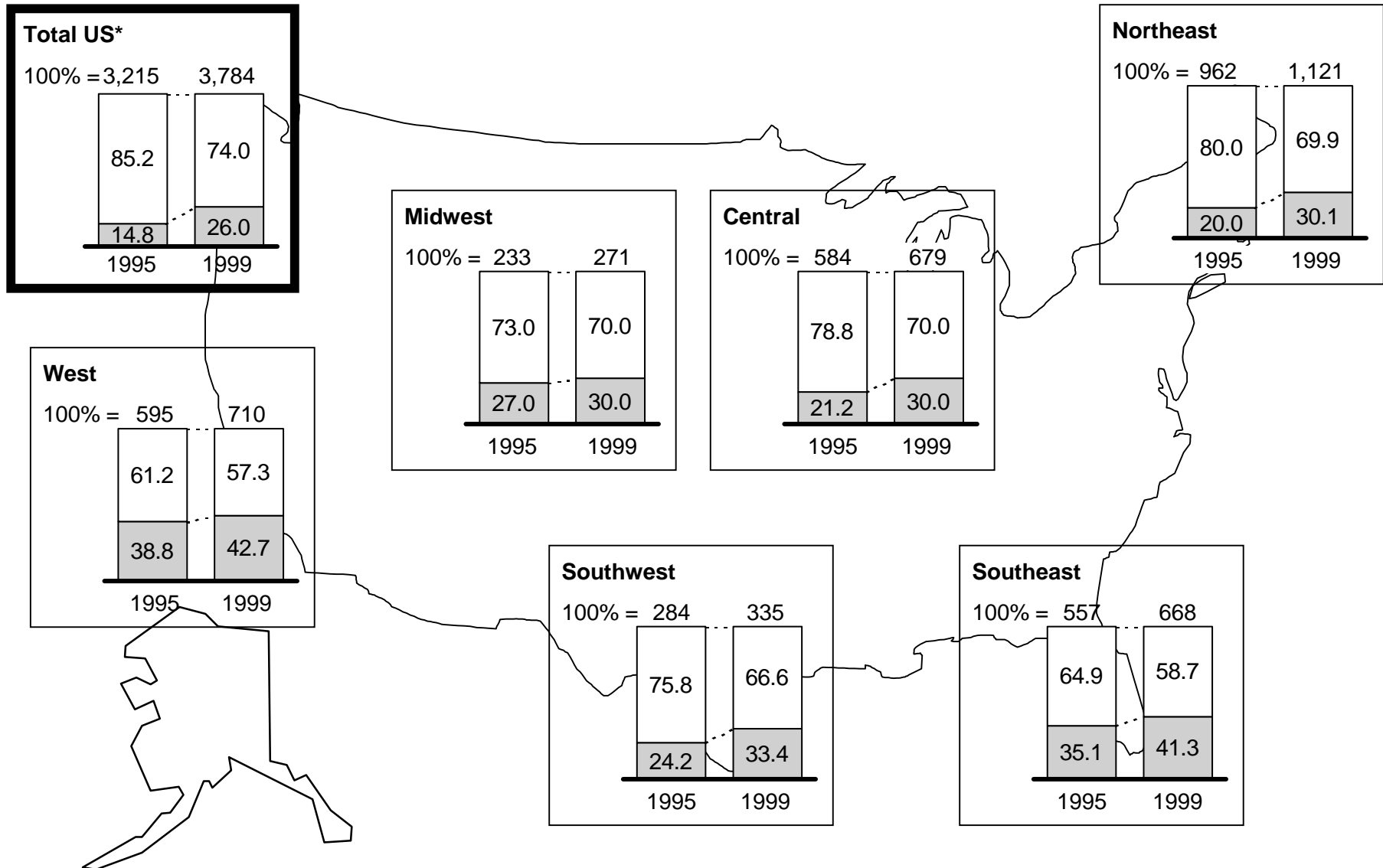
Source: McKinsey Branding Practice; University of Michigan

Exhibit 19

REGIONAL CONCENTRATION IN BANKING INCREASED, 1995-1999

Industry concentration; \$ Billions

■ Top 5 banks
□ Remaining banks



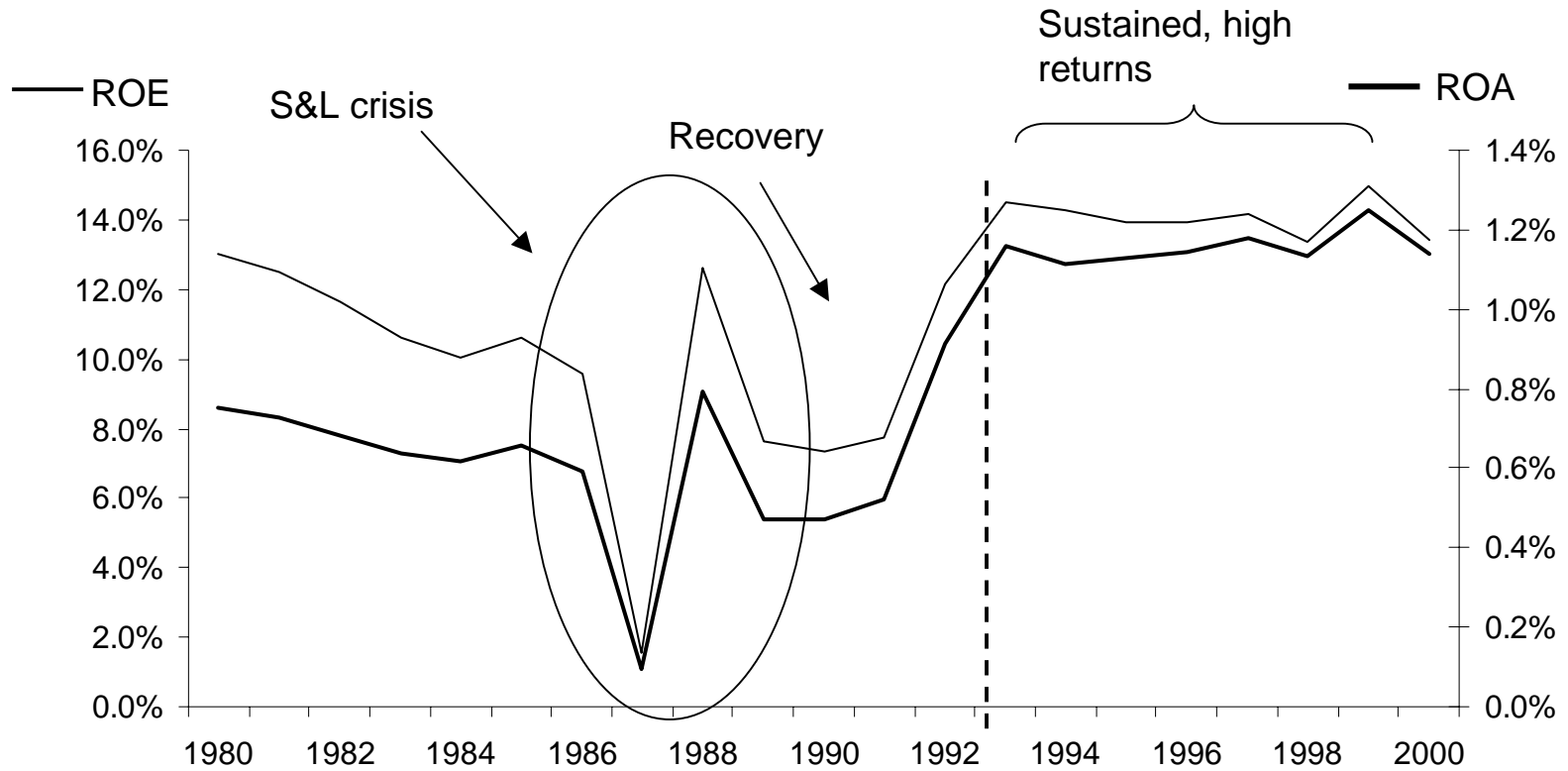
Source: FDIC domestic deposits data for commercial banks and savings institutions by holding company; MGI analysis

Exhibit 20

BANKING HAS BEEN HIGHLY PROFITABLE SINCE 1993

Commercial banks' returns, 1980-2000

Percent

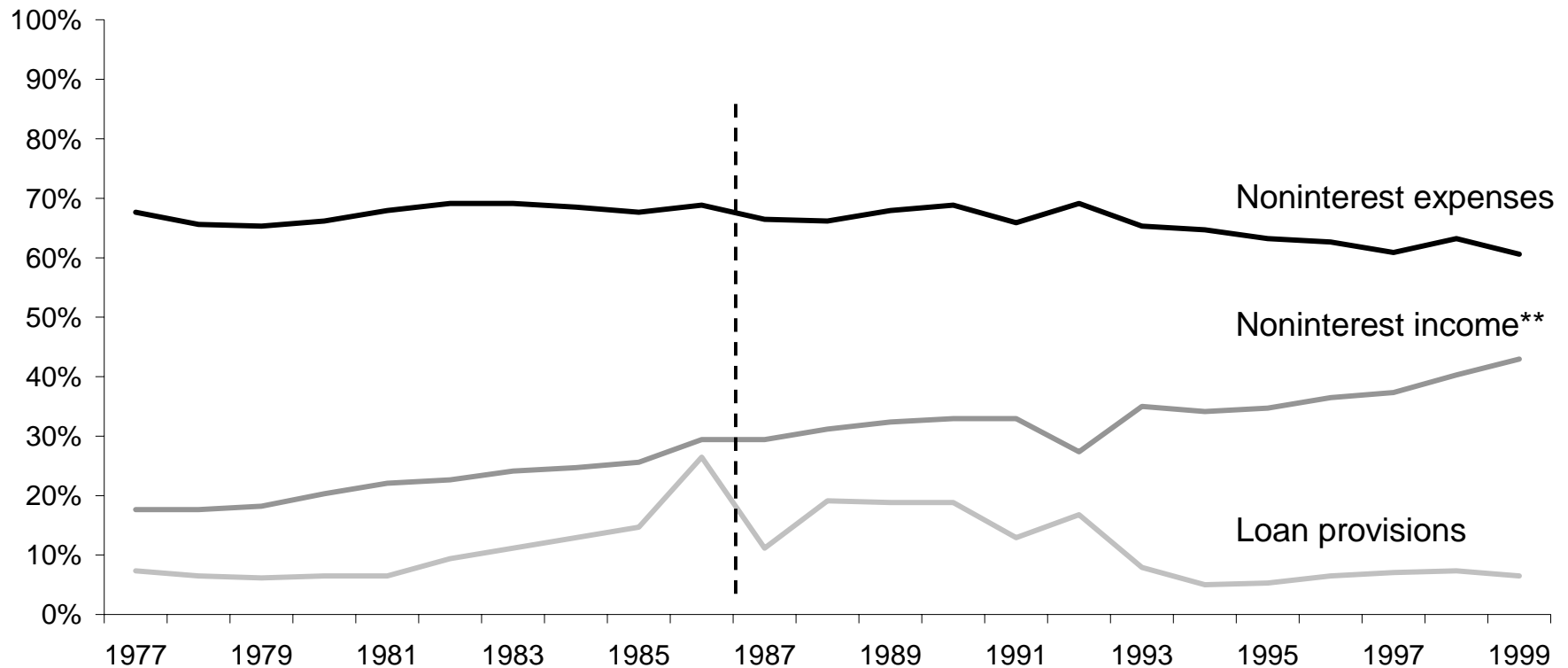


Source: FDIC

Exhibit 21

NONINTEREST INCOME WAS LARGEST CONTRIBUTOR TO INCREASED PROFITS AFTER 1993

Contributors to commercial bank's profits
Percent of total income



* Total income = net interest income + non interest income

** Non-interest income includes fiduciary activities (14%), service charges on deposits (15%), trading account gains and fees (7%) and other non-interest income (64%), which includes investment banking, servicing fees, venture capital revenue, and gains on assets sold

Source: FDIC

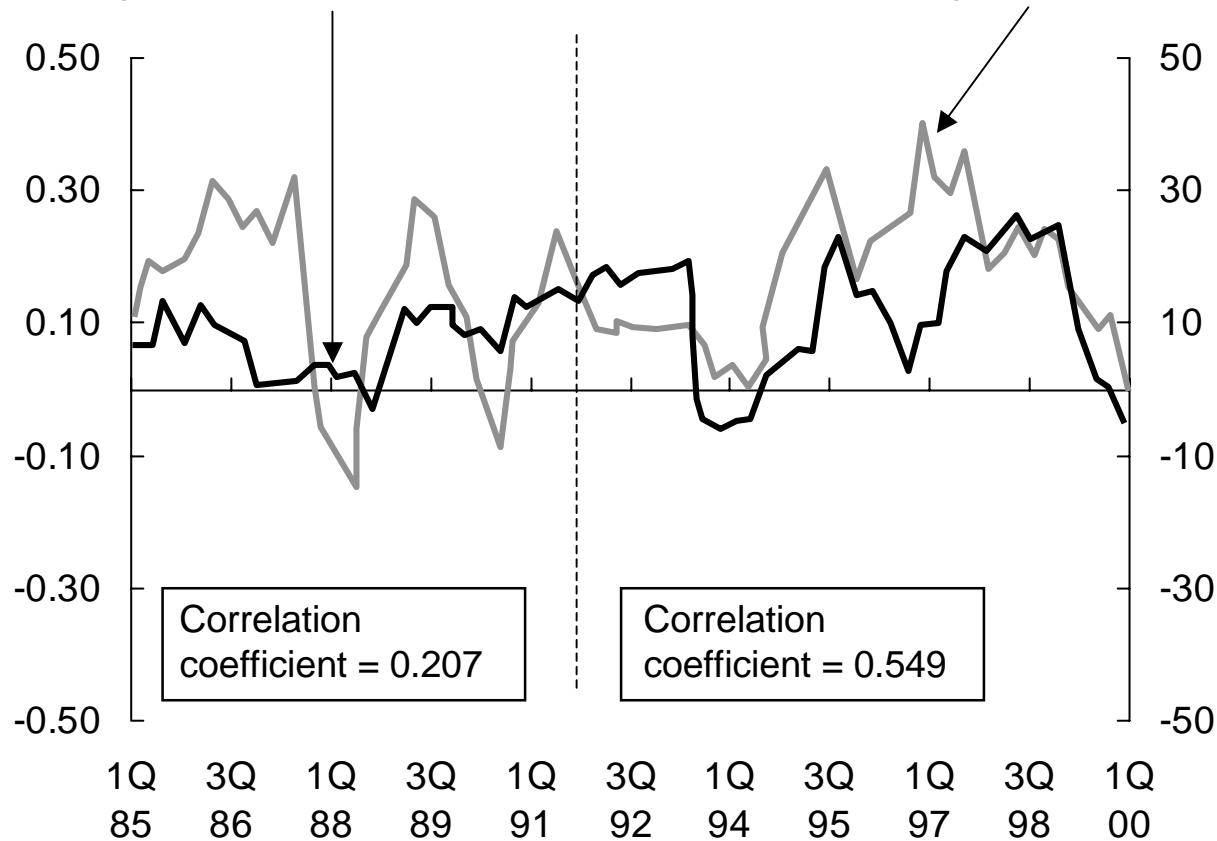
Exhibit 22

NONINTEREST INCOME CORRELATES TO S&P 500 PERFORMANCE

Percent

Year-over-year absolute difference
in noninterest income to average
earning assets

Year-over-year
change in S&P 500



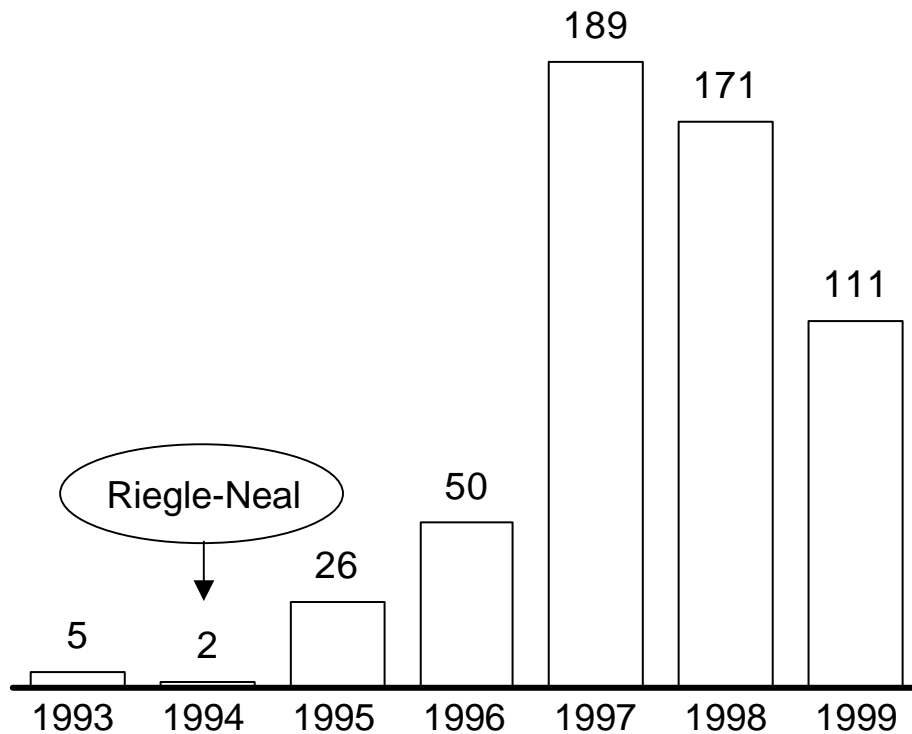
Time lag between changes in S&P 500 index and changes in noninterest income ratio of average earning assets has shortened

Source: FDIC

Exhibit 23

RIEGLE-NEAL ACT OF 1994* LED TO INCREASED CONCENTRATION IN BANKING INDUSTRY

Number of interstate mergers




- Interstate mergers usually involve larger banks than intrastate mergers; therefore, IT integration efforts are larger
- Interstate mergers require complex systems integration due to issues such as state regulations and changes in time zones


* Riegle-Neal Interstate Banking and Branching Efficiency Act (1994) allowed bank holding companies to acquire banks in any state starting in 1997

Source: FDIC

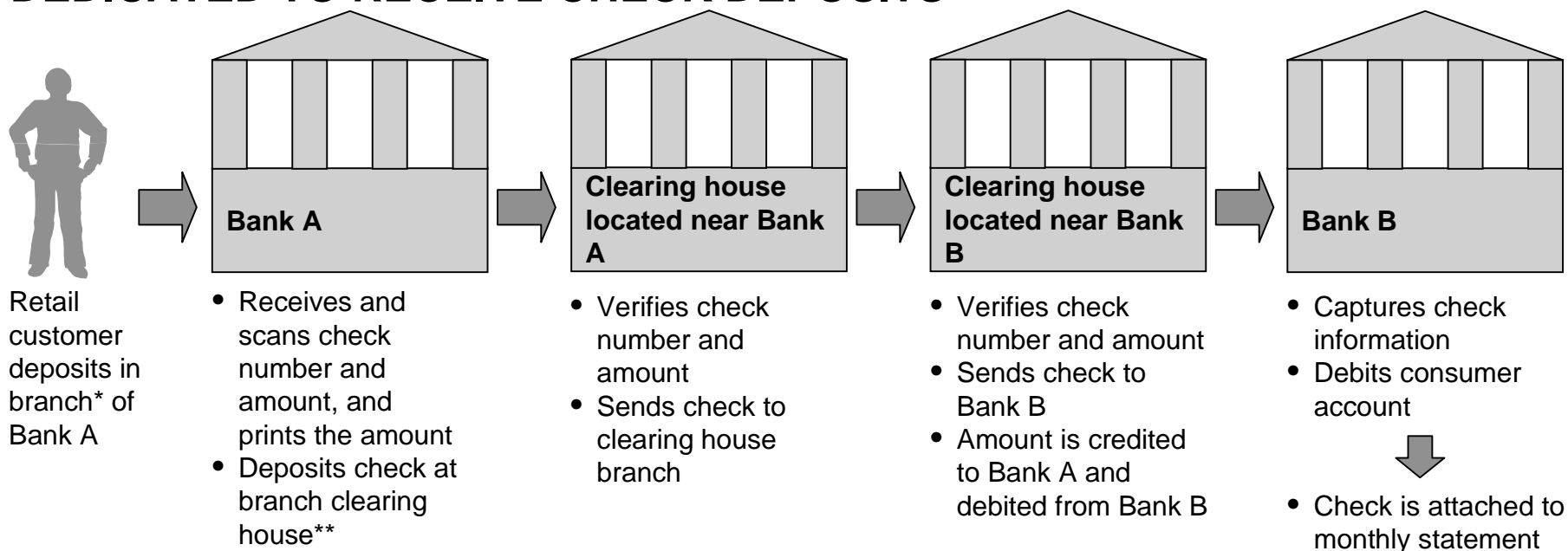
FUTURE PRODUCTIVITY BENEFITS FROM IT INVESTMENTS ARE UNCLEAR

Business approach	CIO/executive assessment	MGI assessment
Y2K	<ul style="list-style-type: none"> • Necessary investment • No functionality benefits 	<ul style="list-style-type: none"> • Same
Channel proliferation (on-line banking)	<ul style="list-style-type: none"> • No cost savings to date, but could yield future returns when penetration increases 	<ul style="list-style-type: none"> • Same
Mergers and acquisitions	<ul style="list-style-type: none"> • Should yield future cost savings 	<ul style="list-style-type: none"> • Same
Product/price proliferation	<ul style="list-style-type: none"> • Has generated incremental revenue • Has increased complexity 	<ul style="list-style-type: none"> • Returns tempered by increased complexity • Declining customer satisfaction, 1995-99, raises red flags
Customer-centric orientation / CRM	<ul style="list-style-type: none"> • Limited returns to date, but significant future promise • To date, has probably decreased productivity due to employee learning curve effects 	<ul style="list-style-type: none"> • Evidence of declining customer satisfaction, 1995-99, calls into question current and perhaps even future returns on investment


Few if any productivity enhancing investments to date, with future gains forthcoming


Few if any productivity enhancing investments to date, with future performance uncertain

IF CONSUMERS ORIGINATE THEIR CHECKS ELECTRONICALLY, BANKS COULD ELIMINATE UP TO 21% OF TOTAL TELLERS, CURRENTLY DEDICATED TO RECEIVE CHECK DEPOSITS



Number of retail banking employees that could be eliminated if consumers shift to electronic payment

Check type***	Tellers/check processor	Check processors	Check processors	Operations/clerks
C-C checks	85,000 (21% of total tellers)	<1,000	<1,000	4,000
C-B checks (bill payments)****	<1,000	4,000	4,000	15,000
C-G checks	<1,000	<1,000	<1,000	<1,000

* Retail customers deposit the majority of their checks through tellers

** If check is truncated (an image of the check is sent instead of the check), subsequent steps are automated

*** C-C: Consumer to consumer; C-B: Consumer to business; C-G: Consumer to government

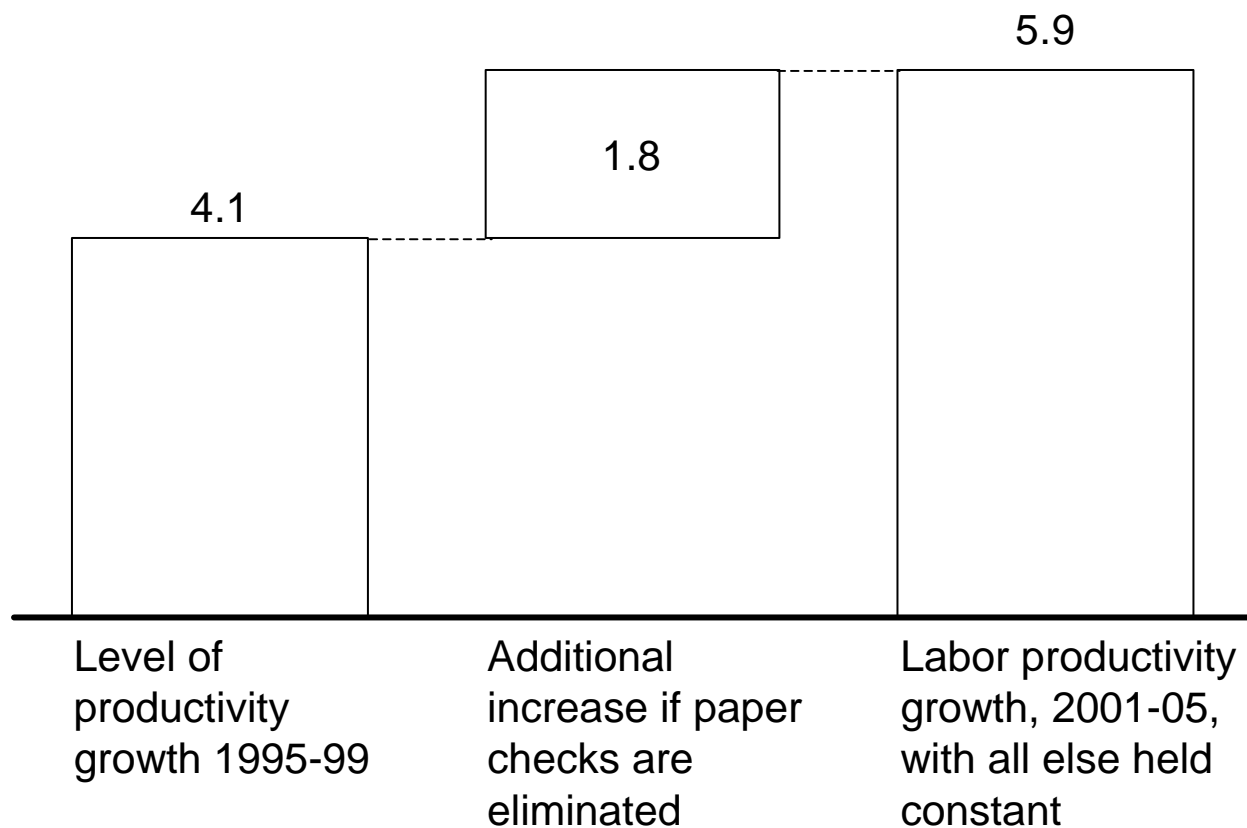
**** Represents 50% of total C-B total payments; includes monthly bill payments and excludes checks paid in stores

Source: GAO; Federal Reserve; MGI analysis

Exhibit 26

ELIMINATION OF PAPER CHECKS WILL INCREASE BANKING PRODUCTIVITY

Impact of consumers shifting from paper checks to electronic checks
CAGR; percent



Source: MGI analysis

APPENDIX

Exhibit A1

COMPETITIVE INTENSITY DROVE BANKING LABOR PRODUCTIVITY JUMP, 1982

- Important (>50% of acceleration)
- ◐ Somewhat important (10-50% of acceleration)
- X Not important (<10% of acceleration)

External factors

- Demand factors (Macroeconomic/financial markets)
- Technology/innovation
- Product market regulation
- Up/downstream industries
- Measurement issues



Industry dynamics

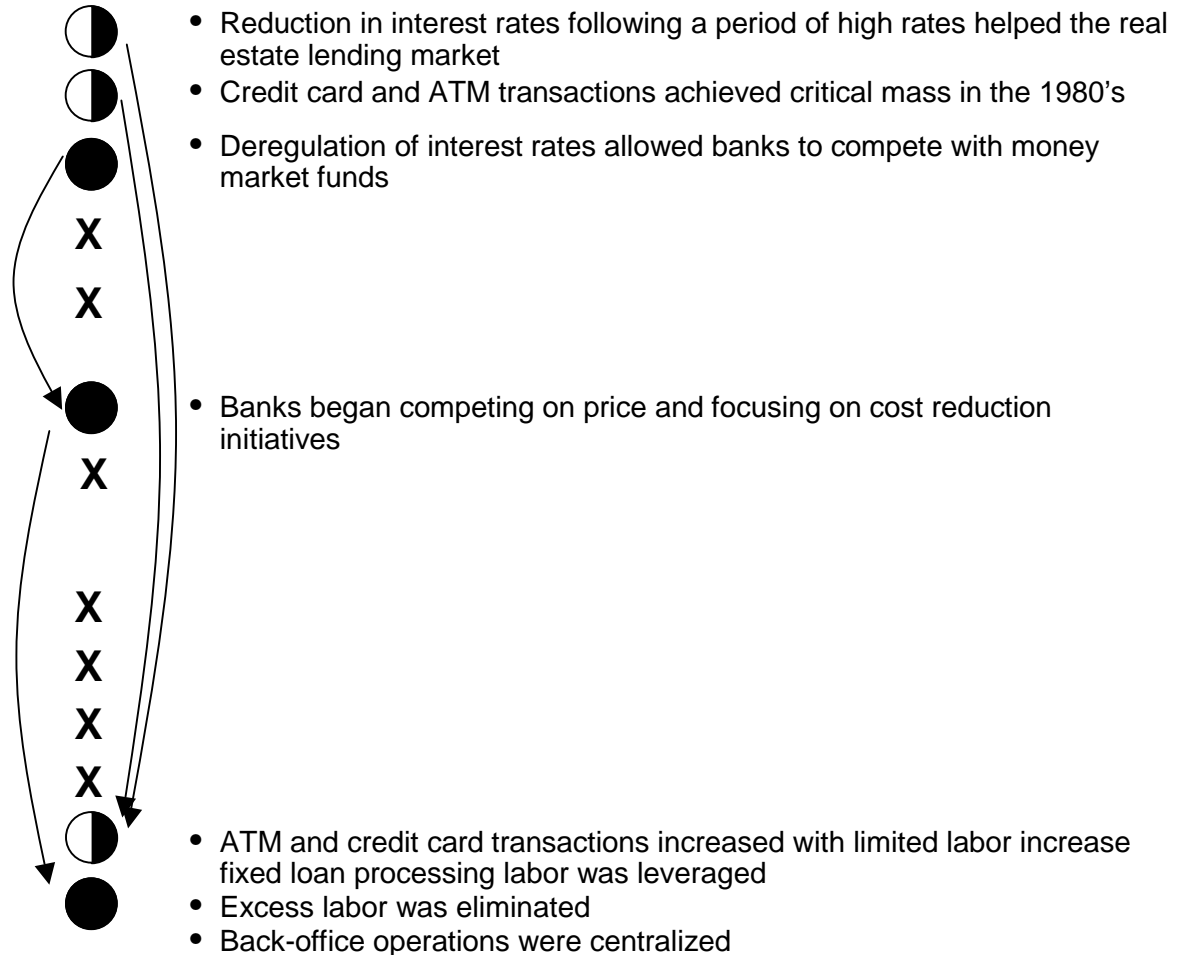
- Competitive intensity
- Prices/demand effects



Firm-level factors

- Output mix
- Capital/technology/capacity
- Intermediate inputs/technology
- Labor skills
- Labor economies of scale
- OFT/Process design

Retail banking

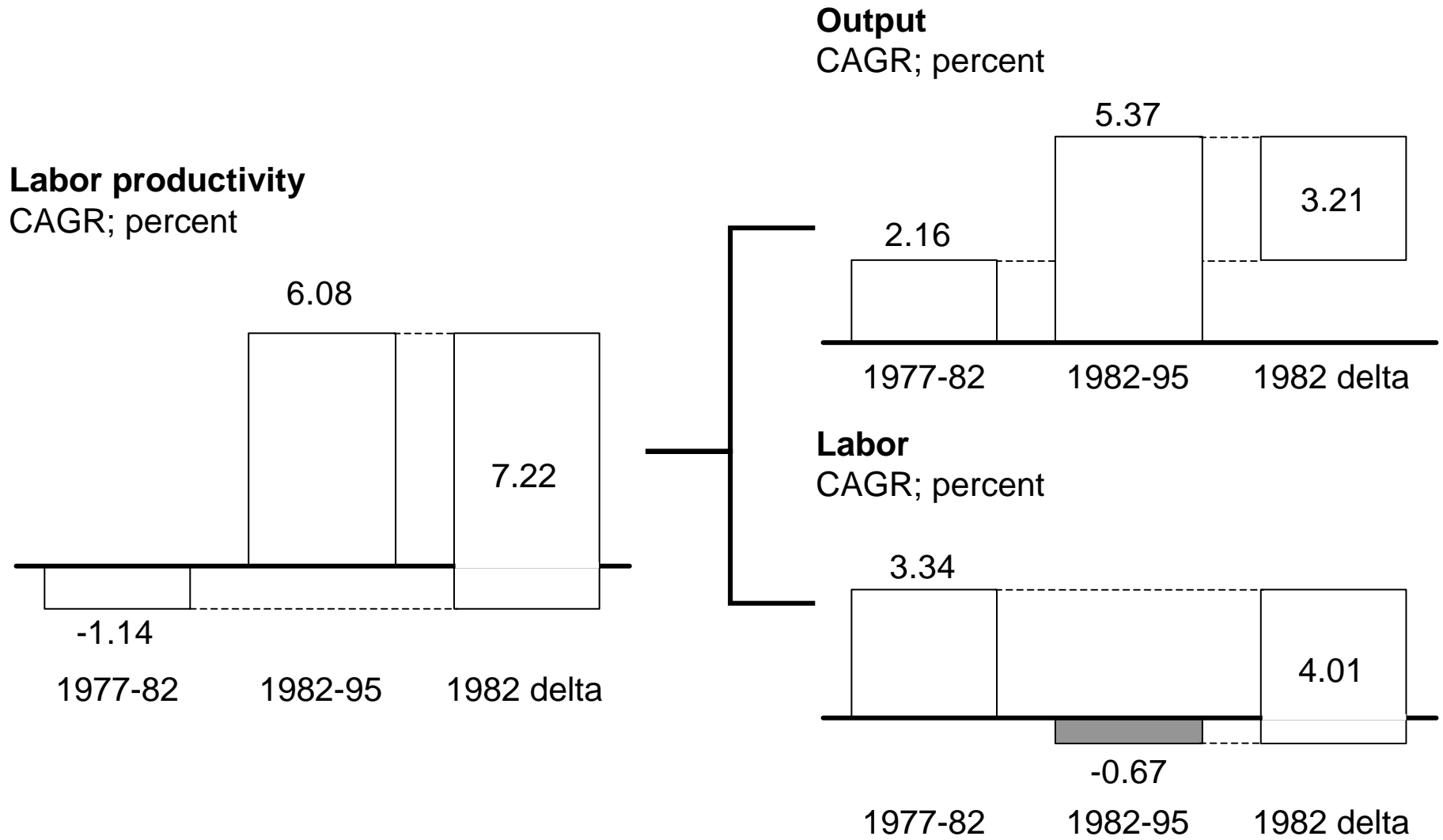


Source: MGI analysis

Exhibit A2

LABOR PRODUCTIVITY IN RETAIL BANKING JUMPED IN 1982 AS A RESULT OF LABOR REDUCTIONS

■ Labor force reduction



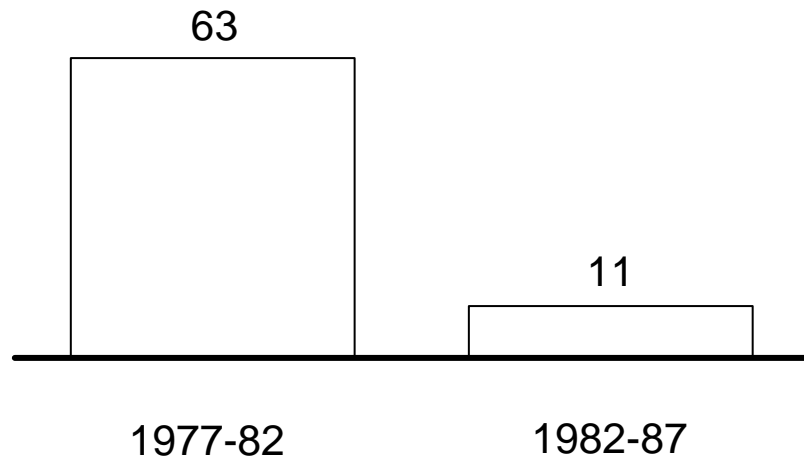
Source: BLS; FDIC; BEA; MGI analysis

Exhibit A3

IT INVESTMENT IN MAINFRAME SYSTEMS INCREASED DURING 1977-82

Investment in mainframes

CAGR; Percent

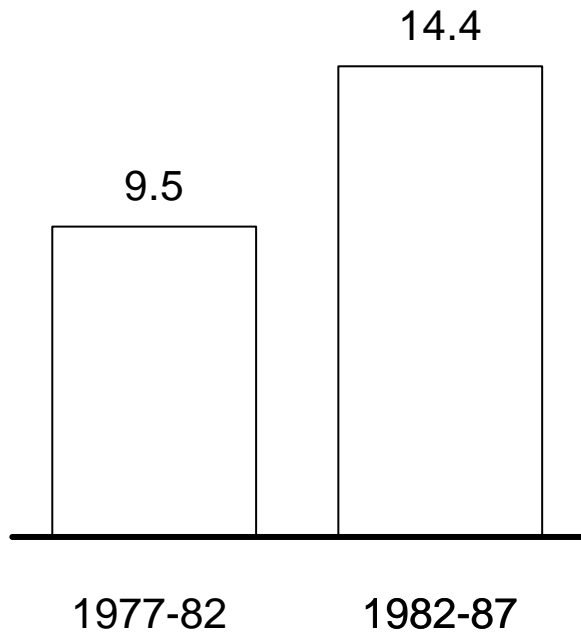


- Banks invested heavily in mainframes in the late 1970s to automate operations, centralize back-office operations, and reduce labor
- Investments slowed in the 1980s as banks reaped the benefits of past investments

Exhibit A4

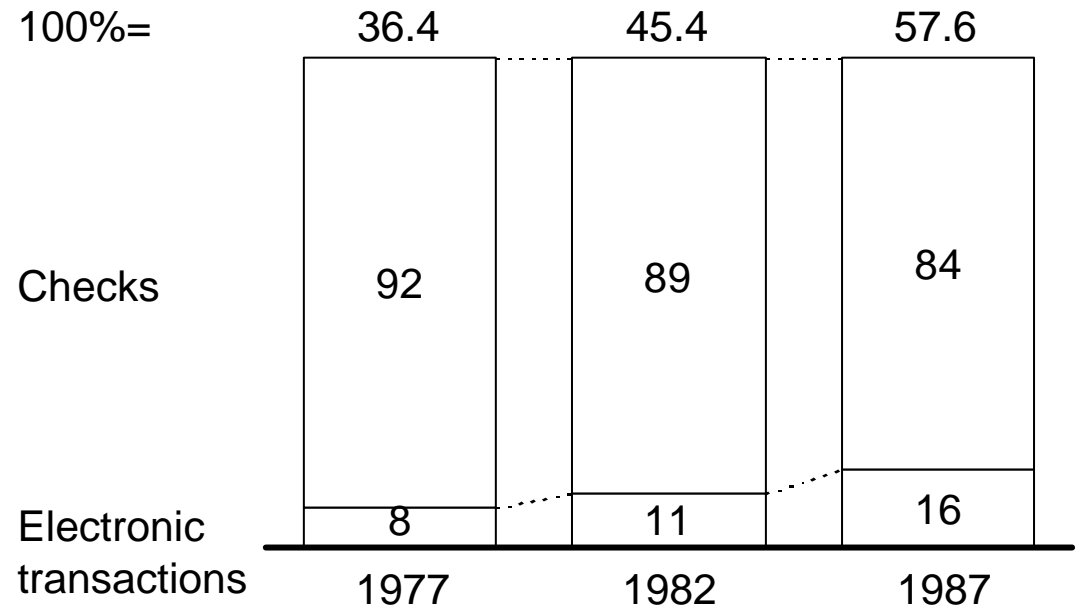
GROWTH RATE OF ELECTRONIC TRANSACTIONS ACCELERATED DURING THE 1980s

Growth rate of electronic transactions
CAGR; percent



Transactions
Billions

100%=



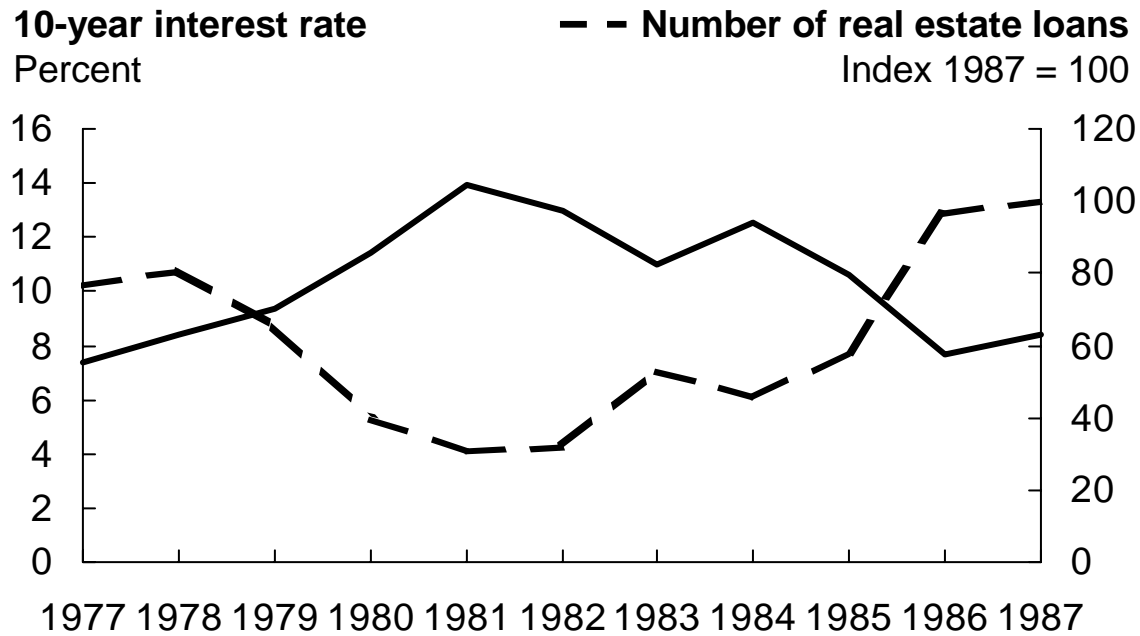
Growth of electronic transactions (credit card, ATM), which required limited variable labor, helped boost productivity

Source: BLS; ABA; International Bank of Settlement; MGI analysis

Exhibit A5

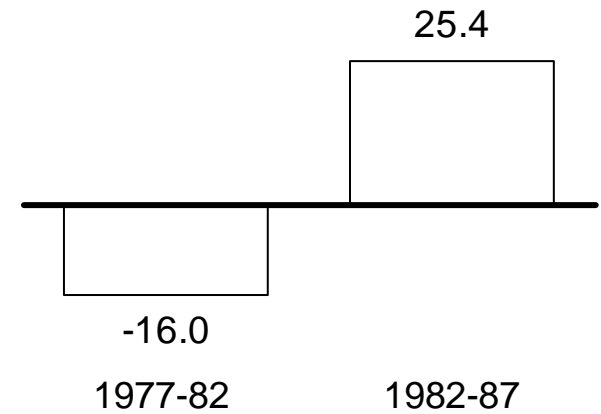
NUMBER OF REAL ESTATE LOANS ROSE AS INTEREST RATES FELL, 1982-1987

Changes in the growth rate of real estate loans



Number of real estate loans

CAGR; Percent



Source: BLS; Federal Reserve

MGI LABOR PRODUCTIVITY MEASURE

