

# IMPLICATIONS OF THE E-REVOLUTION FOR HONG KONG'S STOCK MARKET

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Technology and global capital markets are transforming business, society, and government. Technology and globalization are intertwined: the one makes the other possible. Although, arguably, the world has gone through many phases of globalization and technological advance already, the current phase appears to be a major one, even a revolution. We are perhaps at an early stage in the revolution, so it is difficult to see how the changes will eventually work themselves out. But some sectors and some economies are at a more advanced stage of this revolution, and we can observe them for possible clues as to what may happen in our own sector or economy.

Given the vast scope of the topic, I shall focus this paper on how the forces of technology and globalization are revolutionizing the Hong Kong stock market, and consider the role of government in supporting that process of change.

## The Technological Revolution

In order to explore the impact of technology on the stock market specifically, it is necessary first to establish the general nature of the technological revolution as it is affecting business generally. At the World Economic Forum, Klaus Schwab (1999) referred to the “e-revolution.” He conceived of that revolution as transforming the business world fundamentally, so fundamentally that it will mean the death of commerce in its present form. More specifically, the e-revolution will bring about three “deaths”: the death of *space*, of *sequence*, and of *structure*.

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The death of *space* is the disappearance of distance as a significant factor in business dealing. For example, from the Central District of Hong Kong, one can deal via the Internet as easily with counterparties in Washington, D.C. as one can with those in Wan Chai.

The death of *sequence* is the collapse of the serial progression of steps in the typical business transaction. Processes that were formerly done sequentially—such as design, production, marketing, sales, and delivery—can now be done almost simultaneously. For example, at a computer manufacturer's website, customers can design their own PC on-line, for manufacture to their specification, and pay for it on-line within minutes. The various intermediaries that were involved in the serial processes are no longer needed.

The final death is the death of *structure*. Traditional retailers with brick-and-mortar outlets can find them undercut by low-cost dot.com competitors. Manufacturers used to working over time scales of months to deliver large batches of product now have to deliver the product within days, perhaps in batches of one. Because existing business structures are oriented to geographical proximities and serial processes, the collapse of these factors means also the collapse of traditional intermediaries, marketplaces, and transaction processors, and their replacement by new forms of intermediaries and service aggregators.

## The Stock Market Revolutionized

How does the idea of the three “deaths” apply to the stock market? On the face of it, stock markets are already highly automated, handling vast volumes of transactions worth billions of dollars daily. It might appear that further automation might enable volumes to increase further, but otherwise not change much. I would suggest, however, that the application of technology to the stock markets has so far amounted to little more than automation of the preexisting manual processes, making those processes more efficient. The processes and institutions themselves are not much changed from what they were in manual trading days. For example, the structure of the U.S. stock markets today is surprisingly little changed from what it was in the 19th century when the introduction of the ticker tape first made it possible for an exchange to tap investor interest from remote locations and thus brought into being an instantaneous nationwide market. However, the present phase of technological development promises to bring fundamental changes.

*Death of Space*

Traditionally, stock markets have been organized along local lines. When stock markets first emerged, “local” meant literally the same city or region; hence, in the United States in the 19th century, there were more than 250 stock markets. Since then, as communications improved, markets consolidated. Within the last decade or two, “locality” has been defined for the most part as the respective nation or jurisdiction. Thus, Hong Kong has its own stock market, as do Thailand and Korea. Most companies have had little choice but to list on their local market; investors, especially retail investors, would invest mainly in the local market; and the market was accessed through locally based intermediaries. There was effectively a natural monopoly.

Technology disrupts these cosy local arrangements. Issuers, in principle, can list on any market. Markets themselves compete to list products that had traditionally belonged to other markets. Some markets, such as NASDAQ or London, emerge as global giants, attracting issuers from all over the globe. On the other hand, investors can access overseas markets as easily as their own. And they increasingly do so through global intermediaries that operate in all major markets.

Will all listing and trading then consolidate on a few giant global exchanges, or on a single super-giant exchange? Many factors will retard such development. Most issuers still base their headquarters in a single place, and release announcements within the working hours of that time zone. Analysts tend to be located within reach of the issuer’s headquarters. Financial intermediaries engage in a variety of complex transactions that require face-to-face negotiation. Political boundaries are still important, especially in Asia. Regulations are still jurisdiction-specific; a global regulator and global rules are not likely to emerge in the foreseeable future. And share depositories tend to be localized as well.

The complete “death” of space is thus unlikely in the near to medium term. But this is the direction in which world markets are going.

*Death of Sequence*

The traditional stock market transaction process is highly sequential. The process of trade execution can be very quick on an electronic exchange; for a market order it is almost instantaneous. However, the postexecution processes are much slower. Hong Kong is one of the markets with a shorter settlement period, but it still takes two days for stock settlement and to the morning of the following day for cash settlement. Registration of the transaction in the new owners’ name

becomes effective only 10 days after that. At each step in the process, there are intermediaries—brokers, custodians, banks, registrars—who make their living by bridging the gaps between the steps and so forming them into a transaction chain.

In principle, it should be possible to effect the entire transaction process with a single click. In other words, the execution of the trade would effect the transfer of ownership of stock and cash from the respective accounts of the counterparties, including full entitlements and entry of the new owner's name on the share register—all done electronically. The whole transaction mechanism would then become much cheaper, more transparent, and more effectively controlled by the investor. The investor would thus be able to trade more often, at a lower cost and with lower risk; he would be better able to achieve his investment strategy through trades that he can control more directly and hence reach a more optimal outcome. And for the intermediaries, the traditional profitable niches would disappear.

Will stock market mechanisms then collapse to this kind of instantaneous electronic trading? There are obstacles to such development. In order for instantaneous settlement to be possible, investors have to deposit cash up front in their accounts. There is a natural reluctance to do this, especially on the part of institutional investors where the amounts are relatively large. And at the institutional level, “the investor” is not a single person or even a single company: it is a complex of intermediaries that may span a number of countries and time zones. It may take some time, even in a fully automated environment, for communication to run between all appropriate parties. There are also issues of message compatibility among these various intermediaries and the market operators. Finally, the needs and risks in the trading environment differ from those in the settlement environment. In trading, speed is very important; in the clearing environment the concern is with accuracy so that payments are not made without shares having been received; timing is less important. It may therefore remain difficult to achieve instantaneous settlement. Some degree of sequentiality may remain in the transaction process for some time to come. However, radical realignment of the processes is inevitable.

### *Death of Structure*

The traditional institutional structure of the stock market is highly complex. There are many categories of intermediary and market operator: broker, dealer, fund manager, custodian, clearinghouse, depository, bank, registrar, margin financier, and so on. Each has a finely delineated role interlocking with those of the others.

Yet the mission of this complex structure as a whole is quite simple. It is merely to give the investor exposure to the issuer or issuers of his choice. In the future, in an e-enabled environment, getting the investor to the issuer may not take so many institutions. A single intermediary may be enough to do the job—if it can aggregate all the functions currently dispersed among the many institutions that make up today's financial market. But there are barriers to dissolving current stock market institutional structures. Obviously there are political barriers, the natural resistance of incumbents to change. However, there are natural barriers too. There are benefits in aggregating order flow at a central point rather than dispersing it among many execution centres. Pricing formation is better; transparency and hence confidence are more easily maintained; liquidity and hence the ability to achieve execution of the order are better. The central point of order execution is currently the stock exchange, which has a natural role. Similar considerations apply to the clearinghouse as the locus of settlement. And while the existing forms of intermediary may disappear, new forms may take their place. For example, companies that provide specific services may support service aggregators. Finally, the differing risks and time-sensitivities at different stages of the transaction process may leave natural niches for different categories of intermediary.

For these reasons, the death of structure may not take place soon. But surely the market will move in the direction of radical restructuring of the existing players. In the U.S. market, we have already seen the rise of Internet brokers, providing a range of services at low cost and superceding their more traditional counterparts.

### How the Hong Kong Stock Market Is Positioned

How is the Hong Kong stock market positioned in the face of the coming e-revolution? In some ways the Hong Kong market is positioned quite well. Hong Kong has always been a very open market. It has no foreign exchange controls, no restrictions on foreign investment, no special taxation on stock trading by foreign investors, no dividend withholding tax, and no capital gains tax. There are no restrictions on foreign intermediaries: the Stock Exchange of Hong Kong (SEHK) currently has more than 110 foreign-controlled broker participants, more than any other market in Asia. And they contribute about 60 percent of the trading. Foreign investors provide about one-third of the trading value. Hong Kong is the most accessible market in Asia, linked to the global capital market network.

The SEHK also benefits from the general business environment in Hong Kong. That environment is characterized by the rule of law, fair

regulation to ensure market integrity, minimal government intervention in business, good infrastructure, quality business and professional services, good English and other skills, and a labor market that is relatively open for scarce skills that cannot be sourced locally. Adaptability is one of Hong Kong's great strengths.

The Hong Kong stock market has begun to adapt to the new technology. The SEHK trading system is already fully electronic. There is a physical floor, but this is merely a location for some of the terminals. More than three-quarters of the trading is already done through terminals located off-floor.

Although the trading system is still a closed one, accessible only from proprietary terminals based in Hong Kong, the SEHK is in the process of launching its new trading system, AMS/3. When fully implemented, this system will be accessible via an interface to brokers' own systems, to external networks including the Internet and mobile phones, or to an exchange-provided order-routing system. AMS/3 will accept different order types, and enable the operation of multiple markets.

The regulatory infrastructure is being modernized too. The proposed Securities and Futures Bill, introduced in April 2000 by the Financial Services Bureau for public consultation, is aimed at consolidating 10 existing ordinances relating to the securities sector and introducing modern concepts needed to support electronic trading. Another important step that has been taken is the decision to abolish the minimum commission rule after April 2002; commissions will then be fully negotiable.

Finally, the institutional structure has been rationalized. A year ago, there were two exchanges and three clearing companies handling the various sectors of the market. Now these five institutions have been merged into the Hong Kong Exchanges and Clearing Ltd (HKEx). This change will make possible a much more integrated approach to market operation and market development, reducing costs and improving efficiency for market users.

These various developments, taken as a whole, are creditable. But they really only take the Hong Kong market to the brink of the e-revolution. The profile of the market is still largely along the traditional lines described earlier. The transaction chain mainly extends to Hong Kong's borders only. The links in the chain are sequential: from order execution to registration takes about 12 days; Internet trading is still only about 1 percent of total volume compared with, for example, 50 percent in Korea; there are some 500 broker participants and a host of other intermediaries making their living off the various links in the chain. Much greater changes lie ahead.

## How Government Can Help

If the stock market is in the process of revolutionary change, what is the role of government in that process? Defining “government” broadly—as the provider, or authorizer, of social, legal, and physical infrastructure, including regulation and protection of the investor—there would appear to be a need for government action in two dimensions: preparation and facilitation.

### *Preparation*

In terms of preparation, government needs to develop its own vision of financial markets in an e-commerce environment. Government needs to have a vision of what the markets could look like in order for it to play its own role properly. It cannot wait until the changes have happened and have become obvious before it starts to act.

For example, the changes brought about by the e-revolution will displace many existing market participants. These affected participants will no doubt try to lobby the government to prevent or reverse the changes. Unless it is prepared itself, government will find it difficult to properly evaluate this lobbying and may act inappropriately.

The Hong Kong government has done good preparation work. It has developed and published Digital 21, its vision of what is needed to prepare Hong Kong’s society and economy for the new technological era. The Information Technology and Broadcasting Bureau was set up in April 1998 to lead and coordinate the work of all areas of government involved in information technology and the related areas of broadcasting and telecommunications. (I should declare an interest here as I was formerly in charge of the bureau and involved in several of the initiatives this paper describes.) In regard to the financial markets, the Hong Kong government appointed a Steering Committee on Enhancement of the Financial Infrastructure (SCEFI) to consider the future infrastructural architecture for these markets. The SCEFI report, published in 1999, sets out a vision for the future for Hong Kong’s financial markets. The vision is one of a straight-through transaction process, scripless trading, interconnectivity across the various markets under a common infrastructure. Although the report’s recommendations will need to be fleshed out and perhaps modified in the process, it nonetheless points the way to a possible future. This paves the way for change and provides guidance to the various actors in the financial markets.

Government also needs to prepare the citizens through education and training. In terms of education, the Hong Kong government has

made computers available in schools and encouraged the use of computers in teaching. In the new economy, use of English and creativity are of increased importance. The Hong Kong government has launched a major review of the educational system, with these goals, among others, in mind. At the tertiary level, there is a need for study and research into the new economy. And there are needs to train and retrain workers in new technology-related skills at all stages of their careers.

### *Facilitation*

In terms of facilitation, government has to provide support for the changes that are taking place. In general terms, government can help by setting a good example and embracing e-commerce itself. The Hong Kong government is working on electronic service delivery, for example, the filing of tax returns, renewal of driving licenses, and payment of government bills via the Internet.

Government also has a role in eliminating restrictive practices that hamper adjustment to the new economy. The telecommunications sector is vitally important to the technological revolution. The Hong Kong government took steps in the mid-1990s to liberalize telecommunications, dismantling the former monopoly and enabling competing suppliers to enter. The result has been a dramatic lowering of prices for voice and data transmission, the establishment of no less than four fixed line networks, and a profusion of new services. The Hong Kong government has also introduced an Electronic Transactions Ordinance to ensure that electronic signatures and contracts have legal effect, and through the Hong Kong Post has created a public key infrastructure. The AMS/3 trading system will rely on the use of digital certificates issued by the Hong Kong Post.

Securities market regulation has to adapt to a new environment in which investors are much more empowered with information, and can access a much wider range of investment media, than in the past. In this new open environment, it is difficult for regulators to inspect and approve every product on its merits. A more effective approach may be disclosure-based regulation. The idea of disclosure-based regulation is to require the issuer of the product to make full disclosure about it, so that investors have the right information on which to base their decisions. A disclosure-based approach must be backed by strong sanctions for inadequate or misleading disclosure or other market malpractices.

The administration of regulation can also be streamlined, with electronic reporting of intermediaries' financial positions, electronic scan-



ning and combining of various information resources to detect suspicious transactions. Surveillance of actual trading can be made more effective too. Transaction histories for intermediaries or groups of intermediaries can be reconstructed for examination; transactions in related markets can be compared.

Many securities transactions are now cross-border, but regulatory regimes are local. Eventually, there may be a true global regulator and a global set of securities regulations. But until then, the existing national regulators, within their differing national regulatory regimes, will have to find more effective ways to cooperate.

## Conclusion

This paper has dealt with stock market development in Hong Kong and generally. But in any discussion of the future of Hong Kong's financial market, it would be incomplete not to talk about Mainland China. Turning to the Mainland, there is no doubt that China has a vast need for financial market services, a need that will deepen as its markets open and its industries restructure under the impact of accession to the World Trade Organization. There is also no doubt of the potential for Hong Kong to service China's needs. In order to position itself to service those needs better, the Hong Kong stock market needs to embrace the e-revolution. For Hong Kong to successfully undergo this revolution and restructure itself, vision and support from government are necessary. The Hong Kong government will have to visualize as clearly as it can the future of the financial markets and seek to develop the supporting infrastructure accordingly. In certain areas, government will have to act to unwind existing institutions and practices where these are barriers to progress and facilitate change. Finally, the Hong Kong government has an important role in working with financial institutions to promote Hong Kong's services to the authorities in Beijing.

## Reference

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