Reflections on the regulatory approach to e-finance

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1. Introduction

In the last 20 years, the financial services industry has witnessed dramatic changes, largely driven by globalisation, deregulation and consolidation. Technological advances helped make globalisation and consolidation feasible and encouraged deregulation. More recently, IT has accelerated the process, reinforcing some of these trends, particularly globalisation and deregulation, as well as facilitating the development of e-finance.

In the first part of this paper, attention will be focused on the interaction between the recent trends that have been shaping the way financial services are provided worldwide and the advent of IT. The second part focuses on the regulatory challenges posed by IT to financial services. First, we discuss why regulation of financial markets continues to be necessary in spite of the changes in the financial structure brought about by technology, and what sort of approach to regulation is better suited to this new environment, particularly in consumer and investor protection and promotion of competition. Secondly, we discuss in more detail the challenges posed for the traditional regulatory approach to reducing systemic risk. Thirdly, we comment on a supervisory model that seems to fit better an ever more complex financial structure.

2. Recent trends in financial services and the impact of IT

Among the different trends shaping the provision of financial services in the world, this presentation concentrates on those that, in our view, pose the greatest challenges for policy-making: globalisation, deregulation and consolidation. These trends are interrelated and often mutually reinforcing eg globalisation and deregulation; deregulation and consolidation; consolidation and globalisation. The recent technological revolution is adding an additional dimension of complexity, reinforcing some of the trends shaping the financial system structure.

2.1 Globalisation

Financial markets have grown ever more integrated in the recent past. The liberalisation of the capital account and the deregulation of financial markets have contributed significantly to this phenomenon in the industrial countries. Communication technologies have made an important contribution by dramatically increasing the ability to move information both in terms of volume and speed, making capital account restrictions more difficult to re-establish. IT allows vast quantities of financial information to be available anywhere, anytime. For example, one of the fundamental attractions of internet banking is the capacity to address a materially larger customer base in geographically remote markets without incurring the expense of building and maintaining a branch network.

The finance industry is particularly affected because the information business is one of the fundamental services provided by financial intermediaries. IT increases competition in financial services by making it much easier for foreign competitors to penetrate local markets and renders the process of price formation more transparent. At the same time, the greater interconnection and

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transparency of markets could make asset prices and financial flows more volatile because market participants are able to react immediately to any new information.

As a by-product of the ubiquity in the provision of financial services brought about by the improved communication technologies, there is an internationalisation of products and attitudes, leading to global institutions with a worldwide customer base for which it is increasingly irrelevant where the customer and the institution reside. The Nasdaq stock market is an example of an all-electronic communication network which deals with several stock exchanges around the world (Osaka Securities Exchange, Deutsche Börse, London Stock Exchange, Hong Kong Stock Exchange and Australian Stock Exchange).

2.2 Deregulation

In the past, financial activity was heavily regulated. Regulation governed both qualitative and quantitative aspects of financial intermediaries' activities. This meant the administrative determination of prices charged for financial services (ie interest rate ceilings) and the types of service offered (ie restrictions on banks and insurance companies' asset management activities), barriers to entry (ie limitations on the activity of foreign banks) as well as geographic restrictions (ie limitations on the opening of branches). Financial regulators', and particularly banking regulators', main aim is and has always been minimising systemic risk by providing government guarantees and addressing the moral hazards arising from them. Systemic risks are much less significant in investment and insurance firms.

Deregulation in the financial sector aimed at increasing competition and integrating financial markets while preserving financial stability. The basic objective was to achieve welfare gains from greater competition. The integration aspects of deregulation aimed at globalising the financial activity and breaking the historical segmentation between financial intermediaries. Both consequences of deregulation have been reinforced by the application of IT to financial services. In parallel to these developments, regulators' attention has increasingly focused on consumer and investor protection and competition, although, in the particular case of banking, minimising systemic risk has remained their priority.

The consumer and investor protection regulations are aimed at minimising adverse selection by the users of financial services by solving the asymmetric information problem. To this end, the regulator requires that information provided by financial intermediaries be reliable and complete. Closely related to this type of regulation is competition policy, aimed at ensuring that financial intermediaries do not abuse the market power they have gained from their ability to supply services at lower cost thanks to economies of scale. The second part of the paper deals in more detail with this justification for regulating financial intermediaries in the light of the advent of new technologies.

2.3 Consolidation

Two regulatory developments have contributed to consolidation in the financial sector. First, regulators removed entry barriers to the local markets (eg the single market programme in the European Union, the Riegle-Neal Act in the United States), favouring mergers both across and within borders. Second, regulatory barriers separating the activities of the different financial intermediaries (banking, insurance and securities activities) have been blurred, favouring mergers across sectors (eg the Gramm-Leach-Bliley Act permits banks to affiliate with securities firms and insurance companies in the United States).

Factors affecting consolidation may vary across financial services. Banks, in particular, have been subject to strong competition from capital markets, particularly for their larger clients, in both their assets (eg commercial paper, corporate bonds) and liabilities (eg mutual funds). These disintermediation forces have obliged banks to increase their capital base via mergers and acquisitions in order to achieve economies of scale in the medium-size loan market, where the larger banks have potential competitive advantages. However, a consensus exists that a plethora of financial services (eg lending to small firms, brokerage services, trading systems) have witnessed a reduction in their economies of scale and an increase in competition due to the availability of IT.

Securities markets have also been largely affected by the development of IT that allows securities trading and capital raising activities to migrate to global financial centres. The result has been consolidation of trading systems as well as certain middle and back office functions.

More competition forces financial intermediaries to minimise costs and innovate. In the traditional borrowing-lending business, for example, the reduction in lending margins has created incentives to take more risks by developing more sophisticated products which render obsolete the traditional barriers between different financial products (banking, securities and insurance). Furthermore, technology is tearing down barriers to entry based on physical presence (eg bank branches) while simultaneously creating others based on the first mover advantage and network externalities. The latter is caused by providers of financial services creating standards widely used by the market participants.

3. Why financial market regulation is still necessary in the wake of technological advances but regulators face new challenges

The justification for government involvement in the financial system is unlikely to change, even as the structure of financial intermediation changes as a consequence of technological advances. The driving forces behind government intervention in the form of regulation are still there: consumer protection; promotion of competition; and protection of the stability and soundness of the financial system. However, the accelerating pace of technological progress reinforces some existing trends in the financial sector (eg globalisation, deregulation), raising questions about whether the traditional approach to financial sector regulation is adequate.

One of the objectives of financial regulation is *consumer and investor protection*, which aims to achieve equity in the distribution of information. At the macro level, transparency rules impose the correct dissemination of information and equal treatment among market players. Transparent and reliable advertising by financial intermediaries has traditionally been the focus of this type of regulation. At the micro level, regulation aims at non-discrimination in relations between intermediaries and consumers. Business rules are a good example of this aspect of consumer and investor protection regulation.

Regulators have strongly advocated broader disclosure in recent years. The underlying rationale is that disclosure allows counterparty surveillance and makes markets more efficient "in the sense that they embody the knowledge that market participants have".[2] In this way, regulators have begun to rely more on disclosure and market forces as a disciplinary mechanism for financial institutions. The application of IT to the financial services sector has been largely responsible for the increase in transparency. As a consequence, the balance of power between customer and financial intermediary has been tilted more in favour of the consumer, thanks to the improvement in the quantity and quality of information. In this fashion, IT has reduced the two traditional problems associated with the lack of information: adverse selection in decision-making and moral hazard once the financial transaction takes place. In this context, regulators need to focus on increasing information quality and facilitating private access to that information.

However, applying IT requires a greater emphasis on other areas of consumer protection more related to the micro aspects of the financial intermediary/consumer relationship. The immediate challenges faced by the financial regulator are threefold: security and data privacy, the global character of the provision of e-finance services and the entrance of non-regulated new intermediaries.

Security of transactions and data privacy is increasingly a matter of concern for regulators worldwide. In response, banking regulators of the G10 countries have agreed on principles aimed at addressing the risks related to the privacy of customer information, non-repudiation and accountability for e-banking transactions as well as the establishment of a comprehensive security control process. In addition, the ubiquitous character of the provision of financial services via the internet demands a different approach to the supervision framework for cross-border financial activities. In the case of banking, for example, the approaches developed for the traditional banks do not appear to work well for internet-only banks. In order to meet this new challenge, G10 regulators are discussing guidelines for coordinating the supervision of internationally active internet-only e-banks. Last but not least, the emergence of unregulated non-traditional financial service providers (eg aggregators and non-bank

[2] Greenspan (2000).

payment systems) may pose new challenges for regulators on the consumer protection front. Against this background, not only market discipline via increased transparency, but also consumer education are becoming effective tools of consumer protection.

Closely related to the regulatory objective of customer and investor protection is the objective of *promoting competition* linked with the general objective of efficiency. This requires rules for controlling the structure of competition in the markets aimed at avoiding abuse of dominant positions and excess concentration. Financial services are mostly (and more efficiently) provided by large firms that, thanks to their size, achieve economies of scale. Despite the potential for consumers to be exploited, competition policy has not traditionally been the concern of financial regulators. Furthermore, the promotion of competition has been, to a certain extent, in conflict with solvency requirements (eg restrictions on the structure of ownership or activities, minimum initial capital requirements) and only some areas of financial activity (eg self-regulating organisations) are subject to competition rules. Nevertheless, regulators have recently introduced elements of competition in banks' solvency requirements. A good example is the current revision of banks' minimum capital requirements (New Capital Accord) that allows for greater competition via enhanced risk management techniques. This is expected to yield more competitive pricing initiatives.

Technological advances that allow for cheaper delivery channels seem to be reducing economies of scale in the provision of certain financial activities such as lending to small firms, brokerage services and trading systems. At the same time, technology is making it possible to break the traditional chain of value creation by allowing the production and distribution of financial products to be separated into different businesses. From this point of view, dominant positions, excess concentration and vertical integration might increasingly be less of a concern for the competition regulator, particularly in an ever larger global financial market. However, two caveats need to be made. First, high setup costs for technology in some instances and possible network externalities may promote increasing scale of operation and further consolidation. Second, while vertical integration may decrease as technology encourages financial service providers to "unbundle" their chain of value creation, it is also likely to increase reliance on third-party service providers. Regulatory concern would then switch from large vertically integrated financial intermediaries to the market structure of third-party service providers - many of which are more difficult for financial regulators to oversee.

Furthermore, IT has reduced barriers to entry, facilitating entry by non-financial entities and, as a consequence, an increase in competition, particularly in services traditionally provided by banks (eg aggregators) and brokerage firms (eg alternative trading systems). Although the results of increased competition in the global marketplace have been good - lower commissions - globalisation and reduction of entry barriers raise the problem of market definition for the regulator. Here, as in the case of consumer protection, an international approach to the promotion of competition that ensures a level playing field increasingly demands coordination of regulators and supervisors worldwide.

Furthermore, from the competition viewpoint, IT raises an additional challenge, posed by providers of financial services that create standards widely used by market participants. By creating standards that lead to a dominant share of the market, financial service providers may abuse their market power (eg mobile payment standards developed through the cooperation of banks and telecommunication companies). This phenomenon is termed "network externalities". Financial markets involving high network externalities include payment and trading systems and exchanges.

A primary objective of financial market regulation is *macroeconomic stability*. Here it is appropriate to distinguish between banks and other financial intermediaries in regulatory terms because of the differences in risk profiles and systemic impact. The justification for regulations on safety and soundness of banks is twofold: First, to provide government guarantees (explicit or implicit) to the holders of liabilities issued by this type of financial intermediaries as well as lender of last resort facilities to the banks. Second, to address the moral hazards that arise from those guarantees.

The desirability of the safety net stems from the conviction that banks are different from other types of institutions. The special character of banks lies in the host of services they provide that are essential to the proper functioning of the economy: access to the payment system; access to liquidity; provision of information about borrowers; intermediation between savers and investors; diversification of risks and acting as a conduit for the above-mentioned government guarantees. The divergence between the private and social costs of bank failure explains ex post government intervention in the form of a safety net. If depositors lose confidence in the safety of a bank's portfolio, they may wish to withdraw their funds, forcing the bank to liquidate its assets. A danger of contagion arises, where the loss of confidence in one bank spreads throughout the system. Investors unable to distinguish between a

localised problem and a system-wide problem may wish to withdraw funds from perfectly sound banks and, as a consequence, a large-scale bank failure may follow if banks cannot liquidate sufficient funds to meet the run on their deposits. In these circumstances, the safety net aims to safeguard customers (deposit insurance) and financial institutions (lender of last resort) from the consequences of actions beyond their control. Another rationale for government intervention relates to the important role banks play in creating money. Monetary policy operates to a large extent through banks so that the solvency of the banking system is important for a properly functioning monetary policy.

The existence of the safety net may, in turn, cause distortions as a result of the elimination of market discipline and increase incentives to take more risk, posing a moral hazard problem. This justifies ex ante government intervention in the form of prudential regulation (eg minimum capital requirements, limits on the concentration of credits) and supervision of financial institutions (eg on-site and off-site) in order to secure the stability of the financial intermediaries that may pose a systemic problem, and to minimise the impact of those distortions.

Although the traditional issues raised by the safety net remain with the use of new technologies in financial services, there is little doubt that technological progress has made banks "less special". Technology allows non-banks to provide payment functions without directly involving a depository institution (eg balances on stored value cards and in mobile payment systems),[3] calling the banks' exclusive role in the payment system into question. The advent of IT opens the possibility of having payment settlements outside the central bank.[4] Some authors refer to the threat to monetary policy from the electronic revolution stemming from the "decoupling" of the operations of the central bank from the markets in which financial claims are created.[5] Furthermore, substitutes have emerged for deposits (eg mutual funds, brokerage houses) and lending products (eg bonds and commercial paper), reducing the importance of banks and increasing the importance of securities markets as financial intermediaries. At the same time, advances in IT also raise questions concerning the provision of information about borrowers as a typical bank service. In light of this less special role of banks, Claessens et al (2000) argue that regulations on the safety net and soundness of banks need to be revised. Although most regulators would consider this approach controversial, to say the least, based on the difficulties that non-banks have in providing large amounts of liquidity at short notice,[6] many would agree on the need to revise the traditional approach (or at least certain aspects) to macro and micro financial stability.

Regarding the safety net, the regulator faces challenges mainly on three fronts. First, technology is allowing the separation of payment and credit services, potentially reducing the banks' role in the payment system. As a consequence, ex post government intervention to avoid the danger of contagion may not be effective in preventing a systemic problem. Systemic risk can emanate from any financial (or other) participant sufficiently large in size and scope to affect the system as a whole. Second, new deposit substitutes by non-banks may give rise to confusion on the extent of the safety net. In addition, the extension of the safety net to cover these deposits may further increase the moral hazard problem associated with deposit guarantees. Finally, the use of unregulated outsourced technological infrastructures that are shared by a number of banks in an ever more complex relationship raises increasing concerns about systemic risk. All these issues are increasingly capturing the attention of regulators worldwide.

In parallel, prudential regulation and supervision are also facing challenges of their own. Traditionally, regulators have relied on well understood categories of financial intermediaries (banks, insurers and securities firms), requiring market participants to comply with legally defined views of the marketplace. Technology is rendering these traditional categories obsolete and facilitating the entry of non-traditional financial intermediaries into the financial arena. Regulators' response to these developments ought to be technologically neutral and should not deter innovation ensuring that

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[3] Telephone companies' mobile payment systems can easily be used to direct payments to the user's telephone bill, thereby removing banks from the customer relationship.

[4] King (1999).

[5] Friedman (2000) See Hawkins in this volume for a summary of these debates.

[6] Corrigan (2000).

consumers are not deprived of its benefits while, at the same time, securing the soundness of the financial system.

Challenges to the regulatory approach to e-finance

Regulatory objectives	Traditionally	e-finance environment
Consumer and investor protection	Transparency rules	IT increases transparency. Regulators focus on: • Information quality
	Business rules (eg non-discrimination)	• Access to information • Consumer and investor education
		Entry of non-traditional financial service providers
		Security and data privacy
		Cross-border activity without physical presence
Promotion of competition	Competition often in conflict with solvency requirements	Solvency requirements yield to more competitive pricing initiatives
		Concentration to the extent IT does not reduce scale economies
	Competition authority objectives: avoiding dominant positions, excess concentration	Market definition
		Market structures of unregulated third-party providers
		Dominant positions based on network externalities
Financial stability	Banks have systemic impact, hence are "special"	Banks are "less special" • Disintermediation
Safety net		• Non-exclusive role in payment systems • Deposit substitutes
Regulation and supervision	Minimising systemic risk by providing government guarantees	Systemic risk can emanate from any financial (or other) participant sufficiently large to affect the system as a whole
	Minimising moral hazard	Systemic risk is potentially higher: unregulated outsourced technological infrastructures shared by a number of banks
	Well understood categories of financial intermediaries (FIs)	Traditional categories of FIs obsolete and entry of non-traditional FIs
		Unregulated outsourced technological infrastructure may endanger solvency
	Ability to enforce national standards	Borderless e-finance activities
		Need to secure technological neutrality and desirable market innovation

Moreover, national regulations no longer fit a global marketplace making the reliance on national standards, and the ability to enforce them, increasingly difficult. In this context, we are witnessing increasing harmonisation of standards (eg IAIS, Core Principles for Effective Banking Supervision) as well as a more internationally coordinated approach to prudential regulation and supervision. At the same time, market surveillance, as a mechanism of market discipline, is becoming increasingly important (eg Pillar 3 of the New Basel Capital Accord focuses on the need for greater transparency and disclosure by banks).

In light of the evolution of the role of financial intermediaries, various authors[7] argue that the *monitoring of compliance with prudential regulation* needs to be revised. Financial conglomerates and

[7] Di Giorgo et al (2000) and Claessens et al (2000).

groups operating in a variety of different business sectors in a highly integrated global market demand a supervisory model based on objectives or finalities, as opposed to the traditional arrangement based on the type of financial intermediary (institutional approach). According to this, the three objectives of supervision - stability, transparency and competition - would be entrusted to three distinct authorities designed to oversee the entire financial market regardless of the legal form of the intermediaries and the functions they perform. For example, market stability and solvency of each intermediary, whether bank, security firm or insurance company, would be the responsibility of one authority. The most attractive aspect of this approach is that it provides uniform regulation for different subjects engaged in the same activities, thus avoiding regulatory arbitrage between financial intermediaries. Although conflicts between different objectives are the same as the institutional approach, conflict resolution is more transparent in the supervisory model based on objectives. The negative aspect is that it may produce a certain multiplication of controls or, vice versa, a deficit of controls may occur whenever the exact areas of responsibility are not clearly identifiable in specific cases. No financial supervisory arrangement in the world fits this approach as yet. The single regulator supervisory model shares some features, such as the unified view of financial intermediaries, although the conflict between objectives remains within the institution and its resolution might not be transparent to the public. Still, the global nature of financial activity adds one more dimension of complexity to this institutional arrangement, demanding ever greater coordination among regulators worldwide.

4. Conclusion

While the structure of financial intermediation continues to change as a consequence of technological advances, the justification for government involvement in the form of regulation is unlikely to change: consumer protection; promotion of competition; and protection of the stability and soundness of the financial system. However, the accelerating pace of technological advances raises questions about whether the traditional approach to financial sector regulation is adequate.

The transparency brought about by the incorporation of IT into financial services assists regulators aiming at *consumer and investor protection* to the extent that it helps to solve the asymmetric information problem. The regulators' role needs to focus on improving the quality of information and facilitating private access to it. At the same time, new challenges arise from the security of transactions and data privacy, the cross-border provision of e-finance services and the emergence of non-traditional financial service providers. In this context, not only market discipline via increased transparency, but also consumer education are becoming effective tools of consumer protection.

Promoting competition in financial services has been the responsibility of competition rather than financial regulators. Technological advances and globalisation could make dominant positions, excess concentration - to the extent that economies of scale are reduced - and vertical integration less of a concern for competition authorities. However, financial regulators' concerns may increase to the extent that the breaking of the traditional chain of value creation takes place in favour of unregulated third-party providers - many of whom are more difficult to oversee. At the same time, globalisation and the reduction of entry barriers made possible by technology raise the problem of market definition. Meanwhile, new forms of abuse of market power in the form of network externalities are increasingly a matter of concern for regulators.

The differences in risk appetite and systemic impact between the different financial intermediaries - systemic risks are more important in banks - justify a different approach to the pursuit of macroeconomic stability. Although the traditional issues raised by the safety net are unchanged by new technologies, there is little doubt that technological progress has made banks "less special". In particular, banks are not the sole participants in the payment system, nor do they enjoy the exclusivity of being financial intermediaries (disintermediation via capital markets) nor are they the sole providers of information about borrowers. These developments demand a revision (at least of certain aspects) of the traditional approach to the pursuit of *financial stability*. Regarding the safety net, ex post government intervention to avoid the danger of contagion may not be effective in preventing a system-wide problem given the increasing participation of non-banks. In addition, new deposit substitutes by non-banks may give rise to confusion over the extent of the safety net. All of this is taking place against a background of increasing concerns over systemic risk stemming from the use of outsourced, often unregulated, technological infrastructures shared by a number of banks in an ever more complex relationship.

Regarding prudential regulation and supervision, technology is rendering obsolete the traditional categories of financial intermediaries while facilitating the entry of non-traditional financial intermediaries. In this context, the regulator should balance the need for "ex ante" government intervention aimed at securing the stability of financial intermediaries - particularly those posing a systemic risk - and minimising moral hazard while, at the same time, securing technological neutrality and desirable market innovation.

This more flexible approach to regulation seems to demand a *supervisory model* based on objectives or finalities (stability, transparency and competition), as opposed to the traditional institutional arrangement based on the type of financial intermediary. The most attractive aspect of this approach is that it provides uniform regulation for different institutions engaged in the same activities, thus avoiding regulatory arbitrage between supervisors.

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