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Electronic Finance: Economics and Institutional Factors

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ELECTRONIC FINANCE: ECONOMICS AND INSTITUTIONAL FACTORS[1].

1. The present Occasional Paper is based by a background note that was considered by the OECD Committee on Financial Markets at its meeting in September 2001. The paper's aim is to shed additional light on recent trends in electronic financial services, with a special view to analysing e-finance as an extension of financial operators' ongoing efforts at client acquisition and retention, product development and cost reduction. An additional angle to the study relates to the potential future use of e-finance as a tool for increasing cross-border competition between financial institutions.

2. The paper contains five main sections. The introductory section sets out definitions and limitations of the present study. Section II summarises evidence of the overall trends and developments in e-finance. Section III proposes an analytic framework with which to assess current trends and extrapolate prospective developments. Section IV presents some issues for future developments. Section V reviews some of the new risks and challenges for supervisors that e-finance may raise. Finally, an Annex summarises some empirical as well as anecdotal evidence of e-finance activities in selected countries and segments of the financial sector.

I. Definitions and limitations of the study

3. The present paper focuses on some of the financial sector developments in connection with the progress of open networks technology since the mid-1990s. While the focus is not exclusively on the Internet (and, indeed, other channels are briefly touched upon), the words e-finance, online finance and Internet finance are in practice used interchangeably. Business-to-business (B2B) electronic transactions within the financial sector are not dealt with, as they have a long history already and generally pose different regulatory and other policy concerns. Five areas of financial sector activity receive particular attention, all of in the field of business-to-consumers (B2C) transactions and, to a more limited extent, B2B transactions with non-financial enterprises. The separation follows financial service categories, rather than types of enterprises:

- Commercial banking and related services (checking accounts; debit and credit cards; payment services);
- Brokerage and related securities services;
- Asset management;
- Mortgage finance;
- Insurance.

4. It should be recognised that the delimitation leads to the exclusion of sectors of some importance in B2B transactions. These include, among other things, gross payments systems, electronic trading platforms, and

[1] The author is indebted to the members of the CMF Expert Group on Electronic Finance for their inputs and comments in connection with the preparation of the present report. The Group included Baekin Cha, Korea Institute of Finance, Su Hoong Chang, Monetary Authority of Singapore, Carlo Comporti, CONSOB Italy, Hugh Kelly, US Treasury (OCC) and Peter Knutsson, European Commission.

financial information and advisory ("expert") services. On the B2C side, the main omission is electronic money (e-money). The use of "smart cards" and other stored-value devices has reached a considerable volume in some member countries, but the usage of e-money is in itself a transfer rather than a trade in financial services

5. Finally, there is no commonly accepted definition of what constitutes e-finance. In public debate any activity including a financial institution and taking place via the Internet is sometimes referred to as e-finance -- which makes little economic sense. In the remainder of this paper the following definition is applied:

> *"An electronic finance **transaction** is a financial transaction that depends on the Internet or a similar network to which households or non-financial enterprises have access[2]"*
>
> *"A **trade** in electronic finance is the part of an electronic finance transaction that relates to the exchange of remunerated financial services"*

6. Importantly, this implies that, while any electronic transfer of assets and liabilities (as well as binding agreements to conduct such transactions), may be regarded as e-finance in the broader sense, there must be an element of service provisioning for it to constitute a trade in e-finance services[3]. The more narrow case is arguably the most interesting in terms of the evolving business models in the financial sector.

7. The general definition is broadened to cover sub-categories of financial services. In the remainder of this paper, the prefix "e" (e.g. "e-insurance") is used to denote e-finance as applied to specific financial sector activities.

II. Recent trends: some stylised facts

8. The online channel has already gained great acceptance as a conduit for financial business -- not least in considering that Internet transactions have been available to the financial sector only for around five years. In the B2B market segments, the advent of open network architectures and a sharp reduction in costs have made computerised transactions between financial institutions and clients, which were previously the preserve of relatively few large companies, available to the whole enterprise sector. Companies increasingly use Internet-based systems to cover the entire range of their financial needs, from managing bank accounts and bill payments, to asset management, and to insurance products such as employee benefits. Recent enterprise surveys in some of the most Internet-advanced OECD economies indicate that as much as half of the small and medium-sized enterprises (SMEs) purchase financial services online. This uptake is astounding (particularly in considering that the bulk of SMEs are micro-companies with less than two employees), and it initially took most analysts by surprise.

9. In the B2C segments, growth in e-finance has likewise been explosive. The number of clients doing retail financial transactions online has been almost doubling annually since the mid-1990s to its current level of around 40 to 50 million individuals for the OECD area as a whole. However, and notwithstanding the high rates of growth, some caution is called for: this number represents less than 5 per cent of the area-wide population, and most of the e-finance clients rely on the online channel for a limited part of their total financial transactions. It would thus seem premature to conclude that Internet has fundamentally changed the way that financial institutions

[2] Importantly, this includes bilateral links and proprietary networks by financial institutions to which members of the public may gain (or buy) access, while it excludes electronic links which are the preserve of financial institutions an a limited group of select clients.

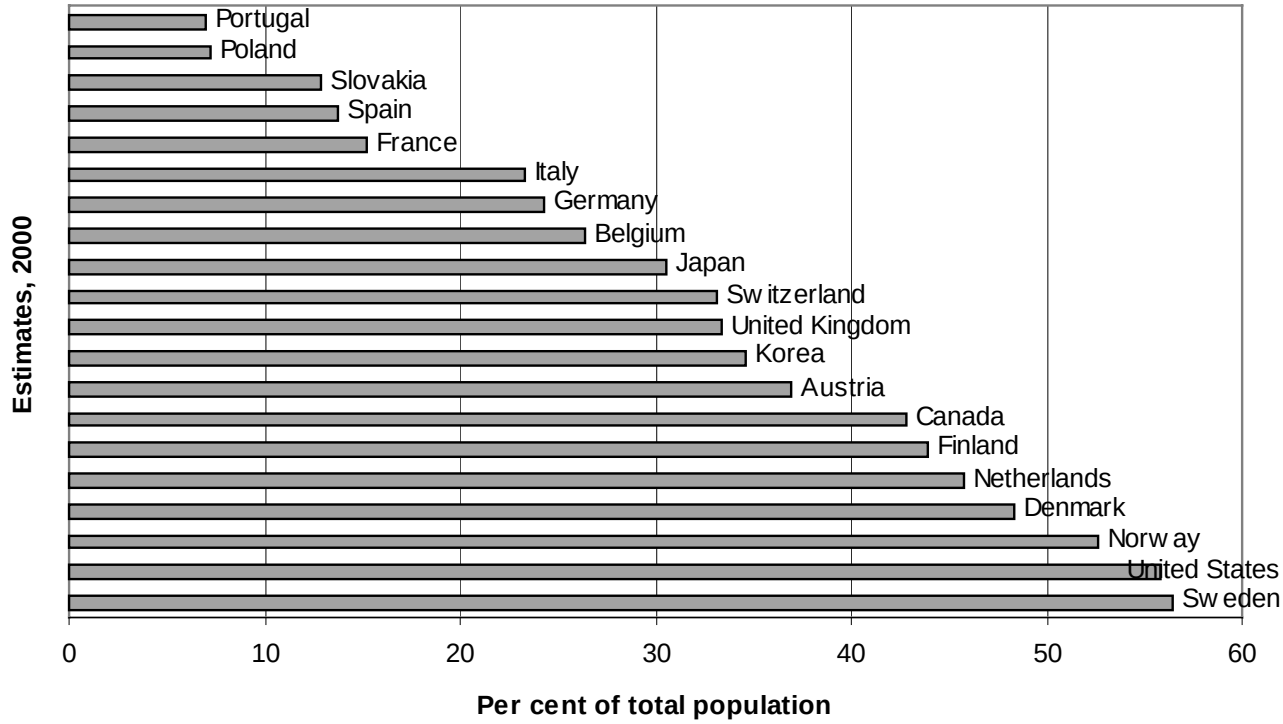
[3] A simple illustration of this point is the example where a client accesses an online bill payment service and authorises it to transfer the amount X between two accounts, for which he has the pay the fee Y to the service provider. The total transfer made under this e-finance transaction is X+Y. The trade in e-finance services amounts to Y.

at large interact with their clients. However, in some particularly Internet-advanced financial markets and in some early-moving market segments, sweeping change has already taken place.

10. National differences in the uptake of e-finance are pronounced. In some OECD member countries online finance does not yet reflect significant market acceptance, with penetration rates in various market segments as low as 0 to 2½ per cent. (Penetration rates are, here and in the following, defined as the number of users as a share of total population). Perhaps more surprisingly, this is also the case in some of the largest continental European economies.

11. A generally high uptake of e-finance, on the other hand, is found in most of the English-speaking countries, the Nordic region and Korea. While these variations in penetration rates relate largely to national differences in the availability of Internet-access (Figure 1) some additional factors seem to be afoot, not least as national patterns are in some cases overshadowed by considerable sectoral variations.

Figure 1. Internet penetration in selected countries

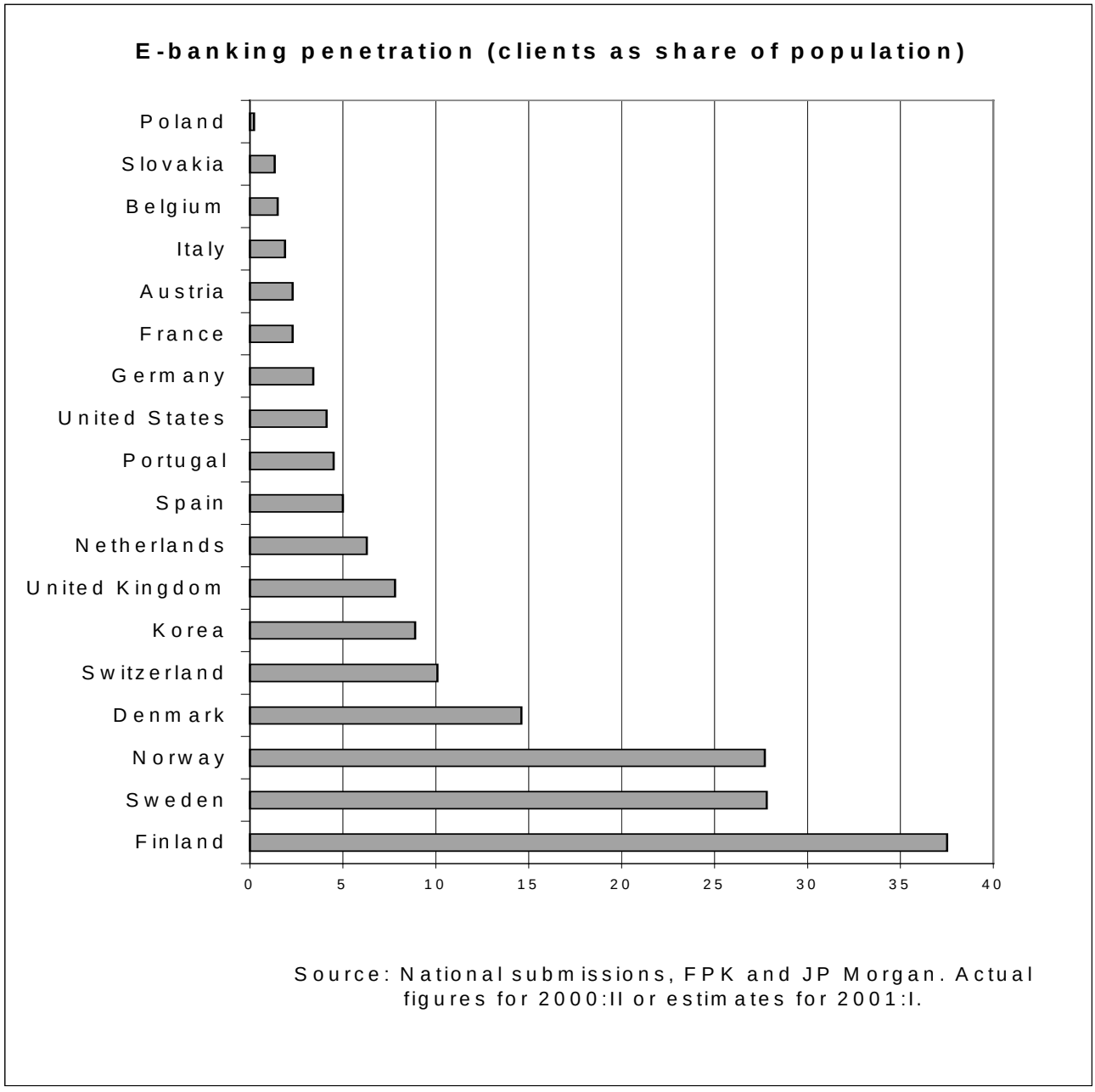


a) Sectoral differences

12. In retail **e-banking**, the Nordic countries are in a class of their own. Norway and Sweden both have penetration rates in excess of 25 per cent, and in Finland more than a third of the population is involved in e-banking (Figure 2). The only large economy to have an internationally high penetration rate is the United Kingdom. In consequence, more than half the e-banking clients in Europe reside either in the Nordic countries or

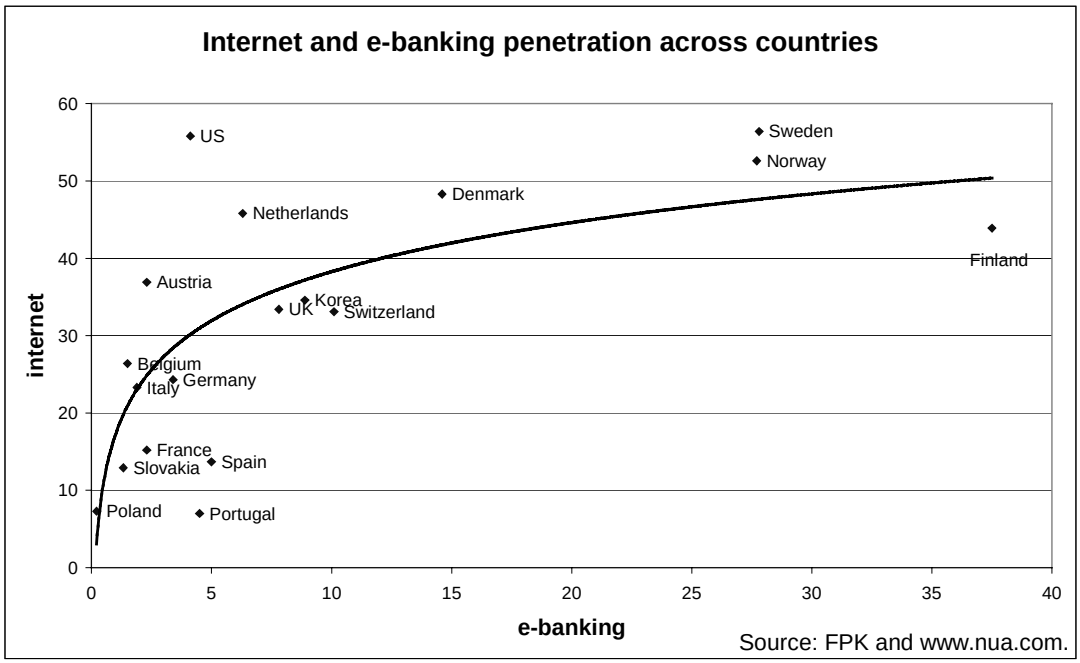
in the United Kingdom. While the degree of PC ownership and Internet access is high in these countries, it does not appear high enough to alone explain the staggering differences in e-banking penetration. Figure 3 illustrates the linkage between Internet and e-banking penetration across selected countries.

Figure 2:



Source: National submissions, FPK and JP Morgan. Actual figures for 2000:II or estimates for 2001:I.

Figure 3:



13. The figure indicates that, as expected, there is a strong positive correlation between Internet penetration and e-banking, but the relationship does not appear to be a linear one. A logarithmic trend has been added to the figure, which, in turn, resembles the early and middle stages of a classic penetration curve for new technologies. Judging from the figure it is tempting to conclude that countries with an Internet penetration between 30 and 50 per cent are likely to find themselves in the "take off" phase for e-banking services. This observation is not in itself novel. A recent study by the World Bank observed that "in countries where e-finance penetration has reached a level that should lead to faster growth, the level of connectivity and the quality of the business environment appear to explain the point of takeoff"[4].

14. The factors referred to as "quality of the business environment", may be used to explain some remarkable outliers in the figure. Spain and Portugal, for example, appear to have much higher e-banking activity than their Internet penetration would justify, while the United States has unusually little e-banking in relation to the massive Internet access in this country. In the first case, the likely reason for the comparatively high e-banking penetration is the pro-active Internet strategies pursued by banks in these countries. In the United States, the reasons for the relatively low e-banking penetration are probably more complex. First, banks have not been particularly fast to embrace the new technology[5]. Second, it should be borne in mind that retail banks are considerably less important for the day-to-day management of personal finances in the United States than in most other OECD countries. Third, unlike in many European countries, automated systems for transfers of funds (e.g. phone banking, teller machines) were in place prior to the introduction of Internet banking.

15. Online brokerage is the only form of e-finance that is so far universally considered as a successful business model. Penetration rates may not seem particularly high (Figure 4 -- but numbers relate to year 2000) as

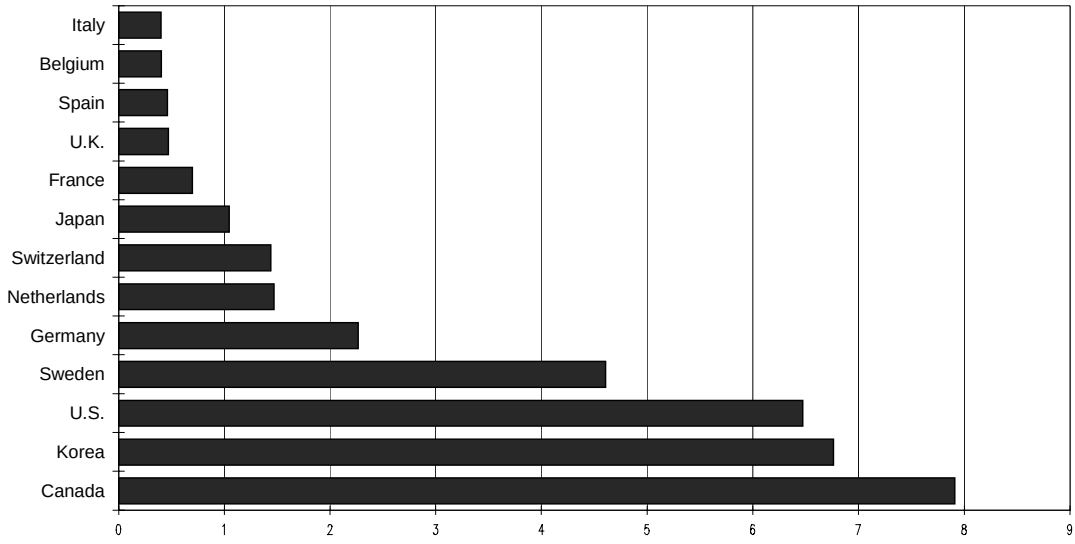
4 S. Claessens, T. Glaessner and D. Klingebiel (2001), "E-Finance in Emerging Markets: Is Leapfrogging Possible?", *Financial Sector Discussion Paper No. 7*, World Bank.

5 A survey by the US Office of the Comptroller of the Currency showed that only 56% of the smaller banks and thrifts under Federal supervision offered basic Internet services: K. Furst, W.W. Lang and D.E. Nolle (2000), "Internet Banking: Developments and Prospects", *Economic and Policy Analysis Working Paper*, 2000-9.

only a minority of the households in most OECD countries engage in securities trading. Nevertheless, evidence abounds that Internet brokers have had great success in attracting business from other trading channels, encouraging an increasing interest in share ownership and facilitating more active trading by retail investors. On recent evidence, some 25 to 35 per cent of households' share trades currently takes place via online brokerages, and in the furthest developed markets the percentage is above 50 per cent (with close to 70 per cent online trades, Korea appears to hold the record). Moreover, a recent study by IOSCO indicated that the number of online brokerage accounts has reached 19 million in the United States and 4 million in Europe (trading volumes are, however, down somewhat due to the current weakness of stock markets)[6]. Partly outside the OECD area, the absolute number of brokerage accounts in Asian countries stands at a very high level, and according to market analysts is expected to grow strongly in coming years.

Figure 4:

E-broking penetration (accounts as per cent of population)



Source: JP Morgan, SIA, Investor Economics, national submissions

16. The main factor behind national differences in e-broking (apart from the penetration of the Internet and to some extent mobile telephony) is the level of stock ownership by households and, more generally, the development of an equity culture across countries. The countries at the high end of the range in Figure 4 (North America, Korea) have a long-established tradition for retail equity investment. In Europe, e-broking has gained more importance in continental markets than in the United Kingdom. In view of the United Kingdom's internationally high Internet penetration and private stock ownership, this has taken analysts aback. The most commonly accepted explanation is that the equity cultures of some continental countries evolved in the second half of the 1990s in tandem with the online distribution channel, so attracting clients to e-brokerage was relatively easier than in markets with long-established client-broker relationships.

17. In areas other than banking and brokerage, e-finance is largely confined to the B2B market segments. Anecdotal evidence suggests that **asset managers** have been particularly active in providing enterprises with online systems for managing their pension and other funds. In the retail segments, the proportion of collective investment products traded online has so far been rather limited. In the United States an estimated 5 per cent of

6 IOSCO (2001), *Report on Securities Activity on the Internet II.*

new sales of mutual funds last year was undertaken via the Internet (Table 1) -- which, in absolute terms, constituted by far the largest transactions volume in any country. The impact of online finance on the mutual funds business does, however, go beyond what these figures seem to suggest. Funds are easily comparable and, by making information about relative performance more freely available, the Internet has contributed to a heightening of competition in the sector. Data from the United States suggest that more than half of all fund owners use the Internet for disseminating performance appraisals.

Table 1. Penetration of e-finance in selected countries (estimate, 2000)
(per cent of new business online)

	Savings	*Credit cards*	*Personal loans*	*Mutual funds*	*Mortgage services*	*Auto insurance*
France	5	-	-	1	-	-
Germany	10	1	-	2	-	1
Italy	3	-	-	1	-	1
Netherlands	5	1	-	2	-	1
Spain	10	-	-	1	-	1
Sweden	25	1	3	12	1	1
Switzerland	3	1	-	1	-	1
United Kingdom	25	5	-	2	-	3
United States	n.a.	3	-	5	1	-

Source: JP Morgan.

18. The online markets for **mortgage loans** in the OECD area have generally not (yet) gained economic significance. Only a few mortgage lenders even allow online loan applications (which already falls short of full-blown e-finance), and those who do are generally located in the United States and a handful of north European countries. The United States stands out in this respect, with five per cent of all Internet users reportedly either having applied for a mortgage online or currently planning to do so. Another source of national differences derives from the different market structures. The US mortgage market is comparatively brokerage-oriented, and mortgage brokers have apparently been keener to move parts of their value chains to Internet-based platforms than the "universal" institutions that characterise many other national mortgage markets.

19. Online insurance has also had a slow start. According to estimates, only around 0.2 per cent of all premiums in the US insurance markets in 1999 were generated via the Internet, and in Europe and Japan the share did not even reach 0.1 per cent. Moreover, this may arguably not even qualify as e-finance in the true sense of the word, since no jurisdiction in 1999 allowed the electronic conclusion of insurance contracts. However, a limited number of insurance companies and brokers do provide online users with an interface to their algorithms for premium calculation and issue a binding offer on the basis thereof. Also, as is the case in some other parts of the financial sector, a rapid growth of online vehicles for price discovery is changing the face of competition in retail insurance.

b) Business models

20. In the early days of e-finance, predictions abounded of a scenario in which the low costs of online distribution would lead to rapid market penetration and a veritable rout of large incumbents. However, these events have so far not materialised. Rather, the dominant players so far have been long-established financial institutions and/or their specialised e-finance subsidiaries. This, in turn, raises the question of what types of market players and business models have been successful in the early days of online finance (the term 'successful' is here used in the sense of client reach and visibility). At its most basic level, the issue is two-dimensional insofar as it involves competition between different kinds of financial institutions (market incumbents; entrants from other

parts of the financial sector; pure newcomers) on the one hand and mode of delivery and marketing (own brand; specialised Internet branding) on the other.

21. Based on the evidence up to this point, the most commercially successful e-finance operations have been run out of the entrenched financial institutions. On the whole, the apparently "winning formula" has been the setting up of e-finance activities that are integrated with an established brand identity. In e-banking, most of the prominent operators are established traditional banks that have developed Internet delivery channels as a complement to existing physical delivery channels (i.e. branches and ATMs), that is taking a "bricks and clicks" approach (examples are Bank of America, Citigroup and Wells Fargo in the United States). In e-brokerage the evidence is somewhat more mixed. In markets with a strong tradition for retail trading, subsidiaries of the market incumbents have generally gained a position in e-broking as well, but in the newly developed markets many of the rapidly growing e-brokers are the subsidiaries of commercial banks (Germany is a case in point).

22. The financial institutions that have been active in the less developed areas of e-finance have to a large extent relied on their established brand names. Examples include US asset management (in the mutual funds segment Charles Schwab and Fidelity hold 90 per cent of the online market), insurance in Central Europe and UK mortgage lenders, all of whom have pursued relatively defensive strategies of offering their traditional products via the new distribution channel.

23. On the whole, start-ups and Internet-only operators have so far had limited success. Even in the fastest-growing segments of e-finance business, only a limited number of companies have been able to establish themselves in the market, and on recent evidence they are comparatively less profitable. (But that could change: a recent study found that the relative profitability of start-up banks improves over time.[7]) Moreover, market niches "on the edge" of e-finance -- notably activities that fit into the value chains of e-finance operators without themselves constituting e-finance -- have typically been filled by newcomers. Examples include the portal providers discussed below.

24. It follows from the above that the predominant e-finance business model involves **multi-channel distribution**. Most of the online vendors are entrenched financial conglomerates who use the Internet as a new channel for marketing and distributing their financial products -- whether traditional or re-branded. Only a minority of relatively commoditised online services (e.g. execution-only brokerage; financial experts and information services) are marketed as stand-alone products. This has raised additional challenges for e-finance operators, not least because it has compelled them to carry costs of competing distribution channels that are unlikely to be resolved in the near term. So far, only institutions operating in the most advanced markets have been able to partly offset the costs of developing e-finance by cutting back on traditional distribution channels. Nordic banking is among the examples: banks have begun to reduce the staffing of their branch networks, but in order to retain conventional clients they have so far refrained from actual branch closures.

25. Most of the competition for online client acquisition focuses on the layout, functionality and facilities offered by financial institutions' **web presence**. From the viewpoint of the e-finance client, online interfaces can be broadly subdivided into five categories:

1. Company-specific websites;

2. Directories and information portals;

3. Vertical integrators: comprehensive standard websites for financial products;

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[7] R. de Young (2001), "Learning-by-Doing, Scale Efficiencies, and Financial Performance at Internet-Only Banks", *Paper presented at the Central Banks' Workshop on E-finance*, BIS.

4. Point-of-sale sites: product marketing through various theme-based web pages;

5. Value-added portals: websites empowering consumers beyond mere listing and linking;

   5.1. Aggregator portals: price and quality comparisons across a number of service providers.

26. The company-specific websites have been described as the "building stones" of the e-finance architecture, since (up to now, at least) all other Internet presences aimed at attracting or empowering online clients were designed around them. The question hence becomes whether financial institutions interact with their clients through means other than their own websites and, if so, the degree of control they retain over the process. Financial institutions pursuing a purely defensive e-finance strategy (i.e. offering online services in response to existing clients' demands, without actively using the channel for client acquisition) have mostly limited themselves to designing a company-specific website and having it listed on a number of online directories (points 1 and 2, above). One step beyond the mere listing and linking, some companies and, especially, financial conglomerates have constructed vertically integrated sites carrying a whole range of e-finance products. Initially these sites were largely of the "financial supermarket" type, limited to the products of one single vendor, but non-financial Internet providers have increasingly penetrated this market segment with portals tailored to the needs of selected client groups. This is generally done with the acceptance and co-operation of the e-finance vendors. Recently, an increasing number of financial institutions have even begun to carry the products of some of their competitors in order to attract clients by generating a critical mass of e-finance offers.

27. Unlike other kinds of e-commerce (where linking is done freely, and often on entirely unrelated websites), the use of point-of-sale sites in e-finance has been relatively limited. Such sites are mainly found in connection with commercial activities where financial services are commonly purchased in connection with another product. One case in point is websites specialising in infrequently purchased consumer goods, which increasingly carry offers of consumer credit from financial and in some cases non-financial institutions, another one is the use of car dealers' websites for cross-referencing to insurers offering auto insurance.

28. The value-added portals go the furthest toward offering services to the online clients beyond the mere distribution channel. One prime example of such web presences, which are often operated by technology companies and other non-financial enterprises, is the so-called aggregator portals, which provide mechanisms for price discovery and comparison of e-finance products. Aggregator portals are mainly found in the intermediation-heavy financial market segments. For example, the fund supermarkets in asset management are a borderline case between integrator and aggregator portals, and aggregators have gained considerable ground in European e-insurance and US e-mortgage services. However, aggregators have found it difficult to generate sufficient earnings -- not least because retail clients at large have been unwilling to either pay for the added services or use the aggregator sites for direct referral (the latter would make the ultimate vendors willing to pay fees). One recent illustration of this is the widely publicised liquidity problems of Germany's largest online insurance portal. Online aggregators therefore increasingly take on parts of the value chain of the financial services they carry, thereby blurring the distinction between themselves and the traditional middlemen.

29. A few years ago, analysts predicted that the advent of e-finance would trigger a wave of **alliances** and similar corporate link-ups within the financial sector. However, and apart from the limited co-operation around Internet portals, this has generally not happened. The fact that the incumbents have so far prevailed, and that online activities are still a minor part of their business, appears to have held back more sweeping changes. Within specialised e-finance institutions, some cross-sectoral initiatives have emerged (notably in bankassurance and the combination of banking and brokerage activities), but arguably not beyond what could be expected given the more general trend toward financial convergence. Recent corporate restructuring in the specialised institutions has mostly taken the form of smaller players being acquired by larger ones.

30. The most important area of action, particularly in the last 1½ years, has been the alliances between financial institutions and technology companies. Most of these alliances are concentrated in e-banking and e-broking, and examples include the B2B as well as the B2C market segments. As for the former, the activities range from the mere outsourcing of administrative and other functions (back-office work is so far the favourite) to the creation of full-blown B2B market places using technologies such as those developed by eBay. In the B2C segments, a large number of banks have linked up with technology companies to develop better and more flexible e-banking portals. Of an arguably even more forward-looking nature are alliances in several countries between banks and national telephone companies aiming at positioning themselves for a future delivery of financial services (mobile telephony and, to a lesser extent, interactive television). In terms of prudential issues, such alliances and outsourcing are non-trivial. Authorities have voiced concerns over the fact that banks' interaction with clients increasingly relies on enterprises that are not supervised and whose activities fall outside bank managements' usual field of competence (these issues are discussed in some detail in Section V)[8].

c) Cross-border e-finance

31. E-finance was, at the outset, touted as a distribution channel that would lead to the rapid deterioration of the borders between national financial markets. However, so far this scenario has failed to materialise. While several financial institutions offer online services in more than one country, almost all of them do so through subsidiaries or other commercial presence in the respective jurisdictions (or, alternatively, through correspondence banking relationships), which cannot properly be categorised as cross-border financial services. Moreover, even within the group of institutions involved in e-finance via subsidiaries in jurisdictions other than their home country, the large majority of them were active in these markets long before the advent of electronic transmission channels. Most of them have merely extended their foreign activities to include the provision of e-finance.

32. Analysts have attributed the slow take-up of cross-border e-finance to several factors. On the demand side, the issue of security that may have held back e-finance within national financial markets applies even stronger to cross-border services. Another frequently cited obstacle is the differences among national tax and regulatory systems and in regulatory approach. First, savings instruments and other more complicated financial products are generally tailored to the tax situation of the targeted client group, which makes it notoriously difficult to offer them on a cross-border basis. Second, in most countries the development of "electronic government" lags behind e-finance. This implies that a person or entity that engages in e-finance arrangements in a number of jurisdictions must foresee a multiplication of the compliance costs incurred vis-à-vis tax and other authorities. Finally, and perhaps most importantly, differences in financial regulation and other legal complications continue to throw up barriers to operating on a purely cross-border basis. This point is reviewed in more detail in Section IV.

III. Factors affecting the recent and near-future trends

a) Demand factors

33. The evolving e-finance business models -- and, in the case of B2C transaction, direct household surveys -- indicate that prospective clients are motivated mainly by three sets of demand factors. The first of these relates to the security of the actual transaction and of information submitted to the vendor and, ultimately, the safety of the vendor itself. Second, the purchasers of e-finance services are motivated by absolute and relative price signals. Third, an important demand factor has been the perceived convenience for the clients (in e-business jargon, the "creation of value") of shifting to the online distribution channel.

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[8] This issue is discussed in depth in Basel Committee on Banking Supervision (2001), *Risk Management Principles for Electronic Banking.*

34. Recent developments indicate that the first category of demand factors is in a class of its own among consumers' concerns[9]. Put simply, prospective clients need to be convinced that they enjoy a sufficient degree of security and safety before even being willing to consider other demand factors. Once these concerns have been overcome, consumers face the classical challenge of weighing price against quality of services, although surveys indicate that to retail clients in particular pricing may be an overriding concern. For example, recent industry experience shows that bank clients are generally willing to accept new or added services only when these are provided free-of-charge or at a very limited cost to the consumer. Insurance aggregators have made similar experiences. The three categories of demand factors are surveyed briefly below.

35. Security and safety. The principal concerns voiced by prospective e-finance clients fall into four main categories, related to the identity of the counterpart, the safety of the actual online transactions, the uninterrupted access to services, and the integrity of the information transmitted to counterparts. Overall, the consumers' main concerns can be thus classified[10]:

- *Authentication of the e-finance counterpart.* Clients need to guard themselves against mistaken identities of service providers and outright fraud. Where the identity of the counterpart is properly established, the trustworthiness of that actual e-finance vendor becomes an additional concern.

- *Non-repudiation and accountability for e-finance transactions*. In particular, clients look for guarantees that they are protected against unintended transactions, that intended transactions take place without undue delay and that financial transaction data are protected from alteration.

- *Adequate customer support.* Clients need to be convinced that mechanisms are in place to handle complaints, providing support in the advent of new products and quality development. More generally, clients demand a sufficient feedback from the vendor to keep them informed of the current status of their business relationship.

- *Guaranteed business continuity*. Clients undertaking large-volume (especially B2B) transactions will be particularly wary of possible losses in connection, for example, with a temporary breakdown of online services during peak hours.

- *Data integrity and confidentiality.* The public looks to financial institutions to protect stored client data against alteration, and against the usage by unauthorised parties. This is of particular concern in view of a high and rising number of hacker attacks on financial institutions.

36. Moreover, judged by the evidence so far, the degree of concern among clients is related not only to the size of the amounts transacted online, but to an important degree also to the longevity of the business relationship and the complexity of the product. Put differently, clients are apparently less concerned about the safety of the distribution channel when the transaction is limited to a transfer in real time of a simple asset or liability. However, when the transaction involves longer-term contractual relationships, most clients tend to avoid the online channel, citing as their main reason concerns about safety and security. Authorities and e-finance vendors share an

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[9] Examples abound of the effects of clients' preoccupation with the security and safety of online transactions. For example, surveys by the Internet consultants nua.com and the German Bankers Association found that, at end-2000, fears of the safety of online transactions were by far the most important factor holding households back from doing e-banking.

[10] The bullet points are inspired by the following publication: Basel Committee on Banking Supervision (BCBS) (2001*), Risk Management Principles for Electronic Banking.* The BCBS publication provides a comprehensive overview of supervisory issues. In the present paper only issues of direct and immediate concern to the clients are included.

interest in overcoming part of these problems by providing consumers with adequate information and education. Some of the issues involved are discussed in the text box below.

37. Finally, clients' choice between distribution channels and, ultimately, between online vendors depends on the access to dispute settlement mechanisms and legal redress. The simplest mechanism for dispute settlement remains a physical presence near the client, where minor complaints and misunderstandings can be dealt with. As for formal redress, all OECD member countries have mechanisms in place to handle disputes as to whether financial institutions have dealt adequately with their clients' legitimate concerns. However, the novelty of the online distribution channel (and hence, for example, a lack of legal precedence in some areas) may induce an extra degree of caution. This is particularly the case as regards cross-border transactions where jurisdictional uncertainties still prevail.

Providing the consumers with information and education

Technology is increasingly making its presence felt and introduces a fundamental change in the way consumers conduct their everyday lives. The use of the Internet has for example enabled consumers to process information, find new investment opportunities and trade securities directly over the Internet. For investors and consumers the Internet also offers new dimensions of access and interactivity through continuous trading.

At the same time, new issues arise on the demand side. Do consumers have the attitude and capacity required by the new financial environment? Are consumers in general educated enough to use the possibilities offered by recent technical developments? If not, is there relevant and qualitative information accessible to compensate for their lack of knowledge? (the sheer mass of information and the lack of reliable evidence of the quality of each source of information are here examples of problems).

The self-service concept of the Internet is in several cases, in principle, based on the assumption that consumers know "everything" they need about the services offered, operation of the computer and the restrictions, if any, that may apply, depending on the market structure and the "rules of the game".

A probably not too venturesome conclusion is that a natural feeling of uncertainty and insecurity in their own ability and the techniques make many consumers cautious in using e-services and the possibilities to shop across borders. In addition, it is important to remember that a consumer who uses the possibility to shop across borders will be confronted with a maze of different rules. It is therefore important to think in global terms when analysing consumers' need for education and information.

Experience shows that educating consumers for many reasons is connected with considerable difficulties (difficult to target information/education to situations where consumers feel they need it, consumers are often not willing to put a great deal of effort into learning or searching for useful information, supply of services is changing continuously why consumers need on-going information/education etc). Furthermore, it has been difficult to develop successful partnerships to make consumer information/education happen effectively (especially cross-border), possibly because other priorities have been more pressing. However, new technologies are rapidly transforming society and requiring consumers to develop new skills. This should make the climate much more receptive to developing effective consumer education since the development of a well-functioning competitive global financial market depends on active, informed and alert consumers.

38. Prices and the quality of services. Prices may essentially be used to attract consumers to e-finance products in two separate contexts, namely: (1) the pricing of entirely new or added services; and (2) differential pricing of existing services according to delivery channels. So far, however, the concrete evidence of price sensitivity is scarce, and largely limited to the first of the two categories, since incumbent financial institutions have been unwilling to apply differential pricing in the early stages of online distribution. Nevertheless, e-finance clients could be relatively sensitive to price differences, not least because the costs of shifting vendors are generally lower in the virtual world, and information about competing products is more readily available. One case that seems to illustrate the high degree of price flexibility is the relative success of online discount brokerage in many countries. Owing to the safety and security concerns mentioned above, however, the value of trust in an established e-finance relationship is likely to be high. Thus, e-finance could currently be characterised by a strong price awareness among first-time buyers, but a considerable degree of subsequent client loyalty ("stickiness" in the industry jargon).

39. The evidence available so far suggests that financial institutions tend to offer e-finance services at standard prices, with the added "conveniences" of the new distribution channel being their main sales argument. The quality parameters naturally differ according to market segments and national preferences, but some of the main attractions of e-finance in recent years can nevertheless be summarised as follows:

- *Time savings.* Speedier and more timely service delivery is available to households through (a) access to financial services in real time, and (b) access to financial services from within one's own home, workplace or enterprise.

- *Improved access*. The Internet has made a wider selection of financial services available to more people, inter alia by: (a) bringing sophisticated services to geographically remote areas; and (b) making an increasing number of services available at the retail level[11].

- *Easier comparison of prices and services.* This has been one of the main factors behind the growth of aggregators and financial portals.

b) Supply factors

40. Financial institutions' incentives to offer services via the Internet do, at first glance, not differ from their approach toward other new products and distribution channels. The basic inducements remain (1) gaining and retaining clients through an attractive palette of services; and (2) using the new channel to cut costs and set prices so as to maximise the per-client profitability. However, this approach gives an incomplete picture of the supply process. For example, suppliers need to consider: (3) how to best fit new e-finance products into their existing range of services and modus operandi; and (4) whether online distribution will create "channel conflicts" vis-à-vis existing channels. Finally, in a changing world, financial institutions must strive to (5) position themselves so as to be able to reap future benefits of e-finance -- including, sometimes, by offering services that appear, in static analysis, to be non-profitable.

41. Gaining and retaining clients. The extent to which client loyalty continues to be of importance in online-only operations remains a point of contention, but financial institutions applying multiple distribution channels have an obvious incentive to offer well-designed Internet solutions. In most e-finance market segments, early movers who have come up with particularly appealing web presences have been able to pick up a significant number of new clients. The opposite has also been the case: in the more advanced e-finance markets, late starters have had to undertake strong efforts to catch up in purely defensive moves to preserve their client bases. Perhaps

[11] The first of these factors is believed to have spurred the e-banking penetration in Scandinavia; the latter has been particularly visible in the growth of brokerage services via the Internet.

more surprisingly, recent observations from the banking sector seem to point to a generally higher degree of client loyalty among e-banking clients[12].

42. Prices and costs. The advent of the Internet has lowered the marginal (but not necessarily the average) cost of reaching business counterparts, thereby creating a scope for established players to seek to boost their earnings through two separate routes: (1) stepping up their efforts at penetrating highly profitable market segments; and (2) cutting costs by either replacing existing distribution channels or outsourcing parts of their value chains. Most of the effort has been in the second category, although in some segments (banking in particular) there have been examples of market entry by foreign competitors motivated by high margins. Also, the low marginal costs evidently create an incentive for e-finance vendors to offer significant price reductions once they have gained a sufficient volume of business, but this has do far been done almost exclusively in the e-brokerage segment.

43. As for cost cutting, the expectation during the early stages of e-finance that the low marginal costs of online distribution would lead to a rapid replacement of traditional distribution channels has so far largely failed to materialise. However, in some of the most mature e-finance markets (e.g. banking in Scandinavia; brokerage in Korea), cost cutting in the retail distribution system has begun. The observation here is that financial institutions generally prefer to keep their network of retail outlets -- but in a slimmed-down version, whereby an unchanged level of service can be provided to non-online clients and the continued physical presence offers reassurance to the online clients. Moreover, the Internet is being increasingly used to cut costs by moving existing supplier relationships onto the online channel and to outsource services such as back-office and technical assistance. This is the case even in parts of the financial sector that are not otherwise considered as particularly active in e-finance.

44. Products and processes. The problem of securing an adequate product mix particularly applies to commoditised or online-specific products (one example is financial information services). Vendors are generally keen to offer services online that supplement or complement their conventional product range rather than compete with it. One case in point is online brokerage, where incumbents were initially reluctant to enter into the sale of discounted services.

45. The issue of process design applies more widely. The current consensus among market participants is that the only successful strategies are those that involve a complete revamp of internal procedures with a view to their integration with the online distribution platform. Such integrated approaches typically include the linking up of Internet clients with the financial institutions' legacy systems (potentially rising to the level of actual straight-through processing).

46. Competing distribution channels. The financial institutions most concerned with avoiding channel conflict are those that rely the strongest on middlemen. While competing distribution channels may be acceptable within any given financial institution on account that they enhance the client reach, they generally give rise to problems where parts of the marketing and distribution are left to independent entities.

47. Strategies for the future. Institutions from all sides of the financial sector have established e-finance units or subsidiaries with a view to the future position in the market. Business plans have ranged from elaborate plans for new financial products and future distribution systems, to defensive moves to keep up with the competition, and to pure "lottery" strategies. As for the latter, the sheer size of financial markets virtually ensures the success of institutions that come up with a winning formula (a "killer application" in industry jargon). The possibility of large gains in return for a relatively limited investment has apparently induced a number of

[12] This point was stressed by several of the private sector participants at the BIS Seminar on Electronic Finance at 2-3 June 2001. In addition to the "trust factor", the cost of learning to use a new financial institution's Internet interface appears to be a factor.

incumbent financial institutions to position themselves more firmly in the e-finance market than might otherwise have been expected. One example of this is the large number of e-insurance operators chasing a limited number of clients. Other examples are the moves by some of the largest stock brokers to invest in several competing alternative trading systems in the late 1990s[13].

c) Summing up: making sense of the demand and supply factors

48. Looking back, the overriding factor influencing e-finance in recent years seems to have been clients' concerns about safety and security. In addition to the directly expressed concerns, a plethora of surveys and studies have pointed to a continued demand for "personal contact", "proximity", "advice" and "physical access to redress", all of which intimately related with the safety and security issue. These concerns have shaped the early days of e-finance in two distinct ways, insofar as they have been a key factor behind the relative success of different online products as well as competing business models.

49. As already mentioned, clients' concerns about safety and security are a function of the complexity of a given service and the duration of the business relationship. This is the main reason why financial services that are somewhat commoditised at the outset (e.g. execution-only brokerage, information services) are easier to sell online, while complex products involving long-term contracts (e.g. insurance) have gotten off to a slow start. The relative popularity of e-banking must be explained by the fact that, while bank-client relationships are themselves of a long-term nature, the use of the Internet is normally limited to simple payments and transfers that are not.

50. Second, and perhaps more importantly, the safety and security issue is at the heart of the success of market incumbents and the travails of new entrants. In allaying the worries of clients, entrenched financial institutions (and their Internet subsidiaries) have the double advantage of brand recognition and a physical network of outlets. The business model of some Internet start-ups has been to benefit from the low (marginal) costs that arise from the absence of branches so as to acquire clients through attractive pricing, but this model apparently works only if a modicum of consumer confidence is established early in the process. In this vein, some of the more proactive Internet-only financial institutions have invested large sums in advertising to provide themselves with recognised brand names. It is still premature to make judgements about the commercial success of these initiatives, but they could be taken to indicate that e-finance is a case of small marginal and large sunk costs. This would make it a textbook example of scale economics, and further illustrate why the large entrenched financial institutions have so far been more successful.

51. Another demand factor that has been of some importance is the fact that clients demand a certain minimum level of *additional* convenience in order to shift distribution channel (or a minimum cost saving -- but as mentioned there has been little price differentiation in e-finance so far). This is one of the likely reasons why the uptake of e-banking has been relatively slow in countries with well-established older electronic transaction channels (e.g. United States, France) and why e-broking has caught on strongly in certain countries with little-developed prior networks for retail securities trading. It may also serve to explain the apparent client loyalty in e-finance: once clients have reaped the benefits of using the new system (and invested in learning how to use it), they are unlikely to shift vendors unless offered significant further conveniences.

52. The additional convenience factor is also behind the growing importance of aggregator portals and other tools for price discovery, which up to now have been virtually the only important element in e-finance not controlled by traditional financial market institutions. It is precisely by transcending the limits between the traditional players that these establishments have added value in the eyes of the consumers. This also helps explain why financial institutions increasingly embrace aggregator portals and similar technologies after a period

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13 This was discussed in detail in "Future Prospects for National Financial Markets and Trading Centres", Financial Market Trends, Vol. 78, March 2001.

of initial reluctance to "compete with themselves". The increasing recognition that such entities provide consumers with real value has made e-finance operators conclude that their further development is inevitable.

53. Among the key factors influencing supply strategies has been the degree to which individual e-finance products can be separated from other financial products by the same vendors. Put simply, there are two dimensions, namely whether the Internet is seen as a distribution channel for an existing financial service or gives rise to a new or changed product, and whether the online channel is used for transactional purposes or for fulfilling the trade in services:

	Online transaction only	**Online fulfilment or delivery**
Distribution channel	Deposit; credit card services; bill payment; asset management [portfolio shifting]	Insurance; mortgage and other loan application
Changed product	Day trading; asset management [fund supermarkets]	Experts services; financial information

54. The differences between product categories have been particularly visible in pricing strategies. Only e-finance products that are not only new or changed, but also fulfilled online, may be priced individually without risking conflicts between products and processes. Online brokerage is a changed product in the sense that it has made trading techniques that used to be the preserve of a few sophisticated investors available to the general public, but it is still in indirect price competition with brokerage services delivered through other channels. Consequently, new market entrants have been among the most aggressive price cutters. Among the services in the upper left quadrant, price differentiation has been particularly rare: e-finance is here merely an alternative way of distributing an existing product, which makes it difficult to differentiate prices and gives entrenched institutions little incentive to do so. New and Internet-only institutions, on the other hand, have the incentive to cut prices in a quest for market shares, and several of them have done so -- although, as mentioned, without much success so far.

55. Channel conflicts are particularly likely among the financial services found in the upper right quadrant of the table. Contact-based infrequently purchased financial products are often delivered via networks of middlemen (insurance, mortgages), and where e-finance products remain essentially the same as those delivered through networks of middlemen, financial institutions have been unenthusiastic about embracing new distribution channels.

IV. Selected issues for the future

56. It is generally agreed that the face of e-finance will change significantly over the medium term, and that virtually no part of the business will be untouched. However, on the assumption that financial institutions and their fundamental business models change relatively less, the main factors driving the future development are likely to be: (1) evolving client attitudes (i.e. "demand" in the broader sense); (2) new technologies; and (3) market access (i.e. competition between jurisdictions). Each of these factors is reviewed in some detail in this section.

a) Giving the clients what they want: evolving business models

57. The most important demand-side development over the medium-term will be the diminishing importance of the safety and security concerns, as clients grow increasingly confident in the online channel. Technological and related developments will contribute to actually make the medium safer to use, but, most importantly, the

experiences from introducing new consumer technologies in the past indicate that the major impetus comes from consumer *acceptance* of the continued presence of a certain level of risk. This, in turn, raises the spectre that many of the sectoral developments that have been attributed to this demand factor could change course in the coming years. In particular, client loyalty could be loosened, the competitive advantages of large incumbents could evaporate, and the field of financial services considered "suitable" for e-finance could widen.

58. Such developments clearly have the potential to alter the strategies and business models that have been pursued by financial institutions to date. At the current juncture, two competing strategic visions seem to prevail among analysts and market practitioners. One school of thought (which is well-represented in the United States) argues that e-finance institutions need to prepare for a world of greater flexibility and, perhaps, reduced client loyalty by embracing new technologies such as account aggregation and bill payment systems. Others take the position that the established financial institutions are well positioned to benefit from the new technologies and, given sufficiently flexible business models, to retain client loyalty through an appropriate mix of incentives (a view frequently heard in Europe). The two models are described in some detail below.

Account aggregation and electronic bill services

59. Electronic bill services have come to be seen, by traditional banks and new entrants alike, as a key area for strengthening the client relationship. Bill payment, per se, is offered by most banks active on the Internet as part of their general money transfer services. Electronic Bill Presentment and Payments (EBPP), on the other hand, refers to the process by which bills are converted to an electronic form at the source, routed to the payee electronically, and paid electronically by the payee. There are two discrete types of transactions in this process, namely the electronic presentment of bills and the electronic payment of them. Of these, the payments are by far the most mature business, accounting for about half of all Internet-originated bill payment transactions in 2000 (the rest generally being paid by checks or postal transfers). A recent study by the Gartner Group demonstrated that a relatively limited 3 million US households pay bills online, but since these represent the bulk of wealthy individuals in the country, the niche market is already highly lucrative. Moreover, the client base is expected to grow explosively over the next 3-4 years.

60. Companies specialising in EBPP are often owned by one or more banks, or, at least, they operate in co-operation with a large group of financial institutions[14]. A development that will bear watching over the next year will be the impact of more aggressive competition from non-financial institutions, such as Microsoft and Yahoo, in the provision of EBPP services via their Internet portals. In the United Kingdom, several organisations, including the Post Office, have announced plans to develop EBPP consolidation services.

61. Account aggregation (AA) may be seen as a logical extension of EBPP. In its most basic form, it can be described as a process by which the backers of individual Internet portals are equipped with the information and authorisation to address clients' accounts with several financial institutions, which in turn allows e-finance clients to do all their online transactions via one web-site. AA got off to a slow start in the United States in 1999, as the enabling companies initially entered into business under their own, largely unknown, names. In 2000, the account aggregators therefore changed strategy to start offering entrenched financial institutions the backbone technologies to design their own AA sites. Around ten companies are involved in this trade so far, some of the best known being Yodlee, VerticalOne (merged with Yodlee in December 2000), FSPNetworks, Paytrust and PayMyBills.com. The latter two were active in online bill payments before expanding their activities to the field of AA.

[14] Among the more important players in US markets, BillingZone is partly owned by PNC Bank Corp; Spectrum was founded by a number of leading banks including Chase, First Union and Wells Fargo; C2it is owned by Citicorp; and eMoneymail is owned by Bank One. The independent players include CheckFree and PayPal, both of which have established relationships with a large number of billers and financial service providers.

62. Banks initially resisted the new technology, formally on the grounds that it could impair what they considered as proprietary information, but many of them were eventually swayed by the obvious customer interest in these technologies to set up AA sites of their own[15]. In the United States about one million customers currently use AA, and consultants predict that this number will double annually over the years to come. The customers are, unsurprisingly, found among persons with a large number of individual accounts (which, by the same token, means relatively wealthy households): according to the most recent estimates, AA clients aggregate an average of 6 to 7 accounts. AA has also gained prominence in Australia, where four aggregation services are currently in operation -- of which three are bank-owned. In Europe, AA has not yet gained commercial viability. So far, only a couple of institutions in the United Kingdom have embraced the new technology.

63. Sites operated by non-banks have been somewhat slower in the uptake, but portals such as Yahoo and CNBC, and independent sites like OnMoney.com, have announced that they will step into the AA business. Analysts expect this market segment to grow as least as briskly as the bank-operated AAs, driven by many clients' desire for independence. However, some of the non-bank entrants reportedly plan to co-brand their services with smaller community banks in order to combine freedom of operation with the name recognition of established players.

64. Finally, it should be noted that an important argument by the financial institutions that have already embraced AA is that they actually perceive the new technologies as a step toward *greater* customer loyalty. Where traditional aggregator portals serve as a vehicle for price discovery -- and, hence, encourage rather the opposite of loyalty -- clients gain access to the advantages of AA portals in return for surrendering confidential information, which makes them unlikely to frequently change portals. Moreover, since the operators of AAs know the details of individual portfolios, when clients are found to buy services from other financial institutions there is scope for tailoring competing offers.

Client acquisition and retention

65. The majority of successful e-finance operators in Europe and Japan look for ways to retain their market position (and are moving an increasing share of their clients to the online channel) without turning themselves into AA operators. In general terms, this implies pursuing a strategy of improving the quality of e-finance or cutting prices at a sufficiently high pace (drawing, once again, on the concept of "additional" inducement) to give clients incentives against shifting suppliers. At the outset, one factor in favour of the incumbents is the fact that the average household in these countries holds accounts with fewer financial institutions than is the case in the United States. Hence, AA and some of the more advanced forms of EBPP would bring significant added benefits to only a limited subset of wealthy e-finance clients.

66. At the most basic level of attracting and retaining clients, individual financial institutions are expected to turn to a higher degree of **price differentiation** between their online subsidiaries and their traditional distribution channels. However, as this necessarily implies shrinking margins within a client base that is largely fixed, it will pose problems for financial institutions unless it is accompanied by offsetting cost reductions. In other words, significant differentiation is possible only when a level of consumer confidence has been reached that is sufficient for e-finance operators to scale back the current multi-channel strategies.

67. More sophisticated models for price cutting have been proposed. One way of pulling the issue of client loyalty to the forefront is by offering **account sweeping**. Vertically integrated portals carrying only the respective financial institution's own products have offered such accounts, offering automatic clearing of outstanding balances across accounts at the end of each month. To this date, however, sweeper accounts have not gained

[15] In one of the most widely publicised moves in 2000, Citibank set up its MyCiti.com initiative in co-operation with Yodlee, and other major banks to have embraced AA recently include Chase, Wells Fargo, First Union and FleetBoston.

major usage, as financial institutions with sufficiently strong market positions to make sweeping interesting to clients have been reluctant to accept the resultant decline in margins. In Europe, some commercial and merchant banks (notably in the United Kingdom) do, however, offer account sweeping -- some of which offer this service only to existing customers as part of purely defensive strategies for client retention.

68. An alternative strategy for building client loyalty is the offering of **added-value services**. The two most obvious ways of doing this in the normal line of (e-finance) business are: (1) keeping the e-finance services on offer at least as sophisticated and user friendly as those of the competition; and (2) joining forces with a limited number of competing institutions to construct vertical portals. These two development strategies are being actively pursued by financial institutions (not least banks) in Europe. Under the assumption that the average client is somewhat conservative, he is unlikely to change provider as long as he is "satisfied" with the level of e-finance service currently on offer. In case he does want to shop for alternative offers, a vertical portal carrying the products of other financial institutions with a high degree of brand recognition is on offer.

69. As regards client acquisition among regular Internet users, the opportunities are legion. Recent strategies range from attracting Internet users to e-finance sites by offering utilities that are entirely unrelated to finance, to offering first "entry" then "loyalty" gifts to new and return clients. The former of the two examples (which effectively amounts to turning the tables on the carrying of financial products by non-financial websites) is actively pursued in North America, inter alia through bank-owned virtual shopping malls. Recent examples of similar initiatives in Europe include so-called "market places" carrying non-financial products under the producers' own brand names, which have been established by the Nordic banks Nordea and Danske.

Summing up

70. It would seem premature to make judgements about the likely future market developments and business models. However, it is fair to conclude that recent developments such as EBPP and AA have the potential to greatly enhance the flexibility and choices faced by e-finance clients. In the extreme case, we may even see a commoditisation of selected financial products that could in the future be marketed via Internet platforms that are not necessarily operated by financial institutions. However, financial institutions are well placed to counter such a scenario: Entrenched financial institutions have the double advantage of brand recognition and the experiences they harvested in the early days of the online channel. The assessment by most analysts is that through prudent use of this head start the incumbents should be able to continue fending off the challenge from new entrants, provided they are willing and able to develop their e-finance strategies at a sufficiently rapid pace. Whether the "amendments" need to rise to the level of spearheading full-blown AA strategies, or whether more limited moves to retain client loyalties are sufficient, remains to be seen -- and there could be significant differences between national financial markets. It is, however, clear that a new parameter is being added to the competition within the financial sector and between established institutions and newcomers. In the future, financial institutions' client reach could depend to an increasing degree on their prowess in e-finance.

71. On a related issue, technology companies are likely to play a more important -- but not necessarily visible -- role in financial intermediation. As e-finance clients' comfort levels grow, technology companies could ultimately offer highly integrated portal-based solutions under their own branding. However, given financial institutions' initial advantage, an arguably more likely scenario is one where e-finance institutions continually develop their strategies to stay ahead in the face of the pressure from the new technologies brought forward by the technology companies. In such a scenario, the financial institutions may be tempted to step up their use of strategic alliances and outsourcing with the tech sector, in order to secure their e-finance arms continued access to the cutting-edge technology.

b) Alternative electronic distribution channels

72. As evidenced by the alliances between e-finance operators and technology companies, emerging electronic distribution channels figure highly in financial institutions' strategies for the future. The development has been in two separate areas, which can be broadly characterised as wired and mobile devices.

Wired devices

73. Wired alternatives to Internet-connected PCs are not necessarily technologically superior (in some cases rather the opposite), but they have increasingly attracted the attention of e-finance vendors because they are more readily available to the households in some geographical areas. In particular, an increasing number of banks and telecom companies have joined forces to develop distribution channels based on interactive television (iTV). From the e-finance vendors' viewpoint, one of the main added advantages of the iTV channel is that it has, in many countries, already acquired a proven reputation as a direct sales medium. Technologies on the edge of the traditional Internet platforms can, moreover, be put to specialised use in e-finance. One widely publicised example relates to Japan, where e-brokers have developed applications targeting the widely available games consoles.

74. Analysts disagree about the future potential of iTV as a distribution channel for e-finance. On the one hand, it is clear that iTV may widen the client reach over the medium term by making e-finance potentially available to a larger group of households. On the other hand, iTV is not commonly available in even the most advanced economies, and although this medium's reach is expected to expand in the future, it is unlikely to match the explosive growth that is foreseen for mobile telephony. The most prudent prediction may therefore be that iTV is likely to contribute to a widening of the client base by acting as an additional distribution channel, but e-finance vendors will depend on other media for major new developments -- notably the mobile devices.

Mobile devices

75. Notwithstanding the limited use of existing handheld devices for e-finance (e.g. personal digital assistants, WAP phones), market participants generally agree that mobile telephony is one of the key areas for future growth. This expectation is based on supply side as well as demand side arguments. Suppliers are attracted by forecasts that virtually all adult citizens in the OECD area will possess a mobile phone within the next generation, which would make this by far the widest-reaching interactive electronic distribution channel. As for demand, some of the arguments that made households shift to Internet-based banking and brokerage (flexibility, real-time access) apply even stronger to handheld devices. Moreover, additional "convenience" factors could be at play: conventional e-banking got off to a head-start in the Nordic areas largely because it brought banking services to the family home, where people in these countries spend most of their pastime. Similar headway could arguably be made in climatically different countries by making e-finance services available elsewhere.

76. While service technologies such as WAP have already made it technically possible to surf the Internet on a mobile phone, the general feeling is that a wider acceptance of mobile-phone based financial transactions ("m-finance") will have to wait for the development of more sophisticated interfaces. In this context, the allocation of third generation UMTS licenses currently on the way in most OECD countries is key to much of the future development of this distribution channel. Service providers are already in 2001 introducing wireless Internet services based on an interim technology called 2.5G, and when eventually a full-scale third generation (3G) network is established any financial service that is currently on the Internet will be available via mobile phones. However, it is assumed that (at least in the early stages of m-finance) only a small proportion of e-finance transactions will take place using the physically small handheld devices. Clients are unlikely to wish to perform a transaction on a mobile phone, unless (1) it is seen as relatively safe and uncomplicated; and (2) the real-time aspect is of importance. Among the obvious candidates for "m-finance" are thus services such as day trading of securities and bill payments and money transfers.

77. The area of payments and transfers merits special attention, not least as it ties in with the wider prospect of "wireless shopping" (paying for purchases via mobile phone). In this area, technological developments beyond the mere establishment of 3G networks could be called for: the existing e-finance facilities may soon be accessible via phones, but the mobile phone users will, other things equal, continue to be dependent on the architecture and interconnectivity of their e-finance service providers. In order to achieve a greater degree of flexibility, financial institutions and technology companies currently work toward establishing commonly agreed payment architectures. The basic idea is to provide the m-finance clients with a technology that, once they are authenticated vis-à-vis the holder of their account, gives them maximum flexibility in executing the actual act of payment[16].

c) Cross-border trade in e-finance

78. E-finance has the potential to create, for the first time, a global (or at least trans-national) market for retail financial products. However, even as consumers' willingness to shop for financial services is expected to increase as their level of confidence grows, considerable obstacles remain. If, in a extreme case, the commercial rationale for using the establishment of physical outlets as a mode of market entry were to disappear entirely, the most important remaining obstacle could be regulatory and other legal barriers to entry.

79. More concretely, most jurisdictions continue to place outright prohibitions on the cross-border provisioning of a wide range of financial services. A report considered by the Committee on Financial Markets in 1999 addressed this issue and arrived at the following tentative conclusions[17]:

- There are two dominant approaches in banking, with considerable variation in detail across members: prohibition, and reliance on home prudential regulation. Few countries prohibit cross-border banking outright. Some will prohibit specific retail banking activities when these entail "doing business" in the host market. Reliance on home supervision is dominant in wholesale banking. Countries that rely on home supervision for cross-border retail banking may also require compliance with specific host consumer protection rules.

- The prohibition of cross-border activity is more common in the retail insurance sector. Those countries that do permit it generally rely on the home prudential supervisor, with greater recourse to host country consumer protection rules.

- Most members that permit cross-border securities activity subject it to licensing/authorisation requirements as well as full compliance with host country rules. The main exceptions occur in the wholesale/sophisticated segment of the market.

80. A recent report by the UK Financial Services Authority reviewed the issues and concluded that even where the supervisory and regulatory agencies are in principle willing to pave the way for cross-border e-finance,

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16 One recent proposal came from the industry group Mobey Forum (includes some of the most important banks and technology companies in Europe), which issued the report "The Preferred Payment Architecture. Requirements for manufacturers and standardisation bodies" in June 2001. The Forum advocates the use of mobile phones containing two chips -- one of which bank-provided. This technology would provide a high degree of security in terms of authentication, while freeing the client to select the direction of transfers without recourse to existing payment architectures.

17 "Cross-Border Trade in Financial Services: Economics and Regulation", Financial Market Trends, Vol. 75, March 2000.

they run into a number of problems related to the differences between financial market and regulatory cultures[18]. In particular:

- Different countries do not subject the same activities to regulation. For example, some forms of financial experts services must be authorised by supervisors in some countries but not in others. Providing credit triggers an authorisation requirement for a banking license in selected jurisdictions, but not in others.

- Detailed regulatory requirements and protections vary from one country to another, even when the same activity is subject to regulatory oversight. For example, the requirements relating to financial promotions vary from country to country, which makes product comparisons and informed choice difficult.

- There is considerable variation in the tests applied by countries in determining which requirements must be complied with by an overseas firm marketing its services to people in the host jurisdiction.

- Once foreign firms accept clients in the host jurisdiction, the host supervisors adopt a variety of approaches. Some impose an authorisation requirement unless the consumer solicits the transaction or service. Other countries impose only their marketing controls, such as disclosure requirements. (But an authorisation requirement could still be triggered if the service is viewed as taking place in the host country)

81. Financial market participants have generally aired views that are consistent with the findings of the FSA. A commercial bank recently expressed its position in the following way:

"There is considerable uncertainty for a cross-border online financial service provider as to whether, under which circumstances and/or to what extent it will become subject to the regulatory jurisdiction of the host country financial services authorities. So, there would be considerable benefits if the community of national financial services authorities were to develop a single set of criteria that applied in the area of the assertion of jurisdiction across the world"[19].

82. On the one hand, it should be recognised that the regulatory regimes regarding cross-border trade of some kinds of financial services can be surprisingly permissive. (*Inter alia* because some countries drew up their legislation at a time when nobody foresaw cross-border trade in retail financial services) On the other hand, the number of actual prohibitions and the incongruencies between national approaches are such that e-finance companies are unlikely to operate on a multi-country basis in the foreseeable future. Rather, the likely development is an increased targeted penetration by e-finance suppliers of national markets in which they are aware of the regulatory and supervisory requirements.

The European Economic Area

83. In one subset of OECD member countries, multi-country strategies could be a feasible proposition for financial institutions, namely within the European Economic Area (EEA). Under EC financial services directives, a financial institution incorporated and supervised in any Member State may provide services across borders, or through the establishment of branches in any other Member State, on the basis of a "single license". The institution may provide such services under home country authorisation and supervision, given that home member state rules

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18 Financial Services Authority, *The FSA's approach to the regulation of e-commerce*, June 2001.

19 Credit Suisse Group, "Cross-border e-finance", a communication addressed to the OECD Secretariat on 10 September 2001. The authors also stressed the potential effects on cross-border e-finance of the considerable differences among national customer data protection laws.

comply with the harmonisation required by Community legislation[20]. Further progress was made with the adoption of the E-Commerce Directive that addressed the problem of legislative fragmentation by adopting an approach whereby, in general, the law applicable is determined by the place where the supplier is established ("place of establishment" principle).

84. Some outstanding issues do, however, continue to hold back the development of a fully integrated financial market. A recent paper by a subgroup under the ECOFIN Financial Services Policy Group highlighted some fields for further policy action[21]. First and foremost, dealing with existing derogations it is widely recognised that a derogation laid down in the e-commerce directive (giving countries the right to restrict incoming e-commerce services on a case-by-case basis in order to defend public policy, health and security as well as safeguarding consumer protection) needs to be clarified[22]. The European Commission intends to publish a document in early-2002 addressing this issue. Also, more specific derogations for contractual obligations concerning consumer contracts as well as in the fields of insurance and UCITS advertising have given rise to debate. In both respects, the implementation of the Distance Marketing Directive is likely to represent a step toward further clarity.

85. Other issues highlighted by the paper include the fact that there is a distinct legislative regime for online provision of services, which could potentially imperil the objective of regulatory neutrality that international supervisory forums have repeatedly stressed. Finally, further efforts could be needed to buttress consumer confidence in institutions operating on a cross-border basis. Ongoing efforts include the work toward creating a network (FIN-NET) through which consumers may seek out-of-court redress on a cross-border basis. Other initiatives aim at improving the situation for retail payments, especially with respect to improving legal and technical security.

86. Finally, the following main obstacles to market entry on a purely cross-border basis are sometimes cited by market participants[23]:

- Differences between countries in rules concerning customer information, marketing cooling off periods, the rights and obligations of customers and suppliers in the event of a dispute.
- The apparent domination of domestic card networks sometimes rises almost to the level of a *de facto* cartel, which impedes access by card issuers in other Member States.
- The banning of competitive advertising, e.g. showing the price benefit of shifting from one supplier to another.
- Prevention, in some Member States, of practices such as "loyalty points" and co-branding.
- The obligation for identification, often face-to-face, that emanates from national laws against money laundering.

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20 There is, however, a "general good" exception to the home country approach. Subject to the conditions established by the Court of Justice of the European Communities, a host-Member State may apply its own rules "for imperative reasons relating to the general good".

21 "Report on E-Commerce and Financial Services to the Financial Services Policy Group", *mimeo.*

22 Opinions do, however, differ as to the appropriate approach. A significant minority of countries wish to defer the issue until a sufficient degree of harmonisation of consumer protection rules has been achieved.

23 Egg, "Electronic Finance in the EU", a communication addressed to the Secretariat on 8 October 2001. The communication focuses mainly on the problems of online banking.

- Obligations, in various countries and activities, to use written paper instruments.

- The relatively extensive regulation, both at the EU and national levels, of consumer credits. An additional inconvenience for cross-border operators flows from the discrepancies between legal requirements (e.g. "over-indebtedness" and usury laws).

V. E-finance risks and supervisory challenges

87. The rapid advance of e-finance products and services presents new challenges and opportunities to financial institutions and supervisors. The growth in new technologies and the fast pace of their adoption directly influence strategic, reputation, transaction, and compliance risk, at a minimum. Recent economic uncertainty has already affected e-finance and its market acceptance. Technology projects are being re-evaluated for their business case and strategic relevance. Security, privacy, and customer service problems present additional threats to customer acceptance of the online channel. In the long-term, Internet technology developments could threaten the status quo by introducing outside competitors, unproven business strategies, increased price transparency, disintermediation, and cross-border issues.

88. Traditional safety and soundness issues will continue to be central for financial institutions whether or not they go online via the Internet. However, conducting these activities online may result in amplifying traditional risks. Three immediate e-finance-related concerns are in the following.

a) Appropriate planning and internal controls to govern new and emerging electronic delivery channels, products and services.

89. The growth of e-commerce has prompted financial institutions to quickly deploy new technologies to expand the methods of delivery and product offerings to their customers. For some small entities, basic e-finance remains a new technology. As mentioned above, however, more technologically sophisticated institutions have moved rapidly to expand options that include web site hosting, web virtual malls, wireless access, account aggregation, e-bill payment systems, and integration of more product offerings from all business lines. These new products and services first impact financial institutions in the area of strategic planning. The experience of many "dot com" companies and Internet-centred financial institutions to date illustrates the vulnerability of unproven e-commerce business strategies to the realities of the marketplace. Vendors must effectively plan technology deployment to ensure profitability, compatibility with organisational goals, and the implementation of sound controls. Moreover, transaction, reputation, and strategic risk are elevated as system performance and availability problems are now immediately transparent to the customer.

90. New e-delivery channels provide less face-to-face interaction with customers, so they also introduce new challenges when authenticating the identity of online customers. Financial institutions must balance the need for easy customer access with the need to ensure that transactions and data access are properly authenticated. A lack of strong authentication methods increases the risk of computer crime and breaches in privacy. Currently, most e-finance operators rely on the use of passwords and user IDs to authenticate customers. While passwords will certainly remain a key authentication methodology, they often prove vulnerable to compromise. Privacy and fraud concerns have prompted larger financial institutions and vendors to explore new authentication methods like digital certificates, smart cards, and biometrics.

b) Protecting the integrity of information and the privacy and confidentiality of customer information

91. Financial networks are increasingly at risk to both internal and external security threats. One can largely attribute the increased risk to the proliferation of distributed systems (i.e., networks). For several years, distributed

systems have expanded throughout financial institutions connecting multiple departments and business lines to applications, databases and other system resources. While providing significant opportunities to improve operations, this network expansion challenges information security oversight by moving sensitive system resources outside of centrally-controlled computing facilities. In addition, institutions have increasingly connected their internal networks to public networks (e.g., Internet), affiliates, third party service providers, remote users, and customers. The dispersion of resources and the increased connectivity introduce new vulnerabilities to information security that require management to deploy more advanced security tools to effectively manage the risk.

92. It should be noted that the growing access to information by retail clients has increased the benefit for distorting information, not least within the securities sector, along with widening the breadth of market participation. Additional regulatory and supervisory steps could become necessary to safeguard market integrity and protect unsophisticated investors[24].

c) Risk oversight of third party technology service providers

93. Financial institutions are increasingly reliant on third party service providers to deliver an array of new technology products, services and functions -- including, in the case of banking, access to emerging wholesale and retail payment systems. Additionally, the dynamics and complexity of network and Internet security gives new opportunities for third parties to provide e-finance applications, including secure web site hosting, remote data storage, and remote security management services.

94. While outsourcing Internet services to third parties can help financial institutions manage costs, obtain necessary expertise, expand customer product offerings and support, and improve services, it also requires adequate risk management oversight to ensure the security and availability of highly visible online applications. Also, increasing consolidation in the technology service provider community raises potential concern about the systemic impact of any interruption of e-finance services caused by the failure or operating failure (including hacking attacks) of any one dominant Internet technology provider.

95. Financial institutions can strengthen their vendor management through additional due diligence in the selection of technology providers, contractual language, ongoing monitoring and the development of contingency plans in the event that a service provider fails to deliver. Many of them rely heavily on third party audit reports as verification that their service provider has adequate internal controls. But financial institutions must ensure that the service provider has contracted for an external audit with sufficient frequency and scope, including verification and testing procedures.

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[24] This point was discussed in some detail by D'Avioli, G. E. Gildor and A. Schleifer (2001), "Technology, Information Production and Market Efficiency", *mimeo.*

ANNEX I

RECENT TRENDS IN ELECTRONIC FINANCE

I. Banking and related services

1) Current situation

Online banking has developed almost explosively, from virtual insignificance four years ago to an estimated 32 million clients in 2001. However, and notwithstanding the impressive growth rates, the overall coverage is still not high: A mere 3 per cent of the OECD area's population (in which area the vast majority of online banking clients is located) is so far covered.

It should also be kept in mind that not all clients who engage in an "Internet agreement" with their bank enter into actual banking transactions online. A survey by Jupiter Communications indicated that while almost 100 per cent of the online clients in the United States use the Internet to check account balances, only between 50 and 60 per cent use it for transferring money between accounts or for bill payments. Online loan transactions are even more limited. Some 40 per cent of the clients use the Internet for loan research, but less than 10 per cent had applied for a loan online.

The differences in uptake of e-banking among countries are striking. By far the largest absolute number of clients are found in the United States, where around 11 million people did banking via the Internet in 2000 (estimated to have grown to 15 million in 2001)[25]. An additional 4 million people were (still) interacting with their banks via the older "phone banking" arrangement. In Japan, according to a survey conducted in 2000, more than two thirds of the major banks provided account balances and fund transfers online, but only a small proportion of the co-operative financial institutions provided such services. Three internet-only banks have started operations in this country[26]. By mid-2001, the largest four banking groups in Japan reportedly had 8.9 million e-banking clients -- an increase of more than 50 per cent over the same time of the previous year[27]. Among the main UK banking groups, 6.4 million personal accounts were accessed via the Internet by mid-2001 (out of a total 105 million personal accounts).

In terms of online banking relative to the size of the population, the Nordic region stands out. Norway and Sweden both have penetration rates (users as share of the total population) in excess of 25 per cent, and in Finland more than a third of the population are involved in e-banking. The only large economy to have a higher-than-average penetration ratio is the United Kingdom. In consequence, more than 30 per cent of all European e-banking clients reside in the Nordic countries; and another 22 per cent reside in the United Kingdom. Countries with an internationally low penetration include recent OECD members such as Poland and Slovakia (but not Korea), and, perhaps more surprisingly, large European economies such as Italy and France. For example, in Slovakia a mere five banks offered online bank transfers in early 2001, and only one of them provided a wider range of banking services. Outside the OECD area, some jurisdictions with a high degree of Internet penetration have seen a strong

[25] American Banker, "Expectations Increase for Online Banking and Brokerage", 24 July 2001.

[26] Regional banks are increasingly turning to mobile banking. 51.5 per cent of them offer account balances, and 31.3 per cent offer fund transfers through this medium.

[27] "Diversification, speed lure millions to online banking", Nikkei Weekly, 3 September 2001.

growth in e-banking. One case in point is Hong Kong, China where 20 banks or banking groups (a majority of the retail banks) had established online operations by early 2001.

However, important additional factors appear to be at play. As discussed in passing in Section II of the main report, Spain and Portugal, for example, have much higher e-banking activity than their Internet penetration would seem to justify. Conversely, the United States has unusually little e-banking in relation to the massive Internet access in this country. In the first case, the most likely reason for the comparatively high e-banking penetration is the pro-active Internet strategies pursued by banks in these countries. In the United States, the reasons for the relatively low e-banking penetration are probably more complex. First, outside of the largest banks, the U.S. banking industry has not been particularly fast to embrace the new technology. A recent survey by the US Office of the Comptroller of the Currency showed that a relatively limited 41 per cent of the roughly 2, 300 national banks offered transactional e-banking websites by end-March 2001, albeit this is a sizeable jump from 21 per cent as of end-September 1999. Smaller banks and thrifts have been even slower to adopt the new medium. Only 23 per cent of all FDIC-institutions currently maintain Internet web sites that permit actual transactions. (For comparison, in Norway, Sweden and Finland virtually no bank or thrift does not offer online banking services). A study by JP Morgan, applying a stricter definition of Internet banking, even concluded that less than 15 per cent of all US banks offer online services[28]. Second, it should be borne in mind that retail banks are considerably less important for the day-to-day management of personal finances in the United States than in most other OECD countries. Third, unlike in many European countries, automated systems for transfers of funds (e.g. automatic teller machines (ATM) and phone banking) were in place prior to the introduction of Internet banking.

Among the additional factors holding e-banking back in some of the less developed economies is the coverage by ATM networks. Since pure Internet banking does not permit cash withdrawals and deposits, clients depend on ATMs if they are to operate in the absence of physical branches.

Very little firm evidence is available on how the e-banking clients are distributed among main economic sectors. However, anecdotal evidence suggests that e-banking penetration among enterprises is very high in the more Internet-advanced economies. Small and medium-sized enterprises (SMEs), in particular, have been fast to sign up to so-called "administrative systems" with banks, through which a number of bank-related financial transactions are conducted. A recent survey showed that the four largest UK banks had a total 4 million SME clients in early 2001. In the Nordic countries the similar number was close to 1 million. The most common usage of such systems have so far been (1) procurement (which may also include an element of insurance); (2) payment of bills and settling of accounts; and (3) working capital requirements, including online factoring and invoice discounting.

Finally, questionnaire responses to the Secretariat indicate that little traditional banking is so far done on a cross-border basis. Even where national regulators throw up no formal barriers to cross-border banking, banks do not solicit -- or, in many cases, even accept -- online clients who reside in other jurisdictions. Bankers have indicated that they are unwilling to make themselves subject to the dispute settlement mechanisms and customer protection rules of jurisdictions with which they may not be acquainted. Even within the otherwise integrated Nordic area, banks prefer to offer services to non-residents through subsidiaries in the respective host countries. There are, however, some exceptions from the general trends, notably within the European Economic Area. One of the success stories was thought to be First-E, a trading name of the Internet operations of Banque d'Escomptes, which offered online banking in four European jurisdictions. However, this e-bank was closed down by its parent company after initially acquiring some 80,000 online clients, mainly in the United Kingdom and Germany.[29]

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[28] JP Morgan (2000), "E-Finance. 'Architecting' the Open E-Finance Network: Built to Ride the Internet Wave", Industry Analysis. According to this study, only banks with assets in excess of USD 10 billion are certain to offer online banking services.

[29] According to analysts, a factor contributing to First-E's troubles was adverse publicity over its regulatory arrangements and the rights of clients outside France.

Company specific evidence

An increasing number of non-bank financial institutions and even non-financial institutions are deploying Internet banking services, such as transaction accounts and bill payment. This could be seen as a logical extension of a development already seen in online brokerage: the Internet can, by enabling a break-up of the traditional value chain in financial institutions, attract non-traditional players. E*Trade, for example, has undertaken several strategic moves to extend its services into banking, such as the purchasing of TeleBank and contracting for its own network of ATM machines. Another example is the Internet-based commercial cash management business recently launched by Merril Lynch. Internet portals and insurance companies are also offering or plan to offer banking services, *inter alia* as a way of deepening their own customer relationships.

While much media attention has been given to non-traditional entrants and Internet-only banks, these institutions have so far failed to make significant inroads into the client base of the established players. In 2000, less than 4 per cent of all e-banking clients in the United States were the clients of pure branchless banks (the largest ones were: Wingspan, NetBank and Telebank -- the former has since been collapsed into the Internet banking division of its parent company, Bank One; the latter two have recently merged with other entities), with the remaining 96 per cent using the online services provided by their traditional banks, or by wholly owned subsidiaries of these. This trend is mirrored in Europe. Most national banking markets saw the advent of one or two Internet-only banks at a relatively early stage, all of which has now been largely overtaken by the Internet activities of larger long-established competitors. One case in point is the Danish Basis Bank which, after starting operations less than two years ago with extremely low interest margins as the intended customer magnet, recently had to reverse course and announce a hefty increase in lending rates and fees.

Strategic alliances between banks and non-banks flourished in 2000. While some of these were narrowly focused on cost-cutting (and, hence, related to the outsourcing discussed below), most were motivated by a desire to pool the core competences of banks with those of enterprises from other parts of the business sector. The clearest example of this was a large number of alliances between banks and telecom companies with the purpose of setting up Internet activities. Among the more well-publicised examples were the alliances that Credit Lyonnais, BNP-Paribas and Societé Générale entered with Commerce One and Cap Gemini toward the creation of B2B market places. Other examples were ABN AMRO's alliance with Trade.com and Dresdner Bank's alliance with Ebay toward using the non-banks' cross-matching systems in creating virtual financial market places. In Spain, Open Bank (a subsidiary of BSCH) merged with the Argentine portal Patagon to create a portal-based financial supermarket. Of an arguably even more forward-looking nature were alliances in several countries between banks and national telecom companies (e.g. Deutsche Bank with Vodafone-Mannesmann; BBVA with Telefonica) aiming at preparing the ground for future mobile banking services.

Among the later-starting countries, Portugal saw its first Internet-only bank in the first half of 2001. It resulted from an alliance between Banco Espirito Santo and Portugal Telecom. Finally, banks increasingly establish "market places" carrying non-financial products under the producers' own brand names. Recent examples include Nordea and Danske of Scandinavia.

As for the international strategies of institutions involved in e-banking, relatively few operators have so far established subsidiaries in other jurisdictions with the main purpose of offering online services. Some anecdotal evidence seems to suggest that where this does happen it is either motivated by bank-specific strategies to see a given set of countries as one area of operation (as is the case in the Nordic countries), or attracted by profit margins significantly higher than at home. The second category includes initiatives such as ING Bank's aggressive expansion first in Canada and then in the United States in alliance with resident non-financial institutions. Moreover, there have been moves by British and Swiss banks to establish or acquire institutions involved in e-banking in southern Europe, *inter alia* motivated by the fact that margins there remain higher than in the north. One example is Lloyds TSD, which launched its e-banking subsidiary Evolvebank in Spain before even in the United Kingdom. ING Direct has also been active in the Spanish online banking market.

Selected banking-related services

Electronic bill services have come to be seen, by traditional banks and new entrants alike, as a key area for strengthening the client relationship. Bill payment, per se, is offered by most banks active on the Internet as part of their general money transfer services. Electronic Bill Presentment and Payments (EBPP) refers to the process by which bills are converted to an electronic form at the source, routed to the payee electronically, and paid electronically by the payee. There are two discrete types of transactions in this process, namely the electronic presentment of bills and the electronic payment of them. Of these, the payments are by far the most mature business, accounting for about half of all Internet-originated bill payment transactions in 2000 (the rest generally being paid by checks or postal transfers). As for the electronic bill presentment, it has so far made a relatively modest start, largely confined to the B2B market segments. A recent study by the Gartner Group demonstrated that around 3 million US households occasionally pay bills online, but only 100,000 of them are engaging in services up to the level of actual EBPP. The number of clients is, however, expected to grow explosively over the next 3-4 years. In the United Kingdom, the Association of Payment and Clearing services estimates that 500,000 individuals paid at least one bill over the Internet last year

Companies specialising in EBPP are often owned by one or more entrenched banks. In other cases, they generally operate in co-operation with a large group of financial institutions. Among the more important players in US markets, BillingZone is partly owned by PNC Bank Corp, Spectrum was founded by a number of leading banks including Chase, First Union and Wells Fargo, C2it is owned by Citicorp, and eMoneymail is owned by Bank One. The independent players include CheckFree and PayPal, the former of which has reportedly already established relationships with 121 billers and more than 150 financial service providers. A development that will bear watching over the next years will be the impact of more aggressive competition from non-financial institutions, such as Microsoft and Yahoo, in the provision of EBPP services via their Internet portals. Various UK organisations, including the Post Office, have announced plans to develop EBPP consolidation services. In Australia there are two fully functioning EBPP providers (E-bill and Australia Post), and a third operator (BPAY) is about to start.

Electronic credits are another area of rapid development, especially in the B2B market segments. At the current juncture, application processing is available online, but complete fulfilment is not. In this situation, enterprises, especially SMEs, which have access to banks' online administration systems may use the Internet to draw on trade credits and other sources of variable finance.

Households, by contrast, who have no such permanent credit lines with banks (except for bank-issued credit cards), are limited to online information gathering and the submission of applications. The last year has seen an upshot of portals of the aggregator type, matching potential household borrowers with lenders without taking credits on their own books. A much more limited number of Internet companies offer credits in their own right, with partial processing of the application via the Internet. In the case of the United States, these include several providers of home equity loans that are also involved in mortgage lending (and, hence, are mentioned below) and Creditland, Eloan and LendingTree, each of which is involved in auto loans, personal or small business loans and credit card services. Of these types of services, only credit card transactions can be considered as true e-finance. The development of online auto loans has, moreover, been hampered by the fact that more than 50 per cent of all auto financing currently originates with the car dealers.

2) Scenarios for the future

Market trends

Incumbent banks in most countries have, up to now, been able to use their client bases and brand recognition to fend off the competition from all but a few handfuls of new Internet-only banks. This has, however, come at a cost,

for in the near term banks face the burden of maintaining both their traditional bricks-and-mortar infrastructure and their new virtual networks. Managing both traditional and innovative delivery channels will likely be one of the major challenges for banks over the next several years. Moreover, the banks' "clicks and mortar" Internet strategies could come under renewed pressure, if the advent of new technologies and business models such as account aggregation brings the prospect of new entrants (even non-bank entities) competing with traditional banks back to the centre of attention. While opinions differ as to the exact nature of the changes that this will trigger, the following scenarios are widely regarded by banking analysts as the most likely outcomes. They are, of course, not mutually exclusive:

- *No major changes.* The value of reputation and client loyalty will continue to ensure that the current banking models will prevail. Banks will continue to offer a wide range of services (especially in the countries where the universal banking model predominates) on their own vertically integrated portals.

- *Commoditisation* of the banking sector. Retail banks might, for example, enter into non-exclusive alliances with TMT companies in an effort to acquire customers. The likely outcome would be a scenario in which the telecom industry would if not replace banks as intermediaries then at least capture a significant proportion of their value-added.

- *Structural changes in banking.* Banks may prevent commoditisation by themselves embracing the new technologies and orienting themselves toward a number of (likely, but not necessarily, bank-owned) aggregator portals. If the transactions currently done on a large number of bank-specific portals is to migrate to a smaller number of aggregator portals, changes in the way that banks do business are a certainty.

The first of these possible outcomes is naturally the likely one in the near term. However, in a longer perspective it is arguably the least likely model for success. Universal Internet banks will need both the customer reach to compete effectively with portals and the size to gain sufficient economies of scale to compete effectively with specialised institutions.

Most analysts lean to the conclusion that the most likely long-term scenario is the third one. If indeed bank clients increasingly look to Internet portals for specialised financial products, banks are likely to line up behind these portals, each of them increasingly focusing on the segments of the market or the provision of particular services in which they perceive to have advantages over the competition. It may still be too early to form firm opinions about the exact form that a shake-up of (retail) banking services could take, but a recent study argued that as the progress of online banking results in an increasingly consumer oriented banking sector, two major categories of players are likely to develop[30]:

- *Customer gateways.* These are essentially Internet portals of either the aggregator or the vertical integrator type, acting solely as gateways to consumers. The vertical integrator version of this model would take the form of a "one-stop shops", offering a range of products under a single branding. The aggregator version will give access to a range of different brands, including, when the gateway is bank-owned, those of the service provider.

- *Specialised suppliers.* Some banks will focus on the production and administration of a limited number of products, thereby increasing their capacity to provide a value-added element while also reaping economics of scale. In the long run, such institutions would likely retain very limited distribution capabilities. The majority of products would be distributed by gateways, either under the producer's own brand or as rebranded items.

[30] Benoit Vincenzi et al. (2000), "European eBanking. Reality Check", Fox-Pitt, Kelton.

The prospect of strictly specialised institutions may seem somewhat farfetched, not least in countries that have traditionally relied on the universal banking model, but some initiatives of this kind are already under way. In Europe, for example, Societé Générale has been very active in terms of breaking up its value chain, outsourcing its mortgage processing to a unit of BNP-Paribas and creating a jointly owned subsidiary with PriceWaterhouseCooper that regroups its corporate cross-border payment business. In the United Kingdom, several entities have recently outsourced their mortgage processing (examples include Woolwich and Bradford & Bingley). Bradford & Bingley has developed a "portal strategy", by which the bank has focused on using its branches as independent financial advisers, retaining the customer interface but outsourcing the credit risk.

Among the moves taken by banks to counter disintermediation and retain client loyalty is the relatively novel concept of account sweeping, whereby clients are offered an automatic end-of-month netting of outstanding balances held with one financial institution. In the United Kingdom, HSBC has announced its intention to offer such a service through its First Direct subsidiary, and Barclays has said that it will offer the similar Open Plan product to all of its current account holders. This suggests that offset accounts will soon no longer be considered as niche products for sophisticated customers.

Technological developments

The delivery of banking services could be significantly influenced by the advent of more powerful handheld devices. There has even been speculation that m-banking has the potential to gradually replace and exceed the role currently played by payment cards and electronic money. Once an instant and portable access to online money transfer services is available to customers, the need for debit cards will greatly diminish. Changes in the operation of credit card services and electronic money (stored-value devices) are also foreseen, as is the demand for cash. Eventually, handheld devices through which consumers affect transfers between their own bank accounts and those of retailers could become the main means of paying for purchases of goods and services.

II. Brokerage and related securities services

In the area of B2C finance in OECD countries, no sector has felt the effects of the Internet more strongly than brokerage, especially in Korea, the United States and some European countries. Activities are so far largely limited to the trading of national equities, on the grounds that they are homogenous and therefore relatively easy to trade. Non-equity markets, which are perceived as more complex, and cross-border trading, which is subject to some technical and regulatory barriers, have benefited less from the open network architectures. However, conditions in this area too are rapidly changing.

1) Current situation

Following the adoption of the Internet as a key trading channel by major players during the past several years, the US broking market witnessed explosive growth (before cooling off somewhat under the presently subdued market conditions). There were around 18 million online accounts[31] with more than 1 trillion USD in assets in 2000 -- more-than double the 7 million accounts and 430 billion USD in assets in 1998. Online trades accounted for more than 40 percent of all retail trades in the US market. In just three or four years, both average online trades per day

[31] Caution is, however, called for when interpreting the number of accounts. In some countries the difference between accounts opened and accounts active is quite significant.

and the number of online broking firms rose more than 10 times to 1.1 million trades per day and 200 firms in 2000[32].

From a later starting point, online brokerage is also showing spectacular growth in other countries. The European market more than doubled to 3.7 million accounts in 2000. Germany has taken the lead in terms of absolute numbers with around half of the market, followed by Sweden, France, United Kingdom, Netherlands, Italy and Spain. There are already around 150 players on the European online broking market[33]. There were an estimated 305,000 online investors in the United Kingdom in the first quarter of 2001 (up by 6 per cent from 2000:Q4), and the number of online trades was 776,000. In Japan, according to a March 2001 survey, there are 1.9 million online trading accounts, an increase of 46 per cent in six months. More than a third of stock trading by individuals ("retail trades") was conducted online during the six months from October 2000 to March 2001[34]. In Hong Kong, China there was a staggering 99 online brokers in April 2001 (and an additional 8 brokerage advisors), but no information is available about the number of actual clients. In Turkey, and estimated 13 per cent of the daily orders on the Istanbul Stock Exchange in early 2001 were conveyed to brokers via electronic networks. On current information, e-broking penetration (defined as the number of online brokerage accounts relative to total population) is internationally high in countries such as Canada, Korea, United States and Sweden.

In contrast, the fixed-income securities markets are still predominantly made over the telephone as buyers and sellers find one another through broker-dealers. Traditionally, fixed-income securities markets have been fragmented, OTC and dominated by a relatively small number of large broker-dealers, and the transparency of market pricing, supply, and demand is very limited. Even so, the potential for electronic trading may be less than equities since fixed-income products are heterogeneous and more complex in terms of pricing, and prices tend to be less volatile. Online brokers have just started to offer bond-trading services on their sites, but this market segment is still its infancy. For example, in markets such as the United States and Switzerland, approximately 95 per cent of bond trades are still executed over the telephone. In Hong Kong, China intermediaries have created portals that serve as electronic platforms for trading Asian bonds as well as pan-Asian stocks. In government bond markets, an interesting development has taken place in Belgium. Following the creation of MTS Belgium, Euro MRS and Broker Tec, around 20 per cent of the operations on the market government securities are performed via electronic platforms.

New applications and systems which allow for much easier cross-border trading have emerged on the market. Alternative trading systems displaying and automatically matching equity order bypassing the market makers have already captured about 30 percent of OTC trading of US equity (measured by volumes), and are making inroads in the listed market. Many stock exchanges have established links, formed alliances or merged. In the meantime, leading players have moved in to offer online broking service in foreign markets as well as dealing in foreign shares for domestic customers, which has driven down considerably M&A activity in the broking industry. Some of them are building their own cross-border trading platforms, even though few have succeeded as of today, due to the extremely complicated technology needed. Table A1 outlines some examples of M&A activities in the online broking industry.

Specific developments

Along with this rapid growth, the broking industry is going through many changes. US firms have adopted an increasingly segmented approach to the more empowered and multi-tiered clients: mass-market execution-only

[32] Securities Industry Association and U.S. Bancorp Piper Jaffray, 2000.

[33] J.P. Morgan Securities and Affärsvärlden

[34] This proportion remains a relatively limited 6.3 per cent of the value of all stock trading due to a large volume of institutional trading, but it is more than three times the share just one year ago.

clients, day traders, or active investors who take a longer-term horizon with their investments than the day traders. These clients are shared with deep discount firms (e.g. E*Trade, Ameritrade, Datek Online), mid-tier discount firms (e.g. Charles Schwab, TD Waterhouse), and full service firms (e.g. Merrill Lynch, Prudential Securities). Although many are new entrants, most are the online offspring of traditional financial service firms. Unlike in the United States, in most European countries the large universal banks appear to dominate the retail broking business, as shown in Table A2. Notable examples are leading German online brokers, such as Comdirect and ConSors, which were established as wholly-owned subsidiaries of banks. These brokers dominate execution-only distribution in the mass market for small investors while many customers with large portfolios and active trading habits hold their accounts at small, full-service brokers. The top five players in the United States combined represent over 80% of the market, compared with 50% in the European market.

Also, pricing wars for customers have already driven down the cost of trades to the bare bones and pure trading has become a commodity. Competition (and regulatory pressure as well) is moving toward unbundling of product and services such as real-time quotes, access to brokers' institutional research, IPOs and mutual fund offerings. Even though the European customers are behind their US counterparts, they have already started to demand more value-added product and services. Accordingly, cost of attracting and retaining customers have soared. The combination of strong competition and soaring marketing costs has strained the profitability of many online broking firms.

Table A1. Examples of M&A activities in the online broking industry

Acquirer	*Target*	*Target Country*	*Date*
BIPOP(Italy)	Entrium	Germany	2000.6
	i-Bourse	France	2000.2
DAB(Germany)	SelfTrade	France	2000.9
E*Trade(U.S.)	E*Trade UK	UK	2000.1
	E*Trade Net Bourse	France	1999.12
	E*Trade Sweden	Sweden	1999.10
	E*Trade Denmark	Denmark	2000.3
Comdirect(Germany)	Paresco	France	2000.4
ConSors(Germany)	Onbaca(BPCI)	Italy	2000.3
	Siaga	Spain	1999.12
	Axfin	France	1999.7

Source: JP Morgan, National Bank of Denmark.

Table A2. Leading players in the European market

Company	*Majority ownership*	*Established as*
Comdirect	Commerzbank (Germany)	Subsidiary
ConSors	Schmidt Bank (Germany)	Subsidiary
DAB/Self Trade	Hypo Vereinbank (Germany)	Subsidiary
Brokerage 24	Deutsche Bank (Germany)	Subsidiary
e-cortal	Paribas (France)	Subsidiary
Fineco	BIPOP (Italy)	Subsidiary
Bankinter	BSHC (Spain)	Subsidiary
Entrium	BIPOP (Italy)	Greenfield
Fimatex	Société Générale (France)	Subsidiary
Advance Bank	Dresdner Bank (Germany)	Subsidiary

Source: Datamonitor.

Factors driving these developments

The surge in online broking, first in the United States and later in Europe, has taken place against the backdrop of bull markets in equity and favourable demographics. Other factors driving growth rates up have been: a new degree of accessibility of information, large cost savings compared with traditional offline broking, customer segmentation, more convenience, and the ability to place orders without having to interact with a broker. In sum, online trading has empowered individual investors with access to professional levels of information and market participation, all at minimal costs. Analysts have noted a certain difference between sources of growth in the European and the US markets. In the United States a main driving force has been the migration of existing shareholders to the Internet, whereas the emergence of new shareholders choosing to transact over the Internet has been a major factor in Europe (the migrating of existing shareholders has also begun, but late).

Hence, the success of the online brokerage in the United States is to a large extent attributable to a high level of individual share ownership and a high level of Internet penetration. There is already a widespread equity ownership in the U.S.: Over 40 per cent of population own shares. Low levels of retail share ownership in Europe (albeit rising lately) are the main limiting factor. Only 14 per cent of the population own shares, but the pattern differs significantly across countries from Sweden (66 per cent) to some South European countries with ownership rates below 10 per cent. Internet usage in Europe (on average, about 20 per cent of the population) is also lower than the 56 per cent recorded in the U.S. High-quality service and cheap trades from brokerage and banks make Germany the largest market for online trading in Europe. Sweden, which has a high proportion of both Internet users and retail shareowners, has emerged as the second largest despite having a much smaller population.

Puzzlingly, the United Kingdom, which has many Internet users and a high level of share ownership, has not taken a lead over other countries. It can perhaps be partly explained by inactive shareholders -- plus the fact that retail stock ownership was high in the United Kingdom, and channels for buying and selling stocks to the households

well entrenched, prior to the advent of Internet. Most recently, online brokering has pushed ahead in some south European countries. In Spain two important new market participants were introduced, namely Tressis Inversis (with the participation of Caja Madrid, Banco Zaragozano, Terra Lycos and El Corte Inglés) and MaxBlue (the online brokerage arm of Deutsche Bank).

In Japan lies one of the biggest potentials for growth in online broking because Japan has a marked lead in two technologies – mobile telephony linked to the Internet, and Internet-games consoles – that could become vehicles for online investment. But there are some obstacles to the spread of online trading. Many individual investors in Japan are known to be risk averse, which suggests that a big part of savings may stay in low-yielding but safe deposits. After a degree of initial delay, regulation has been overhauled under the so-called IT Strategy. For example, from April 2001, transaction reports of securities firms can now be provided electronically and prospectuses for new issues of securities can also be delivered online. In October 1999 the Japanese stock market ended all fixed brokerage commissions and opened the field to new discount brokers.

2) Scenarios for the future

All securities markets are moving in the long run toward an ideal of real-time, automated trading, clearing, and settlement. Not all securities will be traded in a pure bid/ask environment. For some products, the Internet will provide a medium of discovery and communication. However, market participants predict that even if a given security is not exchange tradable by virtue of its complexity, trades in the security will still be transacted on some type of network-based collaboration platform.

Further strong growth in the online equity broking market is to be expected in the coming years. Most analysts predict that the number of, and the assets held in, online accounts will continue to pick up in the United States and Germany, and the other slow starters -- the United Kingdom, France and Italy – will gain speed to catch up. Developments such as pension reforms, privatisation and consolidation of the European stock markets are predicted to further push the population toward individual online investing. Analysts also point out that the best online financial prospect can be found in the Nordic countries, where 30 percent of consumers own stock and 10 percent of stockholders already trade online. Finally, the Internet is potentially a vehicle for initial public offerings (IPOs) as well as for the secondary market. In the United States several of the larger e-brokers have already established companies with the purpose of bidding against the merchant banks for shares of the IPO market.

Going forward, online trading will expand far beyond its discounter roots with all the benefits of Internet account access moving to both mainstream investors and mainstream brokerages:

- The traditional offline firms are rapidly adapting to the open architecture. They are either creating separate subsidiaries or incorporating online trading with their core business to address channel conflict. Online brokers are also struggling to convert mainstream. They are creating successful vertical portals together with a broad range of financial services online. Horizontal and vertical integration are very much underway.

- As competition in the broking industry continues to heat up, more emphasis is placed on assets, not trading volume. There would be a divergence of business model catering to either the asset management model or the high-volume trading model.

- The second-wave of online account holders, who may be the middle-aged, middle-income investors with a middling aversion to risk, are less experienced and will trade less frequently. To retain and attract them, firms will have to deliver comprehensive, customised, and low-cost advice that is easy to understand and use. Online advisory service (e-advice) will become an important component of the online brokerage. Furthermore, with markets so volatile, small investors are turning from do-it-yourself trading toward a

greater interaction and guidance from brokers, which would cut discount broking firms' core profit as recently seen in the U.S. market.

- Integrated multi-tiered distribution facilities, which offer customers account access online, over the telephone, and through their branches, are becoming the way to success in this industry, along with e-advice.

Consumers are reaping the benefits of unbundling, which brings lower prices. However, pricing pressure in certain segments continues as more new entrants and traditional broking firms move in online. Second-wave pricing models will have to be based on asset levels, trading activity, types of investments, and attitudes toward fees.

New e-finance capabilities will also bring the fixed-income securities market increasingly onto an electronic platform. The main potential for online trading is in fixed-income securities that are already fairly liquid, notably government bond and blue-chip corporate bonds. But high-yielding corporate bonds and asset-backed securities are likely to remain relatively illiquid. The diffusion of liquidity caused by the reduction of bond inventories at most brokers following the 1998 market crisis is helping the cause for electronic trading. In a break with current trends, fairly liquid products in the fixed-income securities market have the potential to become as electronic as the equity market. Platforms to enable interaction among issuers, underwriters, and investors will facilitate deals more efficiently and at a lower cost. Internet-based issuance will open up the market for smaller investment institutions that previously did not have access to the syndication process. As electronic marketplaces prosper, greater transparency will cut spreads, enhance the efficiency of the market, and lead to higher trading volume. However, success will depend on how willing major market participants are to abandon their old ways and cosy relationships.

Analysts generally agree that new trading options and middleware to provide access to multiple, disparate pools of liquidity will be developed. Cross-border trading, clearance and settlement services for retail operations covering all of the European markets, will be available. There will also be process improvement for equity issuance, but there are few prospects for replacing the high-stakes, complicated, hands-on process of IPOs.

Currently, m-finance services offer limited value to customers and firms. Several brokers started to offer online trading through personal digital assistants (PDA), interactive television, Web Phone or Web kiosk. Most of these channels (front-end devices) account for only a fraction of the overall trading volume. Customers have access to real-time quotes and charts, company news, the ability to place stock orders and check order status, and account information such as account balances, holdings and order and account history. However, to build long-term customer retention and differentiation, firms need to offer continuous advisory services that require more than pushing data to mobile devices. In the coming years, leading firms will deliver real-time analysis, action-oriented advice geared to time-sensitive decisions, automatic execution of complex transactions, and instant financing to mobile clients.

Obstacles to further developments

Looking ahead, there could be some possible obstacles to further developments, notably in the field of operational risk[35]:

- The boom in on-line trading has put significant pressures on firms' system and their supporting technologies. Technology-related system interruptions or poor execution may cause serious frustration for

[35] As a corollary to the operational risk, the possibility of breakdowns of online services is also an important potential source of reputational risk.

the customer base. Technology teething problems have been more common among those operators, which migrated onto the Internet with back-office systems designed for less volume intensive businesses. The key requirements for a technically successful internet brokerage solution is identified to be the ability to cope with the high transaction growth and the flexibility to add or exchange functionality elements at front-end and back-end user.

- There are information security risks of unauthorised users' accessing the system and obtaining vital investor information. Some U.S. brokers launched a paperless account-opening process to take advantage of the federal digital-signatures bill that went into effect in October 2000. While the cryptographic principles behind digital certificates are widely accepted, the technology surrounding them remains far from bullet proof. In fact, the digital-signatures law appears to provide less legal protection to investors than expected. Furthermore, the general public remains under-prepared to safeguard their own security. As broadband modems proliferate, the majority of investors still are not using firewalls on their home PCs. The broking business requires building in better legal safeguards for investors.

- Technical and regulatory difficulties related to cross-border transaction services constitute an important hurdle for international expansion for broking service. For example, it is the availability of (unified) execution, clearance, and settlement service on the back end that enables a broker to offer cross-border trading. On the regulatory side, difficulties in complying with the "know your client" rules and the need to obtain approval from overseas regulators have held cross-border trade back. Besides, other barriers are differences across countries in levels of investor preferences; languages and cultures which affect interfaces, marketing and customer support; taxation treatment of investments and reporting requirements; regulations on direct selling, consumer and data protection.

III. Asset management

Asset management includes two main activities, namely the provision of investment funds to households and the management of pension and other funds for enterprises. As for the latter, the uptake of online finance has been swift, not least as the Internet has largely replaced other channels of communication between asset managers and enterprises. This section focuses on the sale of investment funds to the households.

1) Current situation

The Internet is increasingly used as a channel permitting investors to buy and sell investment fund shares directly, in addition to which it is also used among management firms, fund sponsors, investors, and potential customers. There are signs of investors becoming increasingly comfortable using online resources, with the number of investors visiting websites of management firms offering fund shares increasing significantly over the last year. In the United States, nearly half of all mutual fund shareholders with access to the Internet used the Internet to access the websites of mutual funds between April 1999 and March 2000. This should be compared with a rate of about one-third between July 1997 and August 1998 (at which time a much smaller number of investors had Internet access). However, most of this activity may not have constituted e-finance in the true sense of the word: at the websites of firms offering fund shares, the users most frequently reviewed fund performance information, share prices, and personal account information. Slightly more than half the users are estimated to have conducted fund transactions between April 1999 and March 2000, of which 18 percent bought or sold fund shares online[36].

As investors have obtained better access to information through open electronic networks, market conditions have become more competitive. The large and entrenched fund managers have generally tended to be somewhat

[36] Investment Company Institute, 2000. Indeed, few companies have companies with straight-through processing capabilities.

cautious in their online strategies compared with the newer and more aggressive operators. This, in turn, has led to a considerable shift in market shares. In Germany, the *sparkassen* suffered a net outflow of 15.2bn EUR – including one-fifth of their investment fund holdings – to online asset managers and brokers during the first six months of 2000. The picture in Italy was similar: over the same period, 57 per cent of net new money flowing into investment funds went to two specialist technology-based groups, namely the Internet bank *Bipop* and the independent consultancy *Fideuram*.

The Internet is making information on performance widely available -- in fact, it may arguably force fund distributors to increase disclosure and present data on a comparable basis. A growing network of information-processing firms enhances the value of this information by regularly obtaining data from management firms, presenting the data in a consistent way, comparing the performance of various investment funds and disseminating the results. Some information services also rate funds by their performance with respect to peer groups or the fund's return in relation to the risks it has assumed. Initially, the information was mainly available to analysts in financial intermediaries, while the general public had access through the specialised financial press. The Internet has made such information easily accessible to the mass market. Clearly, access to information narrows the information advantage of fund promoters over investors.

Specific developments

Asset management firms have made significant progress toward a broad-based distribution environment, further rendering traditional channel labels of direct, broker-sold and captives increasingly outmoded. Now, virtually all firms compete against each other in at least one channel, with many firms battling the same foes across multiple channels. Even some distributors who only sell proprietary funds in their branch networks sell external funds over the Internet. The swapping of distribution through alliances is likely to lead to an elevation of stature for the products of distributors — thus leaving fewer spots on preferred lists for pure asset managers. Also, the proliferation of sub-advisory arrangements has even led to asset managers competing against themselves, pitting their own product against other firms' products for which they act as sub-advisors.

Furthermore, asset management firms are starting to use the Internet for more detailed segmentation of customers to selectively deliver appropriate service to them. In the United States, the Internet is also expected to play a large part in differentiating one fund family from another in the strategically important 401(k) market. Most corporate sponsors of 401(k) plans want their employees to have ready access to their account balances and the ability to complete purchases and sales within their account. The bulk of the current new, first-time accounts are coming from the 401(k) mutual fund investor types who are discovering what they can do online. In fact, asset management firms are one of the main online broking groups which offer such 401(k) fund investor services.

On the edges of asset management, discount brokers and fund supermarkets have established footholds in several countries. The organiser of the supermarket offers no-load funds from a number of different investment fund complexes. These supermarkets allow investors to purchase funds from participating complexes without investors having to contact each fund complex. The organizer of the supermarket provides the investor with consolidated record-keeping and a single account statement. In the United States, fund supermarkets now represent 9 percent of long-term mutual fund assets under management, triple the market share of five years ago. Currently, several US management firms realise as much as 80 percent of their net new inflow through mutual fund supermarkets[37]. Fund supermarkets tend to differentiate themselves from each other in one of three ways: through product breadth; through aggressive discounting; and through state-of-the-art services for both customers and advisors. In the United States, despite a number of supermarket start-ups in the early 1990s, Charles Schwab & Co, and Fidelity Investments control more than 90 percent of supermarket assets under administration.

[37] Cerulli Associates, Inc, 2000.

Many analysts predict that supermarkets will enjoy similar success throughout Europe. Technological advances – primarily the development of common data backbones, providing a common language between distributors and fund manufacturers – have made it more feasible to launch supermarkets in Europe. In the United Kingdom Egg, Virginmoney and Fidelity run large online supermarkets offering access to hundreds of funds[38]. In some countries, such as the United Kingdom and Australia, independent financial advisers (IFAs), who provide financial advice for fees while marketing products from a number of firms, already constitute a major channel of distribution and similar systems may spread to other countries as well. In the United Kingdom, in many cases, the IFA's fee is paid not by the consumer but by the fund provider.

2) Scenarios for the future

The introduction of low-priced Internet stock trading and the changing competitive landscape mentioned above are, together with a generally slowing inflow to investment funds, increasingly putting pressure on the asset management industry. Individual companies come under pressure to deliver better products, undertake more consumer segmentation and enter into new alliances and joint ventures, potentially bypassing traditional distributors.

Analysts generally agree that under the new environment, marketing, performance, and distribution take on much greater importance:

- Customers are empowered. A growing number of customers will demand that the financial intermediary delivers a better value proposition as pricing becomes more transparent.

- As funds' asset accumulation functions have been disintermediated by some dominant distributors, acquisition costs have risen. Management firms must now share their load revenues and their investment results with their distributors. If that isn't enough, in the process managers have clearly lost direct contact with their investors.

Looking further ahead, while the traditional asset management firms will introduce new products and features, most online brokers will add a variety of investment funds to their products. Investment funds gathering is of extreme importance since this investment form guarantees a safer source of income for the online brokers despite a decline in the number of trades per account, which is expected as the second wave joins the market.

It is quite possible that investment funds will face rising competition from other products. The combination of advances in technology and financial innovation together with problems related to investment costs and strategy may induce investors to turn to alternative investment products. The Internet has paved the way for the introduction of several alternative products: separately managed accounts, exchange-traded funds (ETFs), and customised stock baskets. These alternatives are most likely to pose a significant threat to traditional mutual funds, as well as the greatest potential for growth for new firms that successfully enter the market because of the benefits of tax efficiency and customised portfolios.

Moreover, fund supermarkets are still not as cheap as discount brokers, and it is not clear what model will gain the upper hand. Brokers will continue to play an important role where a need remains for personalised advice and products structured to meet individual needs. If the Internet does indeed blur the boundaries between traditional mutual funds, exchange-traded funds and alternative investment products, then this will reinforce the need for brokers to steer unsophisticated investors through the maze of products.

[38] According to the Financial Times Egg has 17 providers and around 200 funds on offer, and Fidelity has 14 managers and over 250 funds.

Finally, recent signs of the emergence of open architecture have materialised where the services in the investment fund products will be unbundled and fund managers will design funds that may increasingly be distributed by a variety of financial and non-financial enterprises. In the United Kingdom, the Electronic Message Exchange is an electronic trading facility that lets intermediaries buy and sell investment funds electronically from product providers.

IV. Mortgage finance

1) Current situation

Only limited empirical information is available about the magnitude of online mortgage finance operations, and such little evidence as is available is largely derived from one-off surveys. It may, however, be safely concluded that online mortgage services are still insignificant compared with traditional channels. For example, Forrester Research recently estimated that a mere 2 per cent of all new US mortgages in 1999 "originated" on the Internet. According to other estimates, the total world-wide online mortgage market stands at around USD 19 billion.

Another important qualitative observation is that online mortgage activities are much further advanced in the United States than elsewhere. According to a survey by Cyber Dialogue, US online applications for mortgages increased by 19 per cent in 1999. The survey also showed that around 5 per cent of the current Internet users either have applied for a mortgage online or have plans about doing so in the future. This is connected to the dense presence of mortgage brokers and agents in the US markets, who have faced increasing competition from Internet start-ups or, in many cases, undertaken online activities themselves. The potential for savings through efficiency gains has been a major factor. According to recent estimates, US consumers can potentially save up to USD 1,500 in application and closing fees by shopping for mortgages online.

In Europe and elsewhere the traditional structure of national mortgage markets is for a few large lenders to operate extensive retail networks of their own. This has created less scope for immediate penetration by upstarts, but there is mounting evidence that traditional mortgage lenders see Internet presence or outsourcing of certain activities as a way of cutting costs at the retail level.

Finally, it should be noted that the current online mortgage business models are generally limited to solicitation and price discovery. An increasing number of companies do also offer application processing, but complete fulfilment is not yet available online. In other words, in most countries the mortgage lending process still involves a large amount of paperwork, on-site home inspections as well as physical signatures.

Specific evidence

Three types of sites currently predominate in the United States, namely (1) point-of-sale portals, where prospective lenders pay a fee to portal sites for carrying their product information; (2) "lead generation sites", which provide information on borrowers to one or more lenders; and (3) aggregator-type shopping sites, enabling customers to provide personal information in order to receive information on prices and services. In the first two cases, the Internet is used merely as a way of contacting potential customers; only the third category offers a degree of online service that approaches the level of actual electronic finance. Within this category, the major players currently include E-Loan, Mortgage.com, Keystroke.com, Quickenmortgage.com and iQualify.com, all of which are intermediators operating multi-lender websites. The reason why such companies appear to have the edge over other distribution channels, such as own lenders' websites, could according to some analysts be that they operate relatively tight business models aimed at exploiting the advantages of the new medium.

In Europe, most Internet activities have been confined to company-specific sites. The most active lenders do include recent entrants (in the United Kingdom, for example, Standard Life Bank, Egg, Direct Line, Legal & General and Virgin One), but many of these firms do not offer a palette of services, or carry the products of other lenders. Some companies, however, have started offering enhanced functionality online, such as the ability to track the progress of one's mortgage. Also, new sites like E-loan act as advisors and help consumers decide between competing mortgages.

There are few examples of mortgage lenders who use the Internet medium to offer lower rates than through traditional distribution channels, and lenders do not necessarily accept online applications. There are, however, a few exceptions. The Market Harborough Building Society, for example, has been offering reduced-rate loans via the Internet, and following the lead of companies such as Egg, an increasing number of UK lenders now accept online loan applications. Complete fulfilment is not yet available online.

In a few examples of account sweeping in mortgages, UK online mortgage banks such as Virgin One Account, Woolwich's Open Plan and Halifax's IF have all started to offer services offsetting current or deposit accounts against mortgage balances.

The US mortgage market has in recent years seen the advent of so-called "mega-intermediaries", connecting a large number of lenders with a large number of distribution channels. Some of these, such as LoanCity.com, act as "e-correspondents", underwriting and selling loans, thereby automating the entire process from application to fulfilment for the brokers. CapitalThinking and CMAC are among the leading contenders in designing and building platforms to automate the (arguably even more challenging) commercial mortgage process.

2) Scenarios for the future

During the past 1 to 2 years, a significant number of Internet-based mortgage brokerages have been established in Europe -- for example, Emfinance, Flex-e-mortgage, FPD Savills and, most importantly, Charcol of the United Kingdom. These companies aim at facilitating the contact between customers and the large traditional mortgage lenders, notably by providing the customers with a channel through which to choose mortgages and enter applications online. The expectation among market participants is that these developments will continue in the future. Not least because of the scope for cost cutting, parts of the client service operations currently undertaken in the traditional lenders retail networks will likely be outsourced to brokers operating on the Internet[39].

In another interesting development, companies such as Moneysupermarket and FTYourMoney.Com aim to further empower consumers through reverse auctions. This should allow differential deals based on the credit risk associated with different borrowers. This scenario has the potential to make companies compete over their ability to differentiate between the types of risk associated with different consumers and to covert this ability into real time price information.

The United States is well ahead in the process toward online mortgage services, not least because of the efforts of the so-called "government sponsored agencies". Freddie Mac has made its automated mortgage underwriting system, Loan Prospector, available on the Internet to assist loan officers, brokers and correspondents. Fannie Mae also offers an Internet origination engine, the Desktop Originator. These underwriting engines determine whether a loan is "conforming" -- i.e. meets the requirements that these two companies stipulate for being potentially willing to buy it.

[39] For a discussion of these trends, see J. Gilbert (2000), "E-Commerce and the Internet: The Future for Mortgage Distribution?", *Paper by the Council of Mortgage Lenders.*

Looking further ahead, analysts agree that one of the main challenges for e-finance operators in the future could be to establish real-time mortgage underwriting. First, services can be requested, tracked and communicated more efficiently using the Internet than through the current paper trail. Second, and even more importantly, the passing of legislation on digital signatures in most member countries would remove the single most important barrier to online fulfilment.

Market trends

The role of the retail link (brokers in some countries, retail outlets in others) is likely to change. Brokers and branches of mortgage lenders will increasingly use the Internet to address retail clients, *inter alia* in pursuit of ways of cutting costs. However, this part of the supply chain is unlikely to be disintermediated in the near term by the advent of the Internet. Clients are likely to continue seeking the assistance of intermediaries for a number of reasons, among which:

- *Complexity.* The mortgage process is complicated, encompasses several parties (especially in the United States) and is laden with legal issues.

- *Size*. Taking out a mortgage is the largest financial transaction in which most households are likely to engage. This makes most people unwilling to deal with an entity they can not physically contact.

- *Potential for disputes.* The mortgage process includes a host of legal and contractual pitfalls that most people avoid by working with a broker or a retail financial outlet.

- *Discretion.* Complex financial products often require discretion for non-standard deals. Since the Internet is leading lenders further towards personal pricing, the ability to provide discretion is becoming increasingly important.

However, the advent of mega-intemediaries in the United States could arguably put some strains on both lenders and brokers. By organising the market they are likely to put pressure on rates. This will weigh down on lenders, who will also likely come under pressure to integrate and interact with these new platforms. In a longer perspective, as clients become increasingly comfortable with the new distribution channels, the markets may be expected to move to a more customer-direct model, in which existing brokers would have to increasingly transform themselves into Internet-based intermediaries to face sharpened competition.

Similar developments are likely to affect the relationship between lenders and brokers. Lenders increasingly look to the Internet to lower customer acquisition and servicing costs, and they concentrate their efforts where the widest range of loans is for sale. This favours integrated multi-channel connectivity between lenders, on one hand, and brokers, Internet market places and other sources of mortgages, on the other. Some analysts have even argued that this process may favour the development of mortgage origination models that are integrated with home purchasing process providers (such as currently HomeAdvisor, Homestore and Iown).

Finally, the Internet is expected play a key role in developing secondary mortgage trading, but this falls somewhat outside the scope of the present paper. Internet-based trading systems were the topic of an earlier discussion in the Committee on Financial Markets[40].

[40] "Future Prospects for National Financial Markets and Trading Centres", Financial Market Trends, Vol. 78, March 2001.

Obstacles

The passing of bills on electronic signatures has the potential to pave the way for electronic underwriting of mortgages, but the widespread adaptation of such instruments is unlikely to take place soon. Unlike insurance (treated below), there are no regulatory obstacles to electronic mortgage contracts. However, given the fact that a mortgage is the largest financial obligation that most households undertake, it may safely be assumed the level of comfort necessary to make retail clients shift to Internet-only solutions will be reached later than for most other types of financial services.

Technological developments

The online mortgage market is unlikely to be significantly affected by the advent of m-finance. First and foremost, the relatively complex mortgage contracts would be notoriously difficult to handle on a handheld device. Second, even if this problem were overcome it is doubtful if there would be much demand for "m-mortgage services": unlike the financial services of potential high growth that have been identified elsewhere in this paper, mortgage lending is rarely connected with a need for mobility, around-the-clock access or speedy processing.

V. Insurance

1) Current situation

Little hard data is available for the sale of insurance services via the Internet, but surveys indicate that the activity remains low and largely concentrated in the United States. The NUA Internet consultants found that only 1 per cent of all European insurance customers in 1999 used the Internet to purchase insurance cover, and the corresponding figure for the United States was 20 per cent. However, these figures include a large element of simple online marketing and exchange of information: the survey also indicated that less than 0.02 per cent of the premiums in Europe and around 0.2 per cent of the premiums in the United States were generated via the Internet. Most recently, according to a poll conducted among US Internet users in December 2000, only 5 per cent of all respondents (by the current Internet coverage, 2 per cent of the adult population) had ever bought an insurance premium online.

However, this does not imply that insurance companies are indifferent to the online channel. In this respect a recent survey of the Spanish market is representative: 76 per cent of all insurers were found to be "present" online, but only 16 offered services that can be properly described as e-insurance[41]. In Europe as a whole, a survey by the Association of Insurance Brokers showed that there has been only a marginal increase since 1997 in the number of insurers using the Internet to sell directly[42]. In Japan, a mere 20 insurance companies provide overseas travel accident insurance on the Internet, and 12 provide automobile insurance. In Hong Kong, a relatively impressive 63 per cent of the insurers use the Internet to conduct their business, but less than a third of those websites provide services that approach the level of online sale.

In another interesting development, many European banks have acquired insurers in recent years. These banks have been increasingly active in selling insurance policies to bank customers and mortgages to policyholders. Those insurers that have been the most aggressive in their Internet strategies appear to have launched online

[41] Mercer Management Consulting. The company also found that 5 per cent of all households had ever used the Internet in buying an insurance premium.

[42] Association of Insurance Brokers (2000), Electronic Commerce Survey.

banking operations that have the potential to attract new banking customers to whom insurance products can be cross-sold[43].

Insurance may have been especially hampered by some of the factors that have also held back other kinds of online finance. Most particularly, insurance is vulnerable to uncertainties about the enforcement of contracts. In addition, a host of specific problems have made the online selling of insurance products difficult, the following list being far from complete (for example, the argument about discretion made in connection with mortgage applies equally to insurance)[44]:

- Overall, the Internet channel could arguably be less attractive in insurance than in many other financial services, since transactions between individual insurers and their clients are comparatively rare.

- As for tailoring products on the Internet, the complexity of some insurance products increases the consumer's need for specific advice. It should, however, be noted that current efforts aim at addressing this problem, for example through a simplified design of selected insurance products.

- Agents and brokers have resisted insurers' efforts to use the Internet because they recognise it could diminish their role, and their commissions. Since such "middlemen" remain more important in traditional insurance business than in other financial market segments, insurers have generally been wary to challenge them.

- Regarding a possible streamlining of procedures, it is in many cases difficult to standardise claims settlements, as this involves a large amount of investigation and decision making. Moreover, injured parties do in some cases (depending on jurisdictions) have a right to claim directly from the insurer of the party at fault.

Company specific evidence

Some insurers depart from the mainstream and provide extended services via the Internet that rise almost to the level of full-blown e-commerce. For example, an increasing number of companies (for example, Winterthur in Europe and Progressive in the United States) allow users to take out insurance cover online. While physical contracts must still be signed by the clients, the company websites are used to prepare formal offers that legally oblige the insurers until the time of signature. Companies selling insurance policies directly to the households are generally long-established market players which have embraced the Internet as yet another channel for doing business. Recent years have, however, seen the creation of a few Internet-only providers. These include Ineas of the Netherlands, which also operates in Belgium, Germany and France. Ineas' business model is based on getting risks off its books by buying immediate reinsurance on all premia. In the United States, eCoverage and Esurance are both principally in the business of selling auto insurance policies.

The clearest examples of actual e-commerce in the insurance sector relate to business models which allow clients to undertake value transactions online, influencing policies for as long as they are in force. For example, SPP and Skandia of Sweden and Equitable Life and Friends Provident of the United Kingdom provide a range of after-sale online services to their customers. These include the ability to adjust or postpone regular payments and the ability to switch between different sectors with unit-linked insurance plans or defined-contribution pension schemes. Moreover, some companies such as AnnuityNet pursue pure Internet strategies and offer products developed

[43] This observation is due to the Consumers in Europe Group.

[44] For a further discussion, see Swiss Re (2000), "The impact of e-business on the insurance industry: Pressure to adapt -- chance to reinvent", *Sigma*, No. 5.

specifically for Internet distribution (in this case index-linked annuities). This company allows clients to change fund products online during the term of the policy.

In addition to the upstart and traditional insurers' online activities, specialised aggregator portals providing direct price comparisons have gained importance. Companies such as InsWeb, QuickenInsurance, Quotesmith and eHealthInsurance have already been active for a few years in the US markets. More recently the European markets have also seen an increase in the importance of aggregators --- e.g. in Germany with upstart companies such as Aspect-Online and Einsurance. In May 2001, a non-bank aggregator service went live in the United Kingdom -- a partnership between Silkmoth (a software company) and eWise (an Australian technology firm). eWise runs aggregation services in Australia.

It should, however, be noted that the current consensus is that aggregators have had a lower-than-expected rate of converting policy inquiries into actual sales. Most aggregators limit themselves to referring potential clients to insurance companies, and the further processing of the would-be contract depends on the degree of automation that these insurers are practising. This runs somewhat counter to the intentions of clients that shop for insurance online, and it is seen as one of the reasons for a significant big mismatch between the number of persons who use insurance aggregators and those who ultimately use these aggregators' referrals to purchase insurance. This makes it hard for the insurers to justify paying the fees aggregators demand for the referral of clients.

In response to these pressures, a new business model has evolved (principally in the United States), whereby aggregators go a step further by providing customer support throughout the application process. This business model, which carries the potential to partly replace the traditional insurance brokers, has been successful in a number of cases. Some insurance brokers are currently entering into this line of business. Some of the major players in US markets are Insurance Answer Center, CompRevolution, InsuranceGateway, InsurePoint and ReliaQuote.

Finally, the marketing of insurance via point-of-sale portals seems to be important relative to other financial services. Non-financial portals aimed at selling large consumption goods (e.g. cars, boats, holiday travels and homes) are used to offer tailored insurance products to potential buyers.

2) Scenarios for the future

Taking a long perspective, the Internet should enable insurance companies to gather more sophisticated information about consumers, thereby allowing them to differentiate more accurately between different categories of risk. Ultimately this should mean that the advent of Internet enables insurance markets to operate more efficiently.

In the near term, however, and given the teething problems with Internet insurance and the paltry premiums that have so far been generated online, it may surprise that the sector has been flooded with new entrants. For example, a study has found that at least 60 companies offer e-insurance in the United States, of which most were created within the past four years and 20 are still in the start-up phase[45]. Many of these companies are venture capital-based entities without direct contact with the traditional players in the insurance sector. A large share of the newcomers appears to have been attracted by the sheer scale of the insurance market. Total OECD area insurance premiums grossed USD 2.2 trillion in 1998, of which almost half were generated in the United States. Obviously, any company managing to come up with a winning formula in a market of this size will be vastly successful, and it seems to be this "lottery argument" that has induced traditional insurers to go online and venture capitalists to back insurance start-ups.

[45] Elizabeth C. Malone and Heather L. Hunt (2000), "e-Insurance. The Convergence of Insurance, Technology and Capital", *Report by Friedman, Billings, Ramsey & Co.*

Market trends

It has been frequently argued that all insurance products are not equally suited to Internet distribution. According to this argument, the decisive factors are the amount of individual information needed -- i.e. the complexity of the product -- and the financial scale of the transaction: insurers are unlikely to offer very complex products online, and consumers are generally willing to pay for advice when the amounts involved are large. This implies that products that are particularly likely to be offered via the Internet are those that can be described and rated using a small number of parameters, such as motor, private liability, homeowners and household contents. In addition, these types of cover are suitable for online price comparisons. Based on such considerations, recent estimates by insurance and e-finance consultants largely agree that the amount of insurance premiums generated online is likely to increase tenfold over the next four years, and that the bulk of the increase will be in auto insurance[46].

Some caution is, however, called for when taking the longer-term perspective. First and foremost, the "complexity" argument relates wholly to the demand side. From the sellers' perspective, complex insurance contracts could be usefully tailored on the Internet, not least because the risk evaluation and the calculation of premiums are already done by computers on the basis of inputs from the prospective clients. While e-insurance is still in its infancy, clients may be reluctant to shop online for insurance in general -- and complex products in particular -- but as Internet users become more confident, client attitudes are bound to change. In addition, the more complex insurance product offer more scope for savings through automation, which may be partly passed on as an inducement to clients who are willing to tailor their own contracts online.

One area merits special attention: online employee benefit insurance is seen as one of the main potential growth areas, particularly in US markets, but also for example, in Switzerland. Such transactions are essentially B2B between employing companies and insurers, and rarely include incumbent insurance brokers as the (finance department of the) insurance buyer usually acts as its own agent. Thus, two of the standard obstacles to insurance moving online are not present. A large number of companies have already been created in the United States. Their activities range from offering direct insurance online to administrating company-specific schemes and facilitating the contacts between insurers and clients.

Obstacles

Online insurance is likely to receive further stimulus from the passing of laws on electronic signatures in most OECD member countries. In the United States, for example, the E-Sign bill makes electronic signatures binding at the Federal level, and the Uniform Electronic Transaction Act, currently being adopted by most of the State Assemblies, leads to similar changes in State legislation. In Europe, the passing of the EU Electronic Signature Directive has broadly the same effect, as does national legislation passed recently in a number of other industrialised economies. As for the EU, the process of implementing the Directive into national legislation is expected to be completed by end-2001.

The passing of such bills has predictably not led to an immediate adaptation of electronic contracts in insurance. Polls show that insurance clients are generally unwilling to rely on electronically signed agreements, and companies have applied a wait-and-see attitude. In some countries, moreover, the change could not legally have taken place, as insurance regulators continue to insist on the exchange of paper contracts.

[46] JP Morgan (2000), "Internet and E-Services: E-Finance", *Industry Analysis.*

Technological developments

It is commonly agreed that the online marketing of insurance will be little affected by the advent of m-finance. First and foremost, performing the relatively complex operations involved in insurance transactions would be notoriously difficult on a handheld device. Second, even if this problem were overcome it is doubtful if there would be much demand for “m-insurance”: unlike the financial services of potential high growth that have been identified elsewhere in this paper, insurance transactions are rarely connected with a need for mobility, around-the-clock access or speedy processing. Only certain processes focusing on the exchange of information between insurer and client (claims presentment being a case in point) are expected to change in response to the advent of handheld devices.