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INNOVATION IN FINANCIAL SERVICES
CASE STUDY : HOME BANKING

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Innovation in Financial Services

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I. The Definition of Home Banking as an Innovation

Home banking, for the purposes of this report, is the ability to conduct one's banking and financial affairs from home. It has been a "coming revolution" in banking for about the last 25 years. Indeed, telephone banking, the first incarnation of home banking, was introduced by ADP and the Seattle First National Bank in 1973. It has been followed by a variety of overlapping technologies usually labeled by the terminal which delivers the service to the home including video banking, PC banking, Internet banking and screenphone banking. Despite the proliferation of technology, this revolution has not as yet materialized, with the latest figures (1997) indicating that only about 3-6% of banking households use home banking in both the US and Germany.¹

There are many reasons why home banking is attractive in principle. For consumers, it is potentially a cheaper, more convenient, time-saving way to accomplish a necessary, but essentially unpleasant task. For banks, it offers the possibility to save on expensive branch and transaction costs, to attract new and more profitable customers, and to expand their geographical reach. In some forms, it also offers the opportunity for marketing, cross-selling and expanding the bank's financial relationship with the consumer. It was this compelling logic on both the demand and supply sides of the equation that made home banking seem like such an obvious breakthrough product from its inception. The history of home banking is punctuated with frequent claims that it would revolutionize the financial services industry. Despite these predictions, home banking has, for the most part, proved a disappointment.

In the most general terms, there are two reasons why home banking has failed to live up to its potential. The first problem has largely been one of standardization

¹Greg Lindenberg, ed., *Directory of Home Banking and Online Financial Services* 1997 Edition (New York: Faulkner and Gray, 1997).

and network externalities. Home banking is only a breakthrough product if it allows the consumer to manage all or most of his financial affairs and pay bills from one home terminal, whatever that may be. This means that home banking requires not just a high-tech terminal, but an infrastructure that interconnects a significant portion of all banks, non-bank financial institutions, billers, data processors, and consumers. The battles over who imposes the standards, who owns and bears the costs of the infrastructure and the terminals and how the fees should be distributed prevented full implementation of the system. This stimulated fears by consumers, merchants and banks that they would become locked into a technology that they did not control or that might soon become obsolete and deterred them from investing wholeheartedly in home banking technology.

The second problem has been a lack of consumer interest. Despite the obvious benefits and despite extensive market research, banks have consistently overestimated how much consumers really want this service and what they are willing to pay for it. Many banks seemed to treat consumer resistance to home banking as technophobic and felt that once consumers properly understood the advantages, all resistance would fade. According to Richard Braddock, a Citibank vice-president for retail banking in 1984, “[i]f I could sit down with that customer ... I would try to show him that he should have a broader perspective. He should expect to be doing more at his home today than he was doing at his branch yesterday.”² Consumers, however, did not want to broaden their perspective, or at least did not want to learn about this perspective from their banks, and resisted bank efforts to change their habits and make them pay for it. After initial successes with early adopters, many promising home banking initiatives withered from lack of interest.

²Steve Cocheo, “Consumer Service, Citistyle”, ABA Banking Journal 76:4 (April 1984), p 57. Braddock later become President of Citibank in 1990, but was suddenly fired in 1992 by Citicorp chairman John Reed.

Today, there are once again claims that home banking is poised to revolutionize the financial services industry. Much has changed recently that would seem to negate past problems. Standards and infrastructure issues have been nearly resolved by the mass acceptance of Microsoft/Intel (Wintel) terminals (now present in over 40% of US homes and 20% of German homes), the Internet network standard, the World Wide Web user interface standard, and the proliferation of personal finance software such as Quicken (10-11 million US users) and Microsoft Money (2-3 million US users). Recently (April 1998), Microsoft, Intuit, and Integrion agreed on a migration to a unified standard for electronic financial transactions which would seem destined to gain broad acceptance in the US. In Germany, a new transactions standard called the HBCI (Home Banking Computer Interface) has been approved by the ZKA (Zentralkreditausschuß - Central Credit Committee) as a similarly hegemonic standard to which all German banks must comply by October 1998.

Additionally, home banking now requires much less broadening of perspectives on the part of consumers. Many already have PCs, Internet access (70 million or so and growing rapidly) and PFM's; they are much more comfortable with the technology and accustomed to buying books, airline tickets, and even cars on-line. For many consumers, the up-front costs of home banking have already been spent and the network access fees are already being paid to their Internet service providers. Certainly, the pieces now seem in place for the revolution to finally take off. As one respected commentator on the banking industry, Martin Mayer, put it, "At long last, after years of study and product testing, the business of providing computerized [banking] services in the home is finally bursting to life."³

Unfortunately, Mayer said that in 1983. The pieces do seem to be in place, but history

³Martin Mayer, "Coming Fast: Service through the TV Set", *Fortune*, November 14, 1983, p. 50.

should teach a certain humility in predicting that home banking will soon revolutionize financial services.

This report is intended to trace the history of home banking as an innovation in both countries, to understand the sources of that innovation in both countries, and to explain the sources of any differences in innovative processes between the U.S. and Germany. Although there is no reason to assume that home banking is typical of financial service innovation in either country, because it is an innovation with potentially revolutionary effects on retail banking, some general observations may result. Toward that end, the report will begin by sketching the relevant regulatory and industrial structure of the retail banking sector in each country. The next section will detail the history and state of home banking in the United States and Germany. The final section will elaborate on the salient differences in how this innovation has evolved in both countries and make some comparisons as to the sources of innovation in home banking in the U.S. and Germany.

II. Context: Market Structure and Regulatory System

In both the United States and Germany, financial services has traditionally been a highly regulated industry. This level of regulation reflects the role of the financial services sector as an instrument of macroeconomic policy and a key enabler of overall economic development -- as well as its periodic tendency toward systemic instability that can quickly threaten the vitality of the national economy. Despite this basic similarity in intent, the U.S. and Germany have taken markedly different approaches to financial service regulation, reflecting both their distinct histories and distinct goals in the regulation of financial services. These approaches have, over time, resulted in very different market structures in the financial service industry. That, in turn, has had an important effect on the evolution of home banking in each country. This section will quickly sketch each country's approach to financial service regulation and the market structure that has resulted, in part, from that regulation.

a. United States: A Portrait of Fragmentation

The U.S. system of financial service regulation is the most fragmented and byzantine of any of the industrialized nations.⁴ Despite several attempts at rationalization, responsibility for banking regulatory policy formulation remains highly dispersed. Not only are there numerous regulatory agencies at the various levels of government, but the mandates of these organizations often overlap and even conflict. Moreover, because each of these regulatory agencies is either an independent agency or responsible to a different semi-sovereign level of government, there is no higher authority to arbitrate disputes between the

⁴The following section draws on William D. Coleman, *Financial Services, Globalization, and Domestic Policy Change*, (New York: St Martin's Press, 1996), pp. 19-41,67-90.

regulators. Formal linkages between them are few and, because each agency has a different goal in the regulatory process, bitter disputes are common. Under certain circumstances, a specific U.S. bank could potentially be regulated by five of the following six agencies:

First (though in no particular order), the Federal Reserve Bank has a mandate for regulating banks that flows from its responsibility for conducting monetary policy. Because a specific subset of banks are, in effect, mechanisms of monetary policy, the Fed regulates state-chartered banks that are members of the Federal Reserve System as well bank holding companies and foreign operations of U.S. banks. The Fed takes a particular interest in maintaining the soundness of the banking system as part of its role as guarantor of the currency.

Second, the Office of the Comptroller of the Currency in the Federal Treasury Department (OCC) is responsible for chartering national banks, regulating the domestic operations of these banks, and ensuring their international competitiveness. This mandate leads the OCC to emphasize service to the consumer, risk-taking, and innovation over stability.

Next, the Federal Deposit Insurance Corporation (FDIC) manages the deposit insurance fund for commercial and saving banks, as well as regulating state-chartered banks that do not belong to the Federal Reserve System. FDIC has the outlook of an insurer with a mandate to protect the insurance fund and to prevent individual banking insolvency among its member banks.

The recently created Office of Thrift Supervision regulates savings banks (thrifts in the U.S. context) and the National Credit Union Administration is responsible for credit unions. Both have tended to internalize the interests of their segments of the market (small, often community-owned banks).

Finally, each of the fifty states has (and uses to varying degrees) the authority to regulate state-chartered banks headquartered in their jurisdiction.

The market structure of the financial services sector in the United States neatly mirrors the fragmentation of the regulatory system. Much of this fragmentation is purposeful and results from depression-era reforms that in part were intended to limit concentration and the accumulation of power in the financial sector. The market is broken up both geographically and functionally.

Geographically, the McFadden Act of 1927 prohibited banking firms from creating branch networks across state lines. Indeed, in some states, for example Illinois, branch banking even within states was prohibited.

Complementing this geographical division are numerous functional divisions that define which types of financial services specific institutions may provide. The primary division is between commercial and investment banking activities. The Glass-Steagall act of 1933 prohibits investment banks from accepting deposits and restricts the ability of commercial banks to deal in securities for their own account, underwrite debt or equity issues, or provide most types of brokerage services. Complementing this functional division are a variety of special purpose financial institutions intended to fulfill specific social goals. Two types of savings banks were created for the purpose of collecting savings deposits for the purpose providing residential mortgages. Credit Unions (or cooperative banks as they would be called in Europe) are non-profit organizations given special permission to serve specific limited constituencies for the purposes of providing mortgage and consumer loans.

Some consolidation, both geographic and functional, has taken place in recent years. The numerous mergers in recent days have begun to create for the first time U.S. banks with a realistic aspiration to truly national stature and one with aspirations to complete functional integration (Citigroup). Interstate branch banking is now commonplace and technological developments have rendered many of the distinctions between the various types of financial institutions irrelevant or even perverse. In response, U.S. banking regulators have shown an increasing

willingness to exercise their discretionary authority to allow exceptions to the Glass-Steagall prohibitions. These trends, however, should not mask the continuing high level of fragmentation in the U.S. financial sector. The U.S. still has 22,846 deposit-taking institutions (1996) or one for approximately every 12,000 people. This compares with Germany which in the same year had one such institution for every 22,000 people and France with one for every 102,000 people. As a result, the five largest banks in the U.S. hold only 16% of banking assets (1996), compared with 52% in France or 58% in the United Kingdom.⁵ The division between commercial and investment banks remains a formidable barrier to integration, despite a growing number of exceptions and the almost yearly assault against the Glass-Steagall Act in the Congress.

One result of this highly fragmented regulatory system and market structure is that the regulatory policy process in the United States is a highly contentious and highly public one. In a congressional hearing, all of the regulatory agencies and types of financial institutions are given a chance to be heard, as well as any other interested party such as consumer advocacy groups. Neither the banks nor the regulators are capable of presenting a unified front. Many of the interest groups and regulatory agencies involved in the process are powerful enough to block legislative changes, but not powerful enough to force them through. As a result, regulatory reform of the financial services sectors tends to happen only in the event of crisis.

b. Germany: Organized Competition

⁵William R. White, "The Coming Transformation of European Banking", Bank for International Settlements Working Papers #54, June 1998, Table 5.

The German regulatory structure is much more organized than the American system.⁶ There are only three state agencies deeply involved in banking regulation: the finance ministry, the Bundesbank and the Federal Banking Supervisory Office (FBSO - Bundesaufsichtsamt für das Kreditwesen).⁷ These agencies have a relatively clear division of functions and many more formal linkages than in the American system. The finance ministry is responsible for the formulation of banking policy. The FBSO reports to the finance ministry and is responsible for the design of regulations, their implementation and the supervision of banks. Its mandate is to ensure overall system stability. Both agencies, however, are required by the Banking Act to consult with the Bundesbank in carrying out their functions. According to the Banking Act, “the degree to which the Bundesbank is entitled to participate [in the design of regulation] is graduated according to the extent to which such regulations affect its functions.”⁸ Thus, for example, because regulations concerning capital adequacy and liquidity crucially affect the Bundesbank’s ability to carry out monetary policy, the FSBO must reach an agreement with them before implementing such regulations.

In practice, however, the influence of the Bundesbank is even greater than the letter of the law might imply. Because the FSBO has no administrative structure of its own, it conducts its supervision of individual banks through the extensive branch network of the Bundesbank and its affiliate agencies in the Länder, the Land Central Banks. This means that, by necessity, the FSBO has a close working

⁶The following section draws on Deutsche Bundesbank, “Banking Supervision in the Federal Republic of Germany”, p6-9; William D. Coleman, *Financial Services, Globalization, and Domestic Policy Change*, (New York: St Martin’s Press, 1996), pp. 67-90.

⁷State supervisory also share responsibility for the regulation of state savings banks.

⁸German Banking Act, p. 6 ⁹White, “The Future of Electronic Banking”, Table 5.

relationship with the Bundesbank and cannot carry out its functions without Bundesbank cooperation.

The financial services market in Germany is also highly fragmented, though not as fragmented as the U.S. market and perhaps not as fragmented as it first appears. There are over 3,500 credit institutions in Germany and, as in the U.S. the top five banks control only 16% of banking assets.⁹ In contrast to the U.S., this fragmentation is not based on functional divisions. German banks operate on a universal banking model, which is to say that they combine deposit-taking, lending, and brokering, dealing, and issuing securities in one institution. There is no distinction between commercial and investment banks in Germany.

Rather than a result of functional divisions, the fragmentation of the market results largely from geographic limitations that apply to certain types of banks. Most credit institutions in Germany are of one of three types: commercial banks, savings banks, and credit cooperatives. Commercial banks, which represent less than 10% of German credit institutions, are private firms that operate without geographic limitations and compete freely with each other and with savings and cooperative banks. Institutions in the other two subsectors, however, operate within geographic limitations that flow from their status as public institutions and the highly organized character of the subsectors.

Savings banks are chartered and owned by local communities to serve those communities. Cooperative banks, like credit unions in the U.S., are chartered and owned by their members to provide financial services to a specific constituency, though this may be a small locality. Many of these banks, particularly the savings banks, maintain close relationships with the local and regional governments that they serve. Both types are officially not profit maximizing organizations. Although they certainly pay attention to the bottom line, the mandated purpose of both types of organizations is to serve the community that chartered them.

Both the saving and cooperative subsectors have self-imposed geographic limitations on their operations so they do not compete with other banks within their own subsector. They also collectively own regional and national clearinghouse banks which provide them with the capability to offer equivalent services to large banks while retaining their corporate independence. In theory, control in this hierarchical system flows from the bottom as the independent banks nominally control the regional and national clearinghouse banks. In practice, much of the control has migrated up the chain. In the cooperative sector, there is a strong national bank (the DG bank) and a strong national association. In the savings bank sector, the regional banks (Landesbanks) wield the most influence. The Landesbanks are among the biggest banks in Germany and compete mightily with the large commercial banks for investment banking services. In neither case, however, do these higher levels banks compete in the retail sector. In essence, this system seeks to combine the economies of scale of large banks with the local knowledge and embeddedness of small ones. There is a lot of cohesion within these subsectors, though they are in no sense monolithic.

Although there has been steady merger activity among the smaller savings and cooperative banks, there is little sign of restructuring in the form of branch closure and the system as a whole shows no sign of breaking down. Together, these two sectors represent over 87% of credit institutions in Germany and control 81% of savings deposits.¹⁰ Customers tend to have a full service relationship with these banks and because of their access to the large regional banks, they can provide the same full range of financial services as large banks. For example, mutual funds are managed through the regional or national banks, but sold through the independent banks. Despite their corporate independence, these banks only sell fund products originating from within their group.

¹⁰Deutsche Bundesbank, Bankenstatistik, August 1998, Table 21.

The German banking sector is further organized by the presence of powerful trade associations. Each of the subsectors has a trade association that has been delegated some public authority for the purposes of self-regulation. These associations manage their own deposit insurance and settlement systems, provide liquidity for members in difficulty and run the Federal Bond Consortium. Each association must also be consulted before new regulations affecting its sector are proposed. Finally, sitting atop this system of trade associations is the Central Credit Forum (ZKA - Zentralcreditausschuß), a peak association whose membership basically spans all credit institutions in Germany. The banks and the banking associations use this forum to iron out their differences and to reach a quiet consensus on most regulatory issues. The ZKA has been very successful at reaching consensus and thus made itself indispensable to the policy process. According to William Gibson, German government officials he interviewed saw the ZKA “as a force that was impossible to ignore when it acted.”¹¹

While there are interest associations in the American context, like the sector they represent, they are highly fragmented and competitive. There is no organization that can claim to represent the whole sector, no obligation by the government to consult industry associations, and no delegation of power by the government to such associations. As a result, U.S. banking industry associations serve mostly as pluralistic lobbying groups and are unable to present a unified front.

In sum, the German banking sector while highly fragmented and highly competitive in many ways, is also very organized. This means that the regulatory process in Germany is far more unified and capable of purposeful action than the American process. The effect of this feature on the innovation of home banking will be discussed in the final section.

¹¹Coleman, Financial Services, p. 63

III. History and State of Home Banking

a. United States

With only minor violence to the variegated history of home banking, the U.S. experience can be separated into four separate waves of interest and experimentation. The dates are approximate and each technology has a longer history than just the time period indicated. Rather than precision, the dates are meant to convey the period of maximum interest, when commentators and marketers concentrated on the technology in question as the wave of the future. The first wave lasted from about 1979-1981 and focused on telephone banking. The second wave lasted from 1982-1985 and had at its heart the technology of videotext. The third wave, from 1992-1996 focused on direct dial access to a PC equipped with personal financial management (PFM) software. The current wave, beginning in 1995 and continuing into the present, has fixated on the Internet. Additionally, since the mid-1980's, there has been considerable interest in screenphones as delivery system, but they were never the main focus of activity.

Telephone Banking 1979-1981: Telephone banking is, in and of itself the least interesting of the four waves of home banking technology. Although there were some grand claims for how the telephone services would revolutionize banking, the telephone was usually seen an intermediary technology, paving the way by readjusting consumer habits and attitudes, but hardly an end in itself. It is ironic therefore that telephone banking is, to date, the only form of home banking to have reached a significant portion of consumers. Although for reasons explained below, telephone banking is not considered an industry success story, by the end of 1996 60% of consumers were using the telephone to accomplish some of their banking tasks. The reason for this relative success is simple: telephones are already installed

in most homes, they are effectively standardized and require no monetary investment by the consumer and little consumer education.

As mentioned, the first implementation of telephone banking in the U.S. occurred at Seattle First National Bank in 1973 with ADP's (Advanced Data Processing) "Pay-by-Phone." The service offered bill payment and account balances either using a touch-tone phone or by talking to an operator. The system proved awkward to use due to lengthy menus, and so few people had touch-tone phones at the time that most had to speak with operators, thus limiting bank savings. The service was discontinued after six months. In 1978, ADP bought Telephone Computing Services and in 1979 began to offer an updated service to banks that used the touch-tone phone for bill payment, fund transfers, statements, and reconciliation, budgeting, investments, and loan information. By then, touch-tone was in 36% of U.S. households. The service proved popular with customers, and by the end of 1981, 403 banks provided some form of home banking by telephone.

However, banks soon noticed that customers tended to use telephone banking overwhelmingly to check balances. Although consumers used telephone banking, it did not appreciably reduce their visits to the branch. Without the ability to sell other services and to reduce branch costs, telephone banking became just another necessary cost center for banks. To this day, the large majority of telephone transactions are to check balances; other services have never proved popular. The attempt to provide bill-payment and other services by phone foundered either on consumer disinterest or on difficulty of use. In 1982, 30% of the banks offering bill payment by phone discontinued the service.

Videotext Banking 1982-1985: Videotext was the first "big thing" in home banking and the technology that inspired the quote by Martin Mayer above. Essentially, it involved a technology to provide interactive text and graphics over the phone line to either a television equipped with a set top box or some type of video

display terminal such as a personal computer or a specially designed terminal. The services were capable of delivering what was then considered high-quality graphic pages and in getting input back from the customer. As with the Internet, home banking was not the only service that videotext could offer. It advertised a host of other information and transaction services including weather reports, games, local and national news, encyclopedias, home shopping, electronic mail, and airline reservations among others. The systems were operated by a variety of types of companies; the most common were large newspaper conglomerates such Knight-Ridder and Times-Mirror, but banks (Chemical Bank, Citibank, Home Banking Interchange), telecommunications companies (MCI), and stand-alones (Compuserve, Dow Jones) also played in this market. Technology companies, including Radio Shack, Atari, and AT&T, usually signed on as partners, but never attempted to create their own system. Although home banking was not the only service, in contrast to the Internet experience, home banking was an integral part of videotext from its inception. Because banking was an essential service that consumers were already familiar with, home banking was usually the lead application that system operators hoped would spur customers to sign up and allow them to become habituated to other, more novel services.

These systems were, except for the final phone call over the public switched network, almost completely proprietary, especially the software. Thus, software companies were not a factor in system development. The system operator maintained its own transmission and user interface standards. Information providers gave the system operator either raw data or preformatted videotext pages. For transactional services, the system operator sent transaction data back to the service providers in a predetermined format. The home terminal was determined by the system operators; some systems supported multiple vendors' computers, some allowed the user to use a modified television, others demanded a proprietary terminal. Indeed, Citibank's

original videotext test in late 1980 used a dedicated single-purpose terminal produced by a Citibank subsidiary that had its keyboard arranged alphabetically to accommodate “people not familiar with a typewriter.”

Although videotext was invented in Britain in the early 1970’s, by the early 1980’s there were several competing standards coming from France and the United States. Essentially, there was a hefty trade-off between quality of graphics and cost that encouraged experiments at different points on the trade-off curve and prevented agreement on a single standard. Compuserve dispensed with graphics altogether in order to make their service compatible with any terminal, while those services such as Knight-Ridder’s Viewtron that required proprietary terminals, tended to have better graphics. There was also the usual battle of standards and because the systems were all proprietary, no one saw any particular reason to settle on one standard, or more precisely to give up control over their own. There appears to have been little attempt in the U.S. to unify transmission standards or the varieties of terminals supported.

The two most interesting videotext services in terms of home banking were Chemical Bank’s Pronto system and Knight-Ridder’s Viewtron. Pronto was developed in-house at Chemical in the early 1980’s at a cost of over \$20 million and was introduced on a full commercial basis in the spring of 1983. Although Chemical used Pronto to deliver home banking to its own customers, it was intended as a turnkey system that could be sold to other banks. Chemical intended to charge others banks a one-time license fee, a yearly maintenance fee, and a per customer fee. They also intended to add other information services beyond home banking to Pronto once it had gained a core of acceptance. In the beginning, however, Pronto offered primarily banking services (balance inquiry, fund transfers, bill payment to participating merchants) for \$8-10 per month with a customer provided computer (most were supported). The service initially had 6 licensees, but that number never

rose above eight as most banks, even small ones, proved unwilling to allow Chemical Bank to own their home banking system. Consumers also manifested lukewarm interest and proved unwilling to invest in a computer in order to use Pronto. Chemical created the system based on market research that showed there would be over 50% market penetration of PCs by 1990. The actual number was less than 25%. Chemical tried forming a separate subsidiary to market Pronto, but to no avail; they quietly closed down the service in 1989 when it had about 100,000 users.

A somewhat different approach was tried by Knight-Ridder with its Viewtron system. Knight-Ridder, as an information company that owned many large newspapers across the US, viewed home banking as only part of a larger system that would provide information, home shopping, news and weather on a local basis. After development costs exceeding \$26 million, Viewtron went fully commercial in Miami in November 1982 and had plans to open in five more cities in which Knight-Ridder has newspapers. The system cost \$12 per month plus \$1 per hour of connect time and required the customer to purchase a special AT&T Sceptre terminal for \$600. For its initial service, Knight-Ridder signed up 12 local banks and dozens of merchants. The system never attracted many users and closed down in early 1986.

Commentators almost universally cite the expensive pricing and lack of consumer interest for the failure of these services. Time and a wider view, however, provide a more textured story. Today, a large segment of the population is willing to pay almost \$2,000 for a computer and \$20-30 a month in access fees to enjoy similar services, albeit of much greater breadth and quality. The difference between the two periods difference is not just size and quality of service, but also the open standards of the system that gives both consumers and banks the certainty that they will not be tied to one company, will not be left with unusable systems, and will have access to a multitude of services.

PC/PFM Banking 1992-1995 - The next wave of interest in home banking began due to three developments. First, the Microsoft/Intel standard became established in home personal computers, reaching by the early 1990's a critical mass of young, affluent consumers. Second, personal financial managers, particularly Intuit's Quicken introduced in 1984 and Microsoft Money gained in popularity and demonstrated a desire on the part of personal computer users to use the system to manage their home finances. Finally, independent processors such as Checkfree (1989) and Prodigy (1990) began to offer electronic bill payment services to consumers, independently of banks.

Many banks, particularly the large ones, had begun to offer direct-dial modem access for consumers in the mid 1980's. Indeed, Citibank, the pioneer in this area, introduced its Direct Access service in 1984 with Bank of America and others quickly following. Some smaller banks also signed on to the next generation of videotext services based on the PC standard. Prodigy began offering home banking in late 1988. These services had proprietary software that they distributed to their clients and used proprietary networks or modem pools for connection. These services never generated much interest because they were expensive for consumers, usually \$10-12 a month plus network access fees, and the software was cumbersome and difficult for banks to develop and support.

It was the entrance and success of the technology companies and bill payment processors that generated this wave of excitement, particularly Intuit, Checkfree, and Microsoft. As Quicken's install base grew, Intuit realized that it had a hard core of users who were already doing financial management on their home computers and would probably jump at the chance to be able to connect to their bank accounts and pay bills electronically. In 1992, Intuit joined Visa USA in a home banking alliance that offered Quicken software as a platform for PC-driven home banking to a group of member banks, including Banc One and Wells Fargo. Microsoft followed in

1993 with a similar system based on Money called the Home Banking Network and signed up US Bancorp, First Chicago and Michigan National and later Chase. Also in 1993, Checkfree teamed with Mastercard to offer a similar service starting from their base of credit card and bill payment customers.

Banks saw these developments as an opportunity and a threat. They offered a more open solution for home banking which might drive down the costs of providing the service, but they threatened to place technology companies and bill payment providers between the bank and their customers. Banks worried that they would lose brand recognition and their relationship with the customer if their home banking platform was not seen as part of the bank. They became even more nervous when Bill Gates was quoted in Time Magazine as saying that “Banks are dinosaurs, we can bypass them.” Microsoft seemed to give substance to this sentiment when it announced a deal to buy Intuit in October 1994. Although the acquisition was later blocked by the Justice Department, banks took notice.

In response, in May 1995, NationsBank and Bank of America bought MECA, a small technology company owned by H&R Block which had developed a personal finance manager that could be branded with the bank’s logo and would take a bank-centric approach to home banking. BankBoston, First Bank Systems and the Royal Bank of Canada later joined them as equal partners. They intended to market their system to banks as a bank-run solution that would not interfere with the relationship between them and their customers. Nationsbank and Bank of America both introduced direct dial services based on MECA in early 1996.

These systems enjoyed more success than previous efforts at home banking, but they still only reached a modest number of people, perhaps 750,000 to 1 million by the end of 1995. To a some degree, these events were overtaken by the Internet wave, but this model also contained some inherent weaknesses. Interest in PFM’s remained flat after their initial success seemingly garnered all the people who took

an active interest in their own financial affairs. People who just wanted a more convenient solution were put off by the cost, complexity and excessively rich functionality of PFM's. At the same time, the inability of any one company to dominate the market meant that standards issues continued to create risk for the consumer and the banks. It also meant that any electronic home bill payment infrastructure had to deal with large variety of constantly evolving proprietary networks, interfaces and messaging standards which made the development and maintenance of such a system prohibitively expensive and difficult. These problems might eventually have been resolved, but the unexpected growth of the Internet and the World Wide Web rapidly shifted focus away from proprietary networks and PFMs.

The Internet Wave 1996-Present: The Internet wave of home banking in the US has evolved much more quickly than previous home banking paradigms, paralleling the explosive growth of mass market interest in the Internet. In 1994, only 20 banks in the US had web-sites, today 83% of banks with over \$4 billion in assets have one. While surprisingly few of those banks allow home banking through those sites (only 86 as of June 1997) virtually every bank has plans to do so within the next year as security and privacy concerns have rapidly diminished. Although proprietary networks and direct dial systems persist and are even growing (Citibank and BankBoston have seen large growth of late), there is a decisive sentiment that such systems will eventually migrate to the web. A market research firm, The Tower Group, now predicts that, largely due to migration toward Internet Banking, 15% of US households will use home banking by 2001.

The basic factor impelling banks to the web, according to one bank executive, was the demonstrated, and dramatic, market success of Internet companies such as Netscape and Amazon. One additional factor that has accelerated the move of home banking to the Web was the increased competition in the delivery of banking and other financial services to the home. Banks still have a special place in the delivery

of financial services because consumers trust them more to handle their money, but their position is being eroded from several directions. Checkfree with a consumer base of electronic bill payers in place has teamed up with Intuit to offer consumers a home financial supermarket based on Quicken and Intuit's web site Quicken.com. Intuit sees itself as the owner of the home financial supermarket with banks merely providing some of the products on the shelf.

Microsoft and First Data Corporation, the largest processor of credit card payments, formed MSFDC in July 1997 to provide electronic bill presentment and bill payment on a biller-centric model, which is to say that billers provide most of the revenue for MSFDC. They claim to offer banks significant advantages by providing them the ability to offer their customers electronic bill presentment through their bank's web-sites. However, they have made not so veiled threats to banks that if they don't sign up for the MSFDC service, it will be offered to consumers in other ways. Banks are well aware that if Microsoft and First Data Corporation own the greater part of the credit card and electronic bill payment systems, they may soon be in a position to control the entire payments system.

The banks, especially the large ones, have responded to these pressures by banding together. In September 1996, 18 of the largest North American Banks formed Integrion to provide a bank oriented solution to offering home banking through the Web. After being joined last year by Citibank and First Union, Integrion now represents over 75% of demand deposits in North America. At the same time, a similar consortium of large banks (The Banker's Roundtable) also formed the Banking Industry Technology Secretariat (BITS) to act as a "technology SWAT team." BITS has been acting partly as lobbying group to ensure that privacy and security regulations accord with bank interests and also as a negotiating partner to leverage the banks position as the largest client sector for technology companies such as Microsoft. BITS negotiated the recent unification of the Integrion and

Microsoft/Intuit standards for electronic financial transaction messaging, thus insuring that no one owns the standard.

For banks, all of this competition means that they now look at home banking in a fundamentally different way than they did when the idea began. They no longer view it as a service that can generate revenue or save costs, but rather as another channel to deliver and sell other services, gain new customers and to broaden their relationship with the client. Market research shows that customers that have multiple financial relationships with a bank are both less likely to leave and more profitable.

As a result, fees for home banking have largely been eliminated as banks cease the attempt to make home banking pay for itself directly. They have also largely despaired of its ability to save on costs - as new channels are added, transactions continue to go up in volume; consumers continue to use and demand the old channels, limiting the cost savings. Home banking today is rather a competition to retain and acquire the most profitable banking customers through innovative services that tie customers to the bank. This is done by using ("leveraging" in current management speak) the banks' preexisting relationship with the customer, that is to say using the customer information contained in the bank's database to personalize their financial services and by capitalizing on the bank's brand name and reputation for security and integrity.

b. Germany

Linkages between the retail banking markets in the U.S. and Germany are very weak and technology transfer and emulation appears to happen only at fairly low levels of hardware and software (e.g. operating systems, PCs). Especially earlier in this period, banks in both countries exhibited little interest in learning from each other, believing that the market contexts are so different as to preclude any useful comparisons. It is not surprising therefore that the evolution of home banking in

Germany has been very different than in the United States. Although the technology of home banking has converged somewhat in recent years, substantial differences between the two countries nonetheless remain. Again with only minor violence to the facts, the German home banking experience can be divided into three waves. The first wave from 1980-1990 was based a videotext service developed by the then PTT monopoly, Deutsche Telekom. The second wave lasted from 1991-1995 and was based on telephone banking. The third wave began in 1996 and has, as in the U.S. experience, been based on the Internet and the World Wide Web

Videotext Banking 1980-1990: In the late 1970's, the German post office began developing a videotext system to rival the French Minitel system. The system was intended to deliver a variety of information services to the home, including as one of the flagship applications, home banking. In 1980, the Post Office began testing their proprietary videotext system, known as Bildschirmtext or Btx, in Berlin and Dusseldorf. Although a similar technology to those being developed concurrently in Britain, France and the U.S., Btx relied on different standards and was completely incompatible with the foreign systems. In contrast to the U.S. experience, there were no competing videotext standards or even services until the American company Compuserve began a German operation (in English) in 1989. The system was designed and the standard owned completely by the PTT monopoly, and after that was broken up, by Deutsche Telekom. The standards for Home Banking were decided jointly by the banks in the ZKA forum and layered on top of the Post Office standard.

Btx utilized existing phone lines to connect users directly to the Post Office system and to deliver interactive text and graphics. The Post Office rented special terminals to use the service for 5DM per month and then charged consumers a monthly fee plus, in some cases, fees for specific information services or "pages" of information. In the initial test service, six banks including Dresdner bank allowed

basic transactions including checking balances, transfers and bill payment.

Dresdner, specifically, pointed to the possibility of reducing branch costs, and penetrating new areas without the need for new branches as the primary rationale for the system.

The system was released nationally in late 1980 amid great fanfare and confident predictions that there would be 3.5 million subscribers by 1990. The system never came close to realizing that sort of popular appeal in the 1980's -- in 1988, it boasted less than 150,000 subscribers. Eventually all of the large banks and many of the small ones offered home banking through Btx. Although home banking was the single biggest interactive application on the service, used by more than half of the subscribers, the tiny subscription rate and the lack of other home delivery channels meant that home banking had little impact on the retail banking industry.

A variety of reasons have been advanced for the failure of Btx to catch on in the 1980's. Most are familiar from the American case: lack of consumer interest, insufficient technological development, and high costs. Although the French Minitel service proved far more successful, many commentators have remarked that this success probably reflects the French government's subsidization of the service including their decision to give away terminals, which greatly reduced the costs to the consumer, rather than any inherent technological superiority. One should note that in contrast to the French system, which ran over the French public telephone network directly to the information service providers, the German system was a more centralized model that required users to go through the postal authority system and then be forwarded on to the information providers, resulting both in delays and increased costs.

Despite this lack of success, the Btx system persists, having gone through several evolutions in both name and technology. It was first relaunched on TVs and then on PCs and eventually on Windows. Today, it is known as T-Online and has

become like AOL or Compuserve, somewhat of an "Internet Plus" service, offering a gateway to the Internet as well additional information services only available through T-Online. Moreover, most banks continue to support their T-Online services, although none appear to view it as the future of home banking. Indeed, the system received somewhat of a boost as an avenue of home banking after the introduction of PFM's into Germany in the early 1990's. The ZKA was able to agree upon a single German messaging standard very early in the process to allow communication between PFM's and T-Online, thus allowing tight integration between home banking and personal financial management. Banks used this standard to integrate their offering with both third party PFM's such as Intuit's Quicken and Microsoft Money, as well as with custom made PFM's. As a result, at the end of 1995, as the Internet wave began, T-Online provided access to over 1200 credit institutions and two million home banking accounts. Home banking accounted for 26% of the T-Online service and was the single biggest application. In the U.S., a similar unified standard was not agreed upon until this year. The new ZKA standard HBCI is intended to allow a similar integration between Internet banking and off-line PFM's, as well as to update the old standard.

Although T-Online/Btx has persisted and evolved while US videotext fell by the wayside, it is probably also fair to say that Btx had an overall chilling effect on innovation in home banking. The Commerzbank case is perhaps illustrative in this regard. Commerzbank began offering a Btx service in 1985 in response to demand from the high-end segment of their customer base that saw the service being offered by other banks. The system was extremely simple for them to develop and did not need much innovation as most of the conventions for design and implementation had been laid down by the Post Office or the ZKA. It was developed for them by a third party vendor and they retained very little in-house expertise to alter the system. Although 20% of their customers eventually used the service, there was little

incremental improvement in the system over the next ten years and no major modifications -- they offered no other type of home banking service until they launched their direct bank in 1995. The Btx service seems to have insulated them from fear of customer flight, but because they did not own the standard or possess much expertise and because they depended on the Post Office for their connection to the home, they had little ability to make incremental improvements in the service. Commerzbank had little complaint with this situation as they had no desire to be on the leading edge of innovation in home banking and felt that the situation insulated them from competitive surprises.

T-Online/Btx also deterred the entry of alternative home banking systems. Through T-Online/Btx, the phone company provided a very high level of security for the banks. A customer went to the post office to set up a T-Online/Btx account and then have his phone modified to allow the phone company to know which phone was making the call. In essence, the phone company guaranteed both the identity of the user and the security of the transmission and took the liability for any security problems. Because the German system of bank regulation does not require banks to assume liability for such security lapses, consumers would only accept a system that had this level of security. This situation radically reduced the incentives for banks to strike out on their own as security would be an expensive problem in any alternative system. Probably for this reason, German banks did not introduce proprietary direct dial systems in the early 1990's as many U.S. banks did. This situation may also explain why the Postbank is still the leader in German home banking (as of 1997) with over 450,000 customers on-line and 700,000 who use telephone banking.

Telephone Banking 1991-1995: In the absence of direct dial systems, the most significant new arrival on the home banking scene in the early 1990's was telephone banking. It is not entirely clear why telephone banking did not appear earlier in Germany as it did in the U.S., but most commentators point to the relatively

expensive costs of phone calls in Germany and, once again, to the presence of a phone company operated alternative in the form of T-Online/Btx. In any case, unlike most home banking innovations, the source of this innovation is easy to pinpoint: Citibank.

Citibank entered the German market in 1973 through the purchase of KKB, a highly successful consumer bank that assumed the Citibank name in 1991. In the late 1980's, telephone banking was an important part of Citibank's international strategy. They wanted to become a worldwide mass market consumer bank with a wide variety of delivery channels and products that would give them a financial overview of the consumer. One element of this strategy was 24 hour/7 day-a-week phone banking. Local management could modify the service to fit their needs, but the mother bank required them to offer the service. The management of Citibank Germany was quite skeptical of phone banking. They were concerned about the costs and that it wouldn't generate new customers or new revenue. In contrast to the experience of American banks, they did earn new revenue as phone banking eventually helped them get a lot of new customers, largely because, for some time, they were the only bank offering the service.

Citibank originally started the service in 1989, but kept it low-key until they introduced it to the public in a highly successful advertising blitz that coincided with the introduction of the Citibank name in 1991. The campaign attracted a lot of new customers and expanded their checking account base a great deal, although people overwhelmingly used the service just to check their account balances. Young people were particularly enamored with the service. In contrast with those banks that followed, for which telephone banking was often only a costly defensive measure, for Citibank, it was significant source of new customers and revenues. Because Citibank was the first mover in telephone banking in Germany, they embedded in people's mind the association between Citibank and home banking. (Interestingly

though, because of the security problem mentioned above and because the mother bank refused to allow their subsidiary to rely on a proprietary German-only service like T-Online, Citibank Germany did not introduce PC home banking of any kind until 1994.)

Citibank's success also shook up the other banks a bit. Almost all of the German interviewees pointed to Citibank's introduction of telephone banking as the move that finally shook German home banking out of its lethargy. Quite soon afterwards, all major German banks began to offer telephone banking. Indeed, the large German banks took this form of home banking much further than U.S. banks (or than Citibank, Germany) through the concept of direct banking subsidiaries. In addition to adding telephone banking to their offerings from their main banks, between 1994 and 1997, all of the major German commercial banks started direct banking subsidiaries that offered banking services without branches. Although these direct banking subsidiaries have readily expanded into Internet home banking, they began as telephone banking centers.

According to a spokesman of Bank24, Deutsche Bank's direct banking subsidiary, the reasons for starting a direct bank in addition to offering home banking services at the main bank are threefold. First, they wanted to be able to offer low cost services to consumers willing to forego the use of expensive branches (Bank24's price advantage is up to 50 percent in some services over Deutsche Bank). Second, they wanted to attract a new segment of younger, more technologically savvy and wealthier customers to the bank through the use of aggressive marketing strategy, lower prices, and a "hipper" image. Finally, they needed to avoid eroding Deutsche Bank's staid image and irritating their old customers while accomplishing goals one and two.

Of course, all of these rationales might also apply to U.S. banks, but they have not created direct banking subsidiaries, implying there must be an additional reason.

As mentioned in the U.S. section, U.S. banks see home banking largely in defensive terms. They wish to use it to protect their customer base especially from non-bank competition and to allow them to develop a more full service relationship with their customers, both to increase customer retention and cross-selling of products. In contrast, German banks have long been universal banks and already have a full service relationship with their customers and do not face non-bank competition in retail banking.

Instead, the large German commercial banks are interested in gaining new customers with home banking and are attempting use it to aggressively target the retail base of the savings and cooperative banking sectors. The large national banks have sought since the 1970's to challenge the savings and cooperative banks' hold on the retail sector. However, they have found those banks strong local links, large branch networks, and insensitivity to profits hard to challenge.

Home banking represents a new opportunity to press that challenge. Home banking is very much a scale business that allows the high fixed costs involved in establishing a home banking system to be spread over an almost infinite geographical area with little additional cost. Because savings and cooperative banks don't compete with each other, they are not allowed to use home banking to increase their geographical reach and therefore cannot realize the economies of scale inherent in home banking . The large banks hope therefore that home banking will finally allow them to offer something the small banks cannot and to invade the small banks territory with a lower cost alternative. They hope particularly that, in the long term, they will capture the younger, more affluent more profitable customers from the small banks.

This competitive structure explains why large German banks have opted for direct banking subsidiaries. It allows them to be more nimble, appeal more to younger customers and to keep their prices to a minimum. Although they

acknowledge that they might end up poaching some of their own customers, they feel that given the structure of the industry, they are far more likely to take customers from the smaller banks. Experience thus far seems to have borne out this prediction as both Commerzbank and Deutsche Bank report that only 10-15% of their direct banking customers come from the mother bank.

Savings and cooperative banks with their heavy investment in branch networks and limited regional scope will never be able to match the cost structure of the large direct banking subsidiaries of the commercial banks. In the past, they have responded to challenges stemming from scale advantages by pushing the function up the hierarchy to the regional or national level where it can achieve similar scale advantages. There has been some movement in this direction as some savings banks have banded together to establish call centers at the regional level in attempt to match the larger banks' cost structure.

Unfortunately, home banking is a retail delivery channel rather than simply a product like mutual funds. Small, local banks in particular will be loathe to risk losing control of what they view as their most important competitive advantage: the relationship with customers. Many savings banks have indicated an intention to go it alone, especially the larger ones such as Landesgirokasse (Stuttgart) and Hamburger Sparkasse (Hamburg). Even these large savings banks and regional collectives, however, will have difficulty matching the cost structure of an all-German or even all-European bank. They must therefore rely on the notion that face-to-face banking and local ties will remain the most important source of competitiveness in retail banking.

The Internet Wave 1996-Present: As in the U.S., the Internet wave of home banking has been the most rapid and the most explosive of the "waves" of home banking innovation. While Germany lags behind the U.S. in Internet access (9% vs. 20% of households as of mid-1998), German public adoption of the Internet is

growing at a faster rate than in the U.S. German banks almost universally aver that the Internet is the future of home banking. All of the major German banks either already have or have plans for Internet home banking in the near future. The impetus for this movement is less certain than in the U.S., however as few German firms have definitively demonstrated that the Internet can succeed as a consumer delivery channel.

Relative to the U.S., Internet banking would seem to offer fewer advantages and fewer threats to the German banks' dominance of the retail market. The T-Online system already provides a nationwide standard that allows bill payment to anyone in Germany, connection to a variety of PFM's, and more certain security, provided by Deutsche Telekom, than the Internet. It is a promising platform for future services such as electronic bill presentment and, after a very slow start, has shown tremendous growth of late.

Deutsche Bank's direct bank was the pioneer of Internet home banking in Germany. Bank24 began transactional web service in October 1996.¹² Two factors would seem to make the Internet a more attractive choice than T-Online or other on-line services for a bank such as Deutsche Bank. The first, mentioned by a variety of interviewees, is simply a sense that Internet is the wave of the future around the world. This idea is strongly implanted in all of the large German banks and makes the move to the Internet feel almost inevitable. A more tangible reasons, however, might be the open standards and lack of proprietary ownership of the Internet. As deregulation of the telecommunications industry in Germany proceeds apace, Deutsche Telekom may seek to expand into other businesses including financial services, or it may ally with specific financial service firms. In that context, it makes little sense for German banks to allow Deutsche Telekom to be the only, or

¹²Actually a small Berlin bank, Gries and Heissel launched the first German web one month before Bank24. Nonetheless, Deutsche Bank is the bank that the interviewees saw as having started the trend.

even the principal, electronic conduit between them and their customers. One of the lessons that German banks have taken from their experiences with both videotext and telephone banking is that they need to resist dependence on one supplier, to provide their own standards, and, in a rapidly changing technologically environment, to ensure that they have the technical expertise in-house to maintain their home banking services as well as to develop at least incremental improvements in the service.

The recent adoption, by the ZKA, of a new messaging standard (HBCI) that all German banks will be required to follow will allow Web based home banking to integrate with off-line products in a standard way and thus allow Internet offerings to provide equivalent (or better) functionality than that of T-Online. It would have been possible for German banks to adopt the emerging American OFX/Gold standard, but the Germans chose to create their own. One interviewee cited a fear of being beholden to aggressive U.S. software companies in the way they were once beholden to Deutsche Telekom as the reason for establishing their own standard.

The principal technological impediment to the implementation of Internet banking in Germany has been the issue of transaction security. As mentioned, Deutsche Telekom warrants the identity and security of T-Online transactions (although the method has changed over the years). Moving to the Internet has meant that banks have had to assume this responsibility in a medium with a (somewhat undeserved) reputation for anarchy. Further complicating this situation was the U.S. ban on the export of encryption technology that originally left the banks with access to only less than state-of-the-art encryption. A German software firm (Brokat) was eventually able to produce an encryption product equivalent in sophistication to the American standard. Despite this development (and the later

partial lifting of the ban on the export of U.S. encryption software)¹³ as well as their claims that they have had no serious security problems with Internet banking. German banks continue to unanimously cite security as their biggest concern.

¹³On U.S. encryption policy see, Dorothy Denning, "Encryption Policy: Global Challenges and Directions" in Ryan Henry and C. Edward Peartree, *The Information Revolution and International Security* (Washington, DC: CSIS, 1998).

IV. Conclusion: The Home Banking Innovation in Comparative Perspective

A. Sources of Innovation

The root of the innovation of home banking has clearly been new technology developed in other industries. Each wave of home banking has drawn its inspiration from either a new platform, such as the touch-tone telephone or the PC, or a new delivery channel such as the Internet or videotext. In every case, banks recognized that the new technology offered the potential to lower costs and provide new services to their customers, or were afraid that their competitors would. Consumers have rarely asked for new home banking services, and indeed banks have often had to expend considerable effort to educate consumers as to the benefits that home banking can offer. Banks in both countries have often moved faster than their customers and created systems that only a few intrepid customers were willing to use. Similarly, regulators have played at most a reactive role and have had little to do with introducing new home banking services in either country.

However, the introduction of new technologies was never the end of the story. The new technologies serve only as the raw material for an innovation whose true potential comes from an effectively combining a variety of technologies and institutions into an effective system for home banking. Although the market for these underlying technologies is for the most part global, the systemic nature of home banking and the relative isolation of the retail banking markets in both the U.S. and Germany means that home banking has been largely a domestic story in both cases. Foreign banks control less than 2% of individual savings accounts in Germany and less than 1% in the U.S.¹⁴. With the notable exception of the Citibank

¹⁴Deutsche Bundesbank, *Bankenstatistik*, August 1998, Table 17; Federal Reserve Bank, *Flow of Funds Accounts of the United States*, First Quarter 1998, Table L. 205.

role in German telephone banking, there has been essentially no direct international influence on how new technologies become integrated into home banking systems in either the U.S. or Germany. Banks in both countries pay little attention to the international aspects of home banking and thus there has been no effort to create an international standard or to use home banking to extend the bank's reach beyond national borders (again with the exception of Citibank.)

B. Comparison of the Innovation Process

The observation that retail banking and therefore home banking is essentially a domestic business allow substantial scope for comparing the process of innovation in the two countries, with particular emphasis on the market and regulatory structure laid out in Part II. While the German and US experience has differed along many dimensions, the following distinctions stand out, both because they have seemed to have a large impact the innovation and because logically they would appear to generalize to innovation in financial services as a whole.

1. Standardization and the Resolution of Network Externalities

The German banks, in combination with the PTT monopoly, demonstrated a superior ability to resolve reasonably quickly important network externalities and thus to implement comprehensive systems such as videotext, bill payment, and PFM integration. In part this was an easier task as the German payments system, with its extensive system of Giro accounts and direct transfers, was far more conducive to creating a home banking system than the U.S. payments system, which remains based on paper checks. Nonetheless, there was important issues of standardization involved in the implementation, including standards for electronic transactions, user interfaces, security protocols, etc. The ZKA proved an important forum in this regard where all the parties could settle their disputes in private. Perhaps more importantly, its encompassing membership and authority guaranteed that any

standards agreed upon would be followed. It was this distinction that probably explains why American videotext systems quickly faded from the scene, while T-Online was able to persist and evolve until it eventually gained some level of consumer acceptance. The ZKA has been similarly effective in providing standards for the movement of home banking to the Internet.

A forum like the ZKA is probably not possible in the American context because the ability to enforce standards requires a grant of state authority for the purposes of self-regulation. Such delegation is rare and usually considered an illegitimate appropriation of state power in the U.S. Thus, in contrast to the German experience, American efforts at home banking were (and are) plagued by long-running standards battles waged in the open marketplace. When no system succeeded at gaining hegemonic acceptance, all home banking initiatives suffered as consumers and billers feared becoming locked in to a system with no future. With so much at stake in the ownership of the various standards involved, consensual agreement between similarly placed market actors is very difficult. In retrospect, though, this disadvantage seems mostly one of time as eventually marketplace trends and business alliances point the way toward a hegemonic or unified standard. The unification of the OFX/Gold standard earlier this year is one example of this process.

The downside to the German system of standardization, one more likely to be significant in an area such as this where there is rapid change in the underlying technology, is that hegemonic control of the standards and network used to implement the first generation of systems may well impede implementation of the next. It was for this reason that direct-dial home banking systems never appeared in Germany. German banking firms have had little scope and little incentive to strike out on their own in a quest to be the first to market and to own what may eventually become an exceedingly valuable standard. Instead, they can afford to be reactive and rely on the ZKA to ensure that no rival will control the standard.

In contrast, large American banks believe that they can set standards in home banking and consciously set out to do so. They usually fail, but because the rewards are so great and because the ownership of the standard by a competitor is so disastrous, this issue often spurs banks into action and encourages early attempts at innovation. Thus, when, for example, Bank of America saw an emerging trend toward PC Home Banking in the early 1980's, they made an early bid to be the market leader and launched a system that provided nearly as much functionality as their current system. Even though the failure to resolve network externalities meant that their system never attracted more than 50-60,000 customers, they do not regret the investment as it helped ensure that no one else would succeed. As a large consumer bank, their primary competitive strength is the access they provide to retail customers through numerous branches and other retail channels. They cannot risk losing this advantage or allowing another company to dominate the path between them and their customer. They consequently view investments in new delivery channels, even failed ones, as well worth the risk.

A second potential downside to the German system is that it may become less and less tenable if, as is often predicted, the retail banking market does become more globalized. Germany does not set the pace in establishing worldwide banking or software standards. ZKA standards tend to be German-only standards and are rarely adopted outside Germany. Yet, the German system rests on the ability of the ZKA and the other German trade associations to impose their standard on all the market players, a power acquired largely by state grant. They will not have such power in a global market. Even if the German banks are able to maintain a unified front in the a global standards war, they are unlikely to carry the day against the larger American market and its thriving information technology industry that tends to set world software standards. German banks would, thus, seem ill-prepared for this transition to a global marketplace for standards.

2. Competition

Banks in both countries tend by nature, design and history to be very conservative institutions. Before the 1970's, bank profits in both countries were essentially assured and innovations discouraged by the comforting embrace of heavy regulation. Unless pushed by strong competitive pressures, most banks, especially retail banks, will avoid innovation -- many banks will not move even then. The nature of competition will have therefore have a determinative effect on how and why any innovation emerges in the financial services industry. Today, both Germany and the U.S. have very competitive banking industries. However, they are competitive in very different ways and those distinctions have played a large role in shaping the course of innovation in home banking.

As mentioned the primary competitive dynamic in the German retail sector focuses on the stranglehold that the savings and cooperative banks have on consumer savings. The story of home banking in Germany, especially in the last two waves has largely been one of intra-bank competition. German commercial banks are not trying to transform retail banking so much as attempting to use the technology as a new tool in an old competitive battle. As a result of this competitive dynamic, innovation in home banking is aimed at reducing costs and attracting new customers, particularly young, affluent customers. Few German bankers seem to believe that home banking will radically transform the industry, at least in the foreseeable future. Most believe that certain financial services such as brokerage advice, mortgage and large consumer loans will always require face-to-face attention.

The U.S. competitive dynamic is very different. As explained in the previous section, the last two waves of innovation in U.S. home banking have been spurred by a wide range of non-bank competitors, including non-bank financial institutions such as Fidelity and E*Trade, software companies such as Microsoft and Intuit, data

processors such as First Data Corporation and even telecommunication companies such as the cable and phone companies. As one U.S. bank executive put it, they see “anyone with a computer” as a competitor. Interviewees in U.S. banks typically expressed greater fear of these new non-bank threats than of their more traditional bank competitors.

Non-bank competition is essentially excluded in Germany by the regulatory system described in section II. First, universal banking has long allowed banks to participate in all financial services, except insurance. They have long since established their dominance in all other areas related to banking, including even financial data processing, a prime conduit for non-bank competitive threats in the U.S. Second, because German banking regulation is mostly concerned with maintaining systemic stability and preserving the Bundesbank’s instruments for monetary policy, all other regulation is largely self-imposed by the banking associations in consultation with the regulatory authorities. The FSBO does not really create regulation. It implements regulation mandated by the Bundesbank and takes part in the regulatory negotiations with the banks, but has little power to establish the rules. The Bundesbank cares little about issues that do not effect monetary policy or systemic stability and thus all else is left to the banking associations and the big commercial banks which use the ZKA as forum for ironing out their differences. If they can work out an agreement, then the regulators accept it. Thus, according to one German banking expert, “regulation is reflective of the banks’ interests because banks write the regulation themselves.” This level of self-regulation obviously gives the banks great power to deter or prevent non-bank competition.

The intense non-bank competition in the U.S. has caused the banks to see home banking in much more radical terms. They see it as a means to leverage their current reputation for security and discretion into a broader financial relationship with the client that will sustain itself into an age when all financial services can be

delivered into the home. They intend to use home banking and the data it generates to cross-sell to their clients and even anticipate the client's financial needs. This extra competitive pressure has forced U.S. banks to be more innovative in their thinking, though whether the more radical elements of that innovation will be successful or will allow them to stave off the non-bank threats remains to be seen.

More generally, the presence of non-bank competition in the home banking arena allows another source of innovative thinking, particularly software companies, to come to the fore. In Germany, software companies participate in home banking as vendors to the banks. Although these companies are highly innovative, they tend to focus on serving bank needs, rather than designing new products and services. Banks, with a monopoly on contact with the retail marketplace, are the primary source of new ideas for services. In the U.S., the situation is much more complicated as software companies can be both a bank's competitor and its supplier. Often, the same company is both. Consequently, software companies are more attuned to the retail banking market and banks are more responsive to ideas that begin in the software companies. One bank official described the resulting innovative process as a series of iterative combination of internal (bank) and external (non-bank) steps.

One example of this process is electronic bill presentment, a nascent innovation that appeals more to billers and consumers than to banks. Microsoft and First Data Corporation are pushing this innovation both as a vendor to banks and potentially as a competitor. As a result, U.S. banks have been quick to pick up on the idea and refine it to be more bank centered. There appears to be little movement toward electronic bill presentment in Germany (though they may be other reasons, including less consumer and biller interest).

3. Security

There is a marked difference between U.S. and German banks with regard to the security of their home banking system. German interviewees almost unanimously cited security as the primary technical obstacle to the implementation of home banking. German banks essentially refused to implement a home banking system until a rigorous security system was in place. American interviewees rarely mentioned security as a major problem (unless prompted), and according to a recent Government Accounting Office report¹⁵, many American banks are paying insufficient attention to security in their implementations of home banking.

Somewhat perversely, this distinction is the result of the lack of consumer protection regulation in Germany. In the U.S., consumer liability for losses caused by fraud is very limited, usually to fifty dollars. Banks must assume the lion's share of any fraud losses. Because the German regulatory system is essentially bank run, there is no voice in the system for consumer protection and no limit on consumer losses due to fraud. In practice, German banks are very hard-nosed with consumers when it comes to fraud. For example, if a customer's credit card is charged without the customer's knowledge, the German bank simply makes the customer pay, which helps explain the low rate of credit card use in Germany. A recent European Commission report has documented that a similar system seems to be emerging with regard to remote banking.¹⁶ Consequently, German consumers are very touchy about security and demand total protection before they will use any new service.

The effect of this distinction on home banking is as yet unclear. It has seriously impeded the use of credit cards in Germany, however there is a consensus that the security for home banking, especially in Germany, is very good and experts expect fewer losses from fraud than with credit cards. Nonetheless, the critical

¹⁵GAO, "Electronic Banking: Experiences Reported by Banks in Implementing On-line Banking", Report # GGD-98-34, Jan. 15, 1998.

¹⁶This report has only been released for comment so far. Its contents are reported in Anonymous, "Banks Reject Remote Banking Protection Report," Distribution Management Briefing, August 1998, p. 7.

factor will clearly be consumer confidence. In this regard, one well-publicized security incident could undermine confidence in the whole system in a way that would be difficult to recover. This is a worry for U.S. banks as well, however they believe that consumer protections will limit the effect of isolated security failures. For this reason, they are pushing to formalize a requirement, similar to that in the credit card realm, that banks take responsibility for security losses in remote banking. This is probably not an option in Germany as the smaller savings and cooperative banks would resist taking formal liability for security lapses.