

The Global Trading Village

Mutual benefits for the international online trading community and developing countries

Preface

Technological progress can serve the poor as well as the rich. The same forces that are now upsetting the landscape of established futures exchanges are also providing the basis for a new, more inclusive system of market-based risk management, which can help address the age-old problem of farmers' vulnerability to price risk. Discovery costs and transaction costs are falling precipitously with the development of the Internet, and it is nowadays not rare to find farmers' cooperatives in developing countries that are linked to cyberspace. Tying in these new groups into new trading systems is not philanthropy; it makes eminent business sense.

To turn these business opportunities into reality, exchange managers need to recognize two things: smaller contracts can add significantly to the bottom line; and if they are to be used to develop such opportunities, the risk management networks of the future cannot just exist in a virtual reality. Virtual networks are good for capturing already existing business, simply transforming the routes that this business takes. But to develop new risk management business in emerging markets, it may be best to have local partners involved in the commodity sector, who can develop the local entry points, gather market data, promote contracts, provide support to users, and facilitate the processes of clearing and credit status verification.

The possibility to bring derivatives to the farmgate now clearly exists, even for developing countries. Improvements in hardware and software have greatly reduced the costs of going online, and have made many of the practical barriers of the past (lack of reliable electricity supply, lack of telephone lines, etc.) disappear. What is still needed is a single front-end application providing direct access to all available exchanges via a single user interface, but many hardware and software companies are in a position to provide such a front end. This potential to greatly increase agricultural derivatives business can be realized through an effective partnership between the trading and brokerage community, hardware and software companies, and organizations intent on bringing the benefits of modern communications technology to developing countries.

I. Introduction

What a developing country needs are simple products; much of the complexity of dealing software is redundant for developing-country risk management

Developing country farmers have significant risk management needs. The typical farmer in a developing country, growing perhaps three crops on a small acreage, may be satisfied if he can guarantee a season's prices or achieve a forward sale. His risk management needs will likely be in the areas of farm production and financing: e.g. the future price of the farm's and competitors' crops, the exchange rate between domestic currency and importers' currency of use, and in the level and trend of domestic interest rates. He needs simple products that can meet these needs. For such a farmer, much of the complexity of current, let alone future, dealing software and the markets standing behind them is redundant.

The interface between the system and the user will be a key factor in determining whether the hundreds of millions of farmers in the developing world can find their way into the brave new world of cyberspace. How may the typical farmer's actual requirements for what appears on the screen (which will probably be located in a farmers' association or agricultural bank) be characterised? Three of the most important requirements are:

- (1) a reliable, regular supply of useful and appropriate price data;
- (2) other information about the local and perhaps international market for the particular crops being grown on the farm, for example information about local shortages, news about brokers, government decisions, stock and flow information, and
- (3) the ability to trade at low cost in the commodities produced on the farm as well as currency risk, quite likely in the form of a retail insurance product shaped like an option: easy to understand, clear in its pricing, without payment stream risks of its own, and affordable.

That unforeseen price fluctuations can be enormously damaging to farmers' interests is obvious, and examples abound. Fruit growing is one such risky enterprise. To understand the array of risks to which fruit farmers can be exposed, one could consider the case of: melon growers in Brazil in the mid-1990s. A shortage inflated carton costs for producers by up to 60 per cent. This was compounded by economic fallout from the changeover to a new currency. Exporters were also under pressure from high interest rates, 30 per cent inflation and unexpectedly low exchange rates. They should ideally have been able to hedge input costs, output price, exchange rates, and even inflation. With the twin processes of liberalization and globalization, the number of farmers and traders exposed to major risks which could in, principle, be hedged is increasing. More of them now directly face world market rather than local conditions. And it is widely believed that lower public stock holdings, together with geographical shifts in global stocks, enhance the risk of higher volatility in world market prices.

*Three requirements of a computerized trading system:
- reliability of price data
- other useful information
- low cost trade*

II. Electronic Trading

a. Virtual marketplaces

Through technological developments, virtual marketplaces are rapidly superseding traditional physical marketplaces. The systems being developed are used as a platform for greatly enhancing access to risk management markets. Advocates of the new systems claim that capital markets – and in their wake, subject to certain reservations, commodity markets – will become more liquid, more transparent, and also more accessible. They point to the fact that electronic trading has won its competition with open outcry on the basis of reduced costs, and even greater fairness. In early 1999 EUREX, Europe's largest electronic exchange, exceeded the CBOT's volumes to become the largest exchange in the world.

As floor trading gradually disappears, and the skills associated with it pass into history, the exchanges are seeking to implement their current business paradigm. This paradigm has been based for over a decade now on a series of landlines from exchange to client servers, to which workstations and PCs of varying capacity are then attached. However, most industry analysts are now arguing that the coming multivariable access and dissemination systems will ultimately undermine current market structures. Perhaps even the primacy of central business districts in major cities will soon be a thing of the past. At the very least, all exchanges are now in a position to compete with one another. In practice exchanges themselves now appear under threat. This is because the cost of setting up a system that replicates exchange functions has become relatively modest, as off-the-shelf technology can be bought from various sources. What really matters nowadays for developing liquid risk management markets are issues of regulatory oversight and related to this, users' confidence. Indeed, differences in regulation are the major operational constraint on the development of a global marketplace, not geography or even time zones.

The shape of things to come can be seen in the trading network known as Archipelago, a two-and-a-half-year-old electronic communication network, or ECN, for NASDAQ stock market shares. Since the Securities and Exchange Commission (SEC) passed regulatory changes to allow alternative trading systems in 1996, ECNs have played an increasingly important role in the equities market. ECNs allow orders to be routed directly and displayed on the floor of a derivatives exchange or stock market without the need for an intermediary, and assuring order anonymity. Currently about one third of all shares traded in NASDAQ stocks and one in ten of all NYSE shares are handled by a dozen or so ECNs. Following an earlier application by another ECN, Archipelago has applied to the SEC to become a stock exchange. This move is clearly gaining momentum, as can be seen in the decision of Instinet to take a share in Archipelago (other investors in Archipelago include E*Trade, Goldman Sachs and J.P Morgan). Instinet is another ECN owned by Reuters which operates a stock trading system heavily used by institutional investors to trade large blocks of shares with each other (bypassing the exchanges). ECNs are en route to full exchange status in the USA, and the move is spreading to Europe.

Commodity markets can become more liquid, more transparent and more accessible through the development of virtual marketplaces

The coming multivariable access and dissemination systems will ultimately undermine current market structures: exchanges are under threat

Electronic communication networks (ECNs) are a growing segment of today's financial services market, and are en route to full exchange status

Global electronic inter-dealer brokerage is expected to have a great impact on the efficiency and unification of markets

At present too, considerable excitement in the international marketplace is being created by the announcement last June by a consortium of investment banks (Goldman Sachs, Merrill Lynch, Citigroup/Salomon Smith Barney, Credit Suisse First Boston, Deutsche Bank, Lehman Brothers and Morgan Stanley Dean Witter) that they will set up an electronic interdealer brokerage called BrokerTec. This global electronic inter-dealer brokerage for a broad range of fixed income products will compete directly with brokers such as Cantor Fitzgerald and Liberty Brokerage. BrokerTec's directors believe that technology is providing an enormous opportunity to make markets more efficient and unified, thereby significantly reducing execution costs and increasing market transparency -- currently, as there is no central exchange in the bond market, price data are not reported. If BrokerTec is successful in reducing inter-dealer brokerage costs, this will in turn produce information that will provide greater price transparency to the fixed-income market, benefiting fixed-income investors and the market as a whole.

Trading systems can operate on existing backbones: alternatives to the use of new dedicated systems include, for example, all secure banking and credit card circuits

There are certainly other possibilities for global trading apart from these new dedicated systems. For example, the Visa Open Platform is a comprehensive system architecture that enables the fast and easy development of globally interoperable smart card systems. All the secure banking and credit card circuits could be used as international trading backbones (or indeed, national ones: UNCTAD is looking at this possibility for creating a national commodity futures trading network in India; and in Brazil, the Banco do Brasil network is used to link exchanges). However, credit card network providers would resist general public access to their systems: at present, for example, it is necessary to be vetted for authorization to have in-store equipment. The use of credit card/company intranet would enable trading to occur over a private network, which is inherently more secure even if the network is using Net protocols. One may however assume that despite the pressure to develop the quantity rather than the quality of Net services, public Net security will improve, probably within five years due to increasing involvement of telecommunications companies focusing on the creation of a more business-oriented Net.

Private networks are not dead - yet. But competition from Internet systems is increasingly strong

There are two main reasons as to why the private networks discussed in this section as alternatives to the Internet (discussed in the next session) may not be completely obsolete -- although they may be heading in the direction of obsolescence. Firstly, many organisations -- major banks in particular -- are already connected to them and the technology of connection is already proven. This means that using such circuits may be a useful interim arrangement although the transaction costs will surely be higher. Secondly, many of the private circuits (between banks, and also any private network such as that of Reuters) have been built to provide a specific information service level and also a level of availability. You can provide this over the net only with the assistance of one or more telecommunications companies that are willing to guarantee service levels. There is a very definite service-level issue if any transaction fails because a computer was down or a circuit was broken. Traders themselves cite both the speed of transaction processing and the ability to handle large volumes of business as evidence of the need for dedicated backbones. Even these levels of service may not be sufficient in the future. EUREX last year had great difficulty with trades executed slowly due to problems with its existing computer architecture.

b. Internet trading

The alternative model to the development of new dedicated virtual market places is Internet trading, which has become popularised by Charles Schwab and other online equity brokers, particularly in United States. The broker maintains a website that is password-protected for each individual client, and trading takes place across the Internet. The Internet is generally not regarded as being completely secure for financial transactions although people do use it and softwares such as PGP (Pretty Good Privacy) are highly effective tools. The trading process can be enhanced by the provision of specialised software and information by the broker, as well as by independent online services accessed by the client. Currently some 25% of NASDAQ stocks are traded in this way, and most estimates cluster around the 2/3 mark for the volume of retail brokerage in the USA that is expected to be online as early as 2001. As the volume of online trading increases and margins are falling, the costs of using traditional methods are increasing.

A variant of this is the Mr Market approach, a software firm that franchises local stockbrokers with secure server operations globally and which is closely related to the provision of micro-trades. Underwriting similarly is amenable to both disintermediation and micro scaling. This is closer to the needs of developing countries, and may play an increasing role if venture capital, as has been suggested, migrates to a similar business role. Already in both the USA and Europe venture capitalists are using the Web as much as personal contacts to identify investment opportunities. The opportunities for new products may include sector-specific international markets and will certainly involve a reduction in the traditional distance between equity, bond and derivative markets, which was largely an historical accident rather than a response to customer demand.

This alternative model lends itself to what Chernow called disintermediation, as retail investors can contact markets directly without the need for brokers to intervene. The distinction between brokers and markets breaks down, and fund managers can be similarly circumvented, leading to a greater importance for individuals and, subject to informational asymmetries, opportunities for smaller companies to achieve status as banks, brokers, traders or consultancies. As Young and Theys observe (Capital Markets Revolution, FT, 1999), no one person or party's place in the trading chain is now assured. The marketplace that delivers, today, an appropriate product which is liquid, in a cost-effective way whilst providing high levels of security and reliable clearing, and a regulatory environment which satisfies its users, will be used substantially, today. Tomorrow may be a different story.

Whilst not assured, the place of the new breed of independent diversified trader, operating exclusively online in a range of different instruments, including available commodities, seems certain. These traders are now served by a range of companies providing computer solutions enabling direct access to exchanges and ECNs, to which they will have fickle loyalties depending on their own success in trading. While such traders so far operate almost exclusively in developed countries, the number of retail investors (speculators) in many developing countries is evidently high, and the idea of opening up "Internet cafés" dedicated to online trading seems to have occurred to several financial firms in these countries.

As the volume of online Internet trading increases and margins are falling, the costs of using traditional methods are increasing -- as a result, online trading is expected to dominate in a few years time.

The Internet enables "disintermediation": the distinction between brokers and markets breaks down, and fund managers can be circumvented; no one person or party's place in the trading chain is assured

c. Commodity trading

It is very likely that global physical commodities trading will remain in the hands of the traditional commodity sector with international trading firms such as Cargill continuing to increase their market share through economies of scale. The recent downturn in commodity prices is reducing the number of players. Those left at a national level, when not absorbed into one of the global trading houses, will continue to exist as niche players. The use of derivatives as a hedging medium, however, is likely to grow as smaller players realize the benefits of forward pricing, and speculative interest will continue to thrive.

The reduced cost of new product development means that success will depend on marketing issues rather than on the costs of launching contracts

The reduced cost of new product development in an electronic environment means that the success of new products will depend more on marketing issues and the creation of sustained market liquidity rather than on the costs of launching contracts or breaking into new markets, as was the case in the past. Many industry participants and analysts have suggested that weather derivatives, closely related to yield insurance from an agricultural perspective, as well as environmental trading and the global commoditization of insurance, are highly likely ranges of such new products. Moreover, there is a clear potential for niche market products, whose likely volume would not be worthwhile for an open outcry exchange but which can be offered on an electronic trading system.

The Internet will enable better clearing of OTC markets; this is a threat to businesses which fail to negotiate special deals with clearing houses or link to create their own clearing arrangements

With Internet and other electronic trading gradually dominating the international markets, there is much potential for improving the performance of OTC markets through better netting, clearing and collateralization. This poses a significant threat to established businesses which demonstrate any kind of reluctance to either negotiate special deals with clearing houses, or link to create their own clearing arrangements. Indeed, in both financial and commodity trading, the largest institutions are becoming impatient with inflexible single-tariff structures for clearing, wondering why with their impeccable credit status they need to post margins at all. Clearly an increased degree of variability within the clearing function is inevitable, as the ability to determine and act on different credit ratings becomes an online reality.

For OTC contracts, where there is no common clearing mechanism and companies currently must establish mutual credit lines, it is likely that a market architecture will develop in which banks' creditworthiness is a market instrument itself, and mutual offsets are sought electronically using intelligent software. For example, the market in commodity swaps may migrate at least in part to an electronic environment rather than being conducted exclusively through telephone contact. No delivery of commodities is involved: the mechanism of swaps is entirely financial and therefore lends itself ideally to electronic trading. If so, it is possible that existing difficulties in formulating agricultural financing deals lasting longer than a year, except as revolving one-year deals, will be overcome, as they usually are with metals and energy commodity swaps and financing.

Commodity bonds are another example. The issue of commodity bonds goes back at least a century, but the commodity-price-linked components of these bonds tends to be heavily discounted in the case of bonds issued by developing countries,

because of sovereign risk factors. Sovereign risk insurance is becoming more easily available, and could be traded electronically. It is unlikely that this will be the end for the expansion of electronic trading as many physical commodity markets are also looking to go electronic. Examples already include electricity, coal, natural gas and communications bandwidth -- there is even an electronic exchange for nursery seedlings and similar plant materials. It is likely that efforts will be made to allow other physicals, traditionally traded over the phone and in markets made by domestic brokers, to be traded electronically. There are now well-established origin and destination markets and all other delivery types/places can be priced against these standards. Freight, grains, softs, metals and utilities will all be targeted within the next few years and national telephone markets may be supplemented, if not replaced, by international electronic ones.

Many commodity markets are looking to go electronic; freight, grains, softs, metals and utilities will be targeted within the next few years

For the global online trading community to be able to meet the risk management needs of commodity trading, problems with respect to system access and physical delivery need to be resolved. Warehouse receipts, storage costs, quality controls, port issues, delivery verification, weather damage and insurance claims, all represent a threat to the expansion of purely Net trading. This is why, for instance, buyers now often surf the Net to find a replacement car, but rarely buy it without taking a test drive first. The Net therefore functions so far as little more than a sophisticated advertising and marketing tool for domestic car manufacturers and retailers, both new and second-hand. Companies with a firm footing in the commodity sector will play a crucial role in providing a bridge between the online trading community and the physical commodity traded, which will be invaluable to establish and maintain confidence.

Companies with a firm footing in the commodity sector will be invaluable in providing a bridge between the commodity sector and the online trading community

It is probably safe to conclude that financial derivatives and equities will always be more important than commodity trade for the majority of online traders. However, integration of commodity risk management into the global online trading community might conservatively be expected to result in a considerable expansion of the use of commodity risk management instruments world-wide and commensurate welfare gains -- and add to the bottom line of those offering the instruments.

III. Important Issues To Be Resolved

a. The entry point problem

Current interest and speculation about the future of markets surrounds, at root, the question of whether the traditional concept of an Exchange, even demutualised and working for profit, has a continued use in a world of online trading. There is no doubt that from a developing country standpoint this debate has tremendous significance. From the developing country standpoint, however, other software developments may become equally, or more, significant.

The future of traditional exchanges in an electronic era is of tremendous significance to developing countries.

Probably the most important are the characteristics of a new generation of front end enabling software and the international distribution of such software. This may be described as the front end problem, and the current situation, especially for developing countries, compares markedly and unfavourably with the way that, for

Software developments may become equally or more important: for developing countries, rather than the current bewildering multiplication of front ends, a single application providing direct access to all available exchanges via a single user interface is needed

example, word processing standards world-wide have been largely achieved through the use of Word and WordPerfect. It is true that trading is a much more complex and heterogeneous activity than the creation of text, and bears closer comparison with multi-media, where there is no such standardisation. However, the multiplicity of different front ends available to individuals and institutions – partly due to the proliferation of the Open Architecture Protocol model for Exchanges – for information processing, the regular supply of information, data storage and processing, financial risk management, order processing, settlement, and audit trails is bewildering and unfavourable to the generation of economies of scale.

The medium term vision for trading all these instruments is a single application that provides direct access to all available exchanges via a single-user interface. Only with such economies of scale and the creation of a user friendly, tailorable front end can the problem be solved. Some of the characteristics that such software will possess have already been touched upon, but they are likely to include:

Voice recognition

Voice recognition of at least key commands and an intelligent translation of general instructions into specific trading objectives and instructions, in a range of different languages, not just English and Spanish but more particularly local languages and dialects where specific local markets pertain.

Icon-driven operation

Optional icon driven operation for those users who are not accustomed to written activity and in order to provide the maximum security of operation to avoid mistakes.

Intelligent online help

Ease of understanding with adequate online help. Three-dimensional multi-media presentations, set according to users' preferences, can combine such tools as 3D screens, colours, sounds, shapes and any other communication techniques to present a real-time analysis of risk and decision making. Existing software, even the best, relies heavily on the numeracy and speed of response of the trader at the screen, with electronic support largely in the form of algorithms and built-in trading constraints. This is far from intelligent online help, which could be available (most likely at the level of farmers' associations and agricultural banks) to suit the problems of most farmers in developing countries for a very low price: for example in the form of a 'talking head' or highly individual multi-media presentation. Balancing real time information with accessibility will always remain a design problem of such software, however.

Intelligent selectivity

Programmable selective access to markets. Most users of markets in developing countries will require access to particular markets rather than the global reach with possibly associated costs demanded by traders in developed countries. Informational overload is so prevalent on the Net that intelligent selectivity will be essential, especially with users who will be less familiar with the technology than traders in developed countries and with fewer resources, including time, to devote to the trading task.

Intelligent searches

Intelligent active search of websites and all trading mechanisms. The primary function of the software is to obtain the best deal for the end user. The exact structure

of what is on offer may differ between different exchanges, ECNs or other trading opportunities on or through the Net. The software must interrogate them all and produce a detailed comparable analysis.

Development of a universal trading language. The process of interrogation would be made much easier if every Net trading opportunity takes steps to make its prices, terms of trade, regulatory jurisdiction, and settlement and clearing mechanisms, immediately accessible to the software. The model here is the way in which Websites are designed to make them accessible to browsers and indeed the process may be more than just analogous, it may at root use similar technology. HTML and its derivatives (e.g. XML) could yet become the universal trading language, for if offers are not presented in this format, front-end software might not be able to recognise them.

Universal trading language

Construction of reliable and homogenous reports. The model for this part of the software is the Active Server Page technology and its equivalents. Already the capacity exists for individual users to browse the Net and compile a summary report in HTML format. The complexity of such a report will differ significantly depending on the user and their needs, but should certainly be able to present a recommendation as well as a compilation of opportunities.

Report compilation

All these aspects of the software will be made easier by the gradual narrowing of the distinction between on- and off-line. Already integration of browser technology into workstations and PCs has become so commonplace that users rarely notice or care, especially in the corporate environment, whether they are online or not. The growth of the "thin client" environment, and the demand by companies for suitable browser technology, together with the growth of ISDN and now ASDL technology which enables users to be permanently online at very little cost, will further ease the task for the software.

A number of different software and communications companies world-wide are in a position to join efforts developing such a front-end access system. Many companies already provide products in this area, which are characterised by close attention to the provision of risk management systems and trading strategies, optimised for financial markets.

b. Information distribution

The online world does not represent a level playing field for information. There are several reasons why this is so. Firstly, information which public-sector organisations used to produce for public distribution is no longer available or in some cases even collected. Much of this information was statistical: stock levels for cocoa are an example. Secondly, although the Internet is replete with free information, particularly price series and news, only some of it is either up-to-date or available in sufficient detail. Moreover what is useful may be hard or even impossible to obtain without accurate search information or pre-knowledge of where to look for it. Informational disparities have been identified by the UN and other international agencies for many years as an important aspect of international injustice and the issue

The online world does not represent a level playing field for information; and informational disparities are an important aspect of international injustice, acutely so in respect of trading

is especially acute in respect of trading. The first problem is how to measure informational inequality, when precisely the problem is that no one knows which information is actually relevant: prices, depth of prices, counterparties, credit risk, purchasing power may all influence profitable trading. Information in different hands clearly has different value depending on the ability of the user to act on it. The second issue is who or which organisation should be empowered to carry out the measurement.

Currently the provision of the growing volume of financial information is asymmetrically distorted in favour of a small number of traders in developed countries

Currently the provision of the growing volume of financial information is asymmetrically distorted in favour of a small number of traders in developed countries. Lack of online access and, just as importantly, the absence of a reliable data feed such as Bloomberg or Reuters manifestly hampers traders in developing countries just as it does less information-rich individuals in developing countries. Many of these services involve high initial or fixed monthly outlays, with the result that the marginal cost of incremental information becomes accordingly less, generating an information-rich trading force, voracious in its consumption of data. This informational asymmetry means that the online trading world is becoming, if anything, even less transparent than its predecessor was.

Current screen trading systems are expensive and complex, and do not fit at all easily into activities such as farming or running a small business

Similarly, accessibility is just as restricted as before. Current screen-trading systems are expensive and complex. They require significant amounts of training before they can be used, and do not fit at all easily into a portfolio of activities that includes, for example, farming, or running a small business. The markets they serve demand constant attention from traders monitoring their positions, and quite clearly traders who can monitor positions seamlessly in different time zones will rapidly acquire a competitive advantage over their purely domestic competitors.

c. Credit status

One condition for determining and improving the credit status of users is close collaboration with local credit providers - farmers' associations, local banks, collateral managers, warehousing companies

If online risk management in developing countries is to be successful, a good system for determining credit status and a financial environment that enables users to optimize their credit status are essential. The first input to credit status determination in an online world is the reliable identification of individual users, and sophisticated mechanisms may be required to establish their identities. Secondly, the status of particular individuals must be immediately available to trading opportunity providers. This can only be done within the timeframe of an ASP search by the existence within cyberspace of a range of readily searchable credit databases accessible to at least the majority of trading opportunity providers. Finally, there is the accuracy of such data, which will depend on statistical amalgamation as well as, perhaps, concepts of peer review and close collaboration with local credit providers such as farmers' associations or the local representatives of banks and other credit-related institutions such as collateral managers and warehousing companies. Such systems could of course work through the Internet as well as through private networks, e.g. of credit card providers or banks. For example, a trader depositing goods in a safe, independently-controlled warehouse could have a "smart card" loaded with the details, and use this "smart card" either for trading, or for obtaining a credit.

d. International regulation

According to IOSCO, the three fundamental objectives of securities regulation are ***protecting investors; ensuring that securities markets are fair, efficient and transparent; and reducing systemic risk*** (IOSCO, Securities Policy on the Internet, 1998). Also, as CFTC stresses, regulations regarding response time and operational equality of treatment were created before the Internet was a basic fact of society. Although no Internet-based trading system could meet all of the IOSCO principles in the manner in which they were originally intended, the problem can be addressed or solved through adequate disclosure. FutureCom, a wholly Internet Exchange, has developed what CFTC regards as an adequate disclosure statement for this purpose (IOSCO, *ibid*).

A competitive environment for regulators is certain to emerge within cyberspace, given the possibility that virtually every investment firm can almost at wish relocate to another jurisdiction. At present, it seems as if the CFTC and SEC together are making a bid to regulate the entire online community. Perhaps the most likely outcome is a range of online regulators with different reputations and specialised skills. Although enhanced cooperation among regulators will be necessary to monitor and police effectively activities by the financial industry on the Internet, the closest analogy for what is likely to develop is the shipping industry. Flags of convenience exist in the same way that lax jurisdictions on the net will exist, and the .com site registration process will make it on first sight impossible for the investor to determine in which jurisdiction the site is. The solution must lie in international regulation selling itself better to investors so that kitemarks and other online approvals from regulators can become explicit. Regulators must undertake to provide information in a more user-friendly form on their websites at least, and in the future, more aggressively. For example, they might insist on hyperlinks on websites or imbedded in a secure delivery system. And they must do so cost-effectively, reducing, not increasing, the burden on firms providing retail services to clients. IOSCO sees its own task as setting out 'best regulatory practice' for national regulators in whose jurisdictions particular websites are domiciled.

Although enhanced cooperation among regulators will be necessary, the closest analogy for what is likely to develop is the shipping industry: flags of convenience exist alongside more regulated environments

IV. Online in Developing Countries

So, is all lost for developing countries and low-income individuals in the world of online trading? No: in fact there are several encouraging factors to believe the opposite. Firstly, the unit cost of hardware is falling, in some cases dramatically. Whilst Windows CE is by no means as capable as its big brother NT, the distinction for practical purposes when considering hedging operations by individuals in developing countries is diminishing continuously. There are a number of areas of hardware innovation, too, for example the development of flat-screen technology and its deployment into HPCs, which is expected to cut power demand by up to 100% over the next decade and thereby increase battery effectiveness. Battery technology itself is also, at last, improving. Even the warmth of a human hand may be sufficient to power the computers of the future, whilst keyboards, where required, will be no more than flexible strips of plastic. In parallel with such operational improvements, the cost of equipment required to trade even existing global exchanges is under US\$1000 already

Developing countries will be integrated in the online trading community; the time is fast approaching when hardware costs will be only as significant a barrier to market entry as the cost of a wristwatch is to telling the time

and falling rapidly. The time is fast approaching when hardware costs will be only as significant a barrier to market entry as the cost of a wristwatch is to telling the time, or a portable radio to listening to the news: not an absolute block even in developing countries.

Secondly, the requirements of specific users in developing countries are far more limited than what a trader in a developed-country bank or other financial institution demands, and therefore the cost of the information feeds they require and the trading access they need will be substantially less. The comparative limitations can be expressed in terms of speed, contract volume and commodity and contract range. In terms of accessing markets for hedging, speed at the level demanded by a scalping day trader in the USA or Europe is neither necessary nor cost-effective, and this in turn dramatically reduces the hardware and software cost for participation in online markets. The online trading community, with its intrinsic flexibility, is much more able to provide small OTC products for farmers in developing countries, even with precise delta hedging and online arbitrageurs to ensure highly competitive pricing, than the cumbersome exchanges of the past. Then, individual farmers and other small producers were obliged to club together and approach brokers through co-operatives and other producer groupings in order to access the market, with another layer of bureaucracy and an additional layer of profit margins created by the existence of the broker. Online trading sweeps away the need for both: although co-operatives and other producer groupings may still have vital roles, for example in peer group credit checking, specific trading itself can be carried out at the individual level in the same way that telephone conversations are personal. The effect of this change in some cases is that established markets may disappear, particularly if they no longer appear to meet the needs of their members, as happened to the London Tea Auctions in 1998.

Thirdly, the problem of inadequate telecommunications systems in developing countries is rapidly receding. Hitherto, direct participation in commodity markets has relied upon complex landlines and modems, with information on market movements provided in similar fashion. Even this has advantages in terms of remote participation by comparison to a physical exchange. Orders have been placed in both cases with brokers by telephone, and now by Internet. Yet in developing countries the telecommunications infrastructure for Internet trading using landlines simply does not exist, and because of the revolution in mobile telecommunications, there is little reason for it to be developed. It is probable that further enhancement of access will therefore be achieved through wireless communication. The demand for ISDN lines in Africa, for example, is dwarfed by the supply of mobile phones, of which there are now more in Sub-Saharan Africa than fixed telephones. Moreover, mobile telecommunications by its very nature is much more suited to the field, to remote villages and to precisely the sorts of environments where farmers, co-operatives and others are engaged in subsistence production and small-scale farming operations where price fluctuations can and do have a very significant effect on livelihoods. Combining wireless communication and commodity markets through suitable hardware and software may well represent the opportunity for a significant increase in agricultural derivatives business with associated welfare benefits for those using risk management instruments. It should not be forgotten either that the provision of palmtops to farmers and others in developing countries may have significant other

The online trading community, with its intrinsic flexibility, is much more able to provide small OTC products for farmers in developing than the cumbersome exchanges of the past

Combining wireless communication and commodity markets may well lead to a significant increase in agricultural derivatives business

benefits in respect of education, exchange of information, the consolidation of a democratic political culture, and business more generally than just agricultural commodity risk management instruments.

Not only are most developing countries placing the installation of GSM networks as a high priority, but the existence of mobile telecommunications using GPRS (Generalised Packet Radio Service) and ultimately UMTS (Universal Mobile Telecommunications System) represents an opportunity for all trading systems to be made available to mobile devices such as Olympic's World-Link with no loss of operational efficiency or increased costs by comparison to land lines. "UMTS, will take the personal communications user into the Information Society of the 21st century. It will deliver advanced information directly to people and provide them with access to new and innovative services. It will offer mobile personalised communications to the mass market regardless of location, network or terminal used" (UMTS Forum Regulatory Report). The implications are that all telecommunications networks must be integrated and users will get ample data rates of 2Mb/s in some areas. As the numbers of users in developing countries increases so can unit costs be expected to fall further. Satellite-based personal communications service systems from a global LEO (low earth orbit) satellite constellation will soon offer voice, low-rate data and facsimile services to small, inexpensive terminals. The technologies are less capital-intensive and better adapted for use in remote regions and sparsely populated areas than earlier communications systems. Global mobile personal communications by satellite, the first truly mobile communications system, will not only provide communications facilities to hand-held telephones on mobile platforms and extend the facilities to cellular users to roam beyond the cellular region, but will also be the low-cost method of rapidly implementing fixed or mobile services to rural areas not covered by regular telephony or cellular services and at a cost measured in US\$ cents per minute – at last affordable in developing countries.

So if an appropriate business model can be developed – and the model of Freeplay's success in delivering wind-up radios to a growing community of users in Southern Africa is one that can be cited in this context – then it is highly likely that innovative and targeted software will develop which will enable farmers and others exposed to specific risks in developing countries to access the world of online trading both successfully and cost-effectively. In the context of developing countries, partnership between local bankers, online brokers and the agricultural community will be necessary both to build confidence and to ensure that maximum use is made of the available trades. As IBM have stressed in this context, however, the main obstacle to overcome with a global roll-out of any such system is the cost-effective provision of support, not just online but on the ground. This reinforces the importance of close collaboration between mobile trading systems providers and major hardware providers with their already established international network of dealer technical support.

With an appropriate business model, it is highly likely that innovative and targeted software will be developed to enable farmers in developing countries to access the world of online trading both successfully and cost-effectively

V. Conclusion: The Way Ahead

To replace the agricultural stabilisation programmes of old by market-based risk management, the active involvement of four parties is needed:

- the trading and broking community*
- software companies*
- hardware companies*
- the public and private sector entities bringing all parties together for the benefit of developing countries*

There are four key parties that will be involved in providing risk management services to replace traditional agricultural stabilisation programmes formerly provided by government agencies:

First, the trading and broking community world-wide. This includes the gamut of trading opportunities from exchanges through ECNs to particular OTC deals located on the Internet and offered through a range of different corporate entities. The whole sector would ideally be strategically regulated by IOSCO with execution in the hands of national regulatory agencies operating under international agreements. The online community will offer a wide range of services from full futures market participation to price insurance on particular crops. These may be enhanced by the operation of international agencies such as the online provision of stock and price data by the FAO for agricultural commodities, and will be tied closely to other related online services such as crop advice, online fertiliser or machinery purchase and insurance, and many services related to weather.

Second, the companies and consortia producing front end software, which will make and mutually advertise these services available and accessible to ordinary farmers, co-operatives, local banks, stockbrokers, and rural communities. At present there are two elements to this software: the trading and information software itself, and operating systems where there is currently fierce competition. This split may continue.

Thirdly, the producers of the hardware that will enable the software to be used, both in terms of fixed workstations, PCs and thin client application devices, as well as HPCs, and also worldwide communications, including by satellite. Most of these companies at present are likely to be major international concerns, but this need not be so indefinitely. With prices falling dramatically their business opportunities in this as in other areas, though considerable, may be difficult to assess precisely.

Fourthly, those both working in the public and private sectors who will promote the use of this technology for the benefit of developing countries. This must include the encouragement of publication of more timely and frequent data, for example the integration of FAO, Public Ledger and other spot market commodity prices on the Web into feeds provided on software available in developing countries. Another example is the proposed new World Bank facility for enhancing the use of price risk management in developing countries, which may subsidize option premiums for selected groups: this could be integrated into the software feeds to minimize the cost of using derivative products for farmers and other producers in developing countries.

The possibility to bring derivatives to the farmgate now clearly exist. With all these elements in place the possibility exists for a private sector solution to the problems posed by price and production volatility for commodities, whether agricultural, energy, other raw material or more esoteric commodities such as weather, insurance, and telecommunications. To make this happen will require a

strong partnership. On the one hand there must be the private sector, producing and marketing the instruments themselves and the software, communications equipment and hardware required to make them readily accessible to appropriate potential users within developing countries. On the other hand must stand the UN agencies and NGOs which can 'force multiply' the efforts of the private sector in introducing and successfully deploying this new technology in such a way as to minimise costs and maximise their acceptance as the risk management mechanisms of the new millennium.

With all these elements in place the possibility exists for a private sector solution to the problems posed by commodity price and production volatility: for this a strong partnership is required

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT
Activities in the field of commodity risk management and electronic trading

UNCTAD: the organization

Established in 1964 as a permanent intergovernmental body, UNCTAD is the principal organ of the United Nations General Assembly in the field of trade and development. It is the focal point within the United Nations for the integrated treatment of development and interrelated issues in the areas of trade, finance, technology, investment and sustainable development.

UNCTAD's main goals are to maximize the trade, investment and development opportunities of developing countries, and to help them face challenges arising from globalization and integrate into the world economy, on an equitable basis. UNCTAD pursues its goals through research and policy analysis, intergovernmental deliberations, technical cooperation, and interaction with civil society and the business sector.

UNCTAD's membership currently stands at 188 member States. Many intergovernmental and non-governmental organizations have observer status and participate in its work. The Secretariat is located in Geneva, Switzerland; and its 394 staff members form part of the United Nations Secretariat.

Commodity risk management and finance

UNCTAD has evolved as one of the leading organizations assisting commodity-dependent countries to enhance their capacity to use modern commodity risk management and financing tools. Work involves policy advice, training and technical cooperation activities, geared both to the public and private sectors. Work areas include

- the development of regional/national commodity exchanges, and new commodity contracts;*
- possible legal and regulatory reforms to improve access to international commodity risk management and finance markets, and lower the costs of this access;*
- institution-building to enable access to risk management and structured finance markets; and*
- the use of market-based risk management to construct "safety-net" programmes, e.g. to protect low-income farmers and other households.*

Technical cooperation work has mostly focused on South and Southeast Asia, the Caribbean and Africa. The UNCTAD secretariat is for example closely involved in the development of commodity exchanges and the related warehouse receipt system in India and Indonesia, and is the main agency working with African oil sector entities to improve their price risk management and financing practices.

Electronic trading

UNCTAD has a long track record in developing trade- and finance-related computer software for use in developing countries. This includes, for example the Debt Management and Financial Analysis System (DMFAS) used by more than 50 Central Banks and Ministries of Finance for foreign and domestic public debt management; the Automated System for Customs Data (ASYCUDA), used by more than 60 countries, and the internationally accepted standard for customs automation; the Advance Cargo Information System (ACIS), a tool-box of computer applications designed to produce management information for multimodal cargo transport, and track cargo along land and sea routes; and the Trade Points programme.

UNCTAD's Internet-based system for electronic commerce is the Global Trade Point Network, which is set up to bring together all providers of services required to make a commercial transaction (customs, foreign trade institutes, freight forwarders, transport companies, banks and insurance firms). It enables connected companies to exchange 'ETOs' (Electronic Trading Opportunities), as well as other types of information regarding existing trade regulations, banking practices and market intelligence. There are now more than 150 Trade Points in over 90 countries.