The Institutional Development of India's Financial Markets

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INTRODUCTION

In India, one of the most important challenges of the 1990s concerns the development of institutional arrangement in financial markets. The reliance upon prices to guide resource allocation is the essence of liberalisation, and a major aspect of the economic reforms has been to eliminate government restrictions upon the contracts and trades which economic agents enter into. However, the modern financial system does not operate in an institutional vacuum. If agents have the freedom to trade with each other, that does not by itself produce a sound system of prices which can be the planning commission of the modern economy.

The institutional development of markets is a critical hurdle faced in the transition into the market economy. When markets function poorly, the withdrawal of government controls can prove to be politically costly, and this can diminish the political will that is the prerequisite for liberalisation. Malfunctioning market can generate tactical reversion into interventionist policies on the part of government, as seen in India's foreign exchange market, which generate confusing signals about the credibility and the usefulness of reforms.

Policy makers are hence faced with the challenge of fostering the development of financial markets. Each of the five major financial markets of the economy – equity, debt, foreign exchange, commodities and real estate – presents major challenges in terms of the institutional development of markets.

It is perhaps paradoxical that the withdrawal of the state from resource allocation can be best enabled by an activist state which fosters the development of liquid and efficient markets. The experience of many countries suggests that there is, indeed, a role for the state in enforcing contracts, and playing a strong role in the development of markets institutions which are conducive towards efficient price discovery, liquidity, and market efficiency. The experience of India's equity market in the last four years is consistent with this perspective.

THE MENU OF CHOICES

There are five major methods of organising markets known in the world today:[1]

The open electronic limit order book market

1 For a detailed discussion on the organisation of trading activity on some the world's major markets, see Domowitz (1993).

The most important new idea in market organisation of the recent decades is computerised order matching, which is also called the open electronic limit order book market (Block 1971, Glosten1994).

In the limit order book market, liquidity is supplied by investors and traders all over the country, who place limit orders. The limit order book (the list of all unmatched limit orders) embodies the liquidity of the market. The limit order book is publicly visible (hence the term "open").Orders are matched by Computer, based on strict price - time priority The continuous trading on the "normal market" of NSE or BSE is an open electronic limit order book market.

The open electronic call auction market
The call auction market is a uniform –price auction. The auction takes place at a designated time. The (computerised) auctioneer display a provisional price, based on which limit orders can berevised. At the end of the auction, the computer pairs off all orders which are mutually compatible, at a single price.There is no market impactcost in the all auction.; The pre-opening session on NSE is a call auction.

Market with market makers
These are markets dominated by " market makers" who give out two-way quotes. Investors must trade through the market makers, and cannot trade against each other. OTCEI or NASDAQ are market maker markets.

Floor-based open outcry
This is a market where an unsystematic pool of traders meet on a physical trading floor, and trade by voice and hand – signs. There are no limit orders, there is no price- time priority, and there are no market makers. Examples of this include the futures exchanges of Chicago, and the old BSE floor.

The distributed dealer market
This is a market where the "unsystematic pool of traders"(mentioned above) are spread over geographical distance. They communicate by telephone and over computer systems. As with open outcry, there is no price- time priority. In addition, the information flows of the trading floor are not as easily accessed by all market participants.Distributed dealer markets generally do clearing and settlement bilaterally, without benefit of institutions like the clearing corporation. India's dollar-rupee market and fixed income market are distributed dealer markets.

The choices that we face in India in the context of each major financial market – equity, debt, foreign exchange and commodities –consist of choosing the appropriate style of market organisation for each traded object.[2]

THE POLITICAL ECONOMY OF INSTITUTIONAL CHANGE

Policy issues concerned with institutional arrangements in the securities industry are fraught with controversy. Market participants possess skills, which are specific to existing institutional arrangements, and often stand to lose from institutional change. Hence major market participants are often conservatives who resist institutional change. This resistance is most pronounced when a new form of market organisation directly hurts revenues of intermediaries-e.g. through improved market transparency or through reduced entry barriers in to intermediation.

The conservatism of market participants is not peculiar to India; it is observed in every country. A striking example of the resistance to change is seen in the US, arguably one of the pioneers of modern securities exchanges. The major markets of the US-NYSE, NASDAQ, the Chicago Mercantile Exchange (CME) and the Chicago Board of Options Trade (CBOT)-continue to use market mechanisms which were designed many decades ago. Hence, they fail to exploit contemporary technology in computers and communications.

2 See Madhavan (1992) for a Discussion of the characteristics of different types of market organisations.

Similarly, the US treasury bill market has many deficiencies which derive from its organisation around a small club of primary dealers. The worldwide foreign exchange market operates in the institutional vacuum of the distributed dealer market, lacking basic qualities like price-time priority, centralisation of order flow, public visibility of liquidity, etc.

Electronic order – matching first appeared in small markets (Toronto and Mexico) or new markets (India's National Stock Exchange (NSE) These successes paved the way for adoption in larger markets (like Paris, Tokyo and London) (Domowitz 1990,Melamed & Tamarkin1996). In November 1997, the London Stock Exchange commenced trading through order matching, and Indian readers of The Financial Times witnessed a replay of the debates which took place in India's equity market in 1993 and 1994. In each situation, the introduction of computerised order matching has encountered the same fierce political opposition which was seen in India, from existing intermediaries who face the prospect of reduced revenues.

ATTRIBUTES OF MARKET QUALITY

From an economic perspective, a well functioning market is one where transaction costs are near zero. Every question about the design of market can be usefully addressed by inquiring about the level of transaction costs implied by the alternative under consideration. Every blemish in the functioning of markets translates into transaction costs for users of the market. A liquid market is one where transaction costs are low, and the ideal market is that where transaction costs are low and the ideal market is that where many components of transaction costs are zero, and other components are as low as possible.

The key issues in designing and evaluating markets are standardisation, aggregation and revelation of order flow, intermediaries, anonymity, counterparty risk, settlement, enforcement/prosecution, and futures trading.

Standardisation
The foundation of a liquid market is standardisation of the traded object. When many economic agents in the economy have buy or sell intentions for the same object, the time and information processing expended in negotiation is reduced.

In commodity markets, standardisation refers to the exact grade of the commodity. Markets work better in trading "new saurashtra lokvan wheat" instead of dealing of dealing with "wheat" , a non-standardised commodity.

Standardisation can play a role in accurately defining the goods beingtraded (as in the wheat example), in specifying the date on which the seller will deliver the goods (e.g.the securities pay – in date on NSE), or in specifying the quantities in which trades can take place (e.g. the market lot on the equity market).

One of the common difficulties voiced by traders on India's fixed income market is the fragmentation of liquidity across too many government and and corporate bonds. Liquidity on this market could be enhanced by modified policies on the part of the Reserve Bank and the corporate bond issuers.

Liquidity on the fixed income market could also be enhanced by the introduction of a futures market in treasury bills, which would allow the seller to deliver one of the several series of treasury bills (e. g. the contract definition may allow the delivery of any treasury bills which have between 80 and100 days to expiration), thus pooling the liquidity of these instruments into one traded object This example recurs in many other contexts;the general principle being that delivery options can enhance standardisation.Similarly,a futures contract where any AAA corporate bonds taken individually.

This discussion reveals a basic problem with the real estate market: every piece of real estate in the world is different. This lack of standardisation is an intrinsic barrier towards obtaining a liquid

real estate market. The Market for used cars is another example of a market which is intrinsically hard to standardise.

Counterparty risk (i.e., default risk) can play a role in de- standardising an other uniform market. If there is no clearing corporation and financial houses bear counterparty risk in every trade that they undertake, then prices vary depending upon the credit risk of the two counterparties. A trade between State Bank and Citibank would involve a different price from a trade between State Bank and Indian Bank. This generates noise in traded prices, and reduces the liquidity of the market. Such markets often settle into club markets where trading is concentrated in a small club of companies with homogeneous credit risk

Aggregation of Order Flow and Information Revelation
Give a market which trades a standardised object, there is a flow of buy or sell orders in the economy. These orders can either be speculative (i.e. based on forecasts of future prices), or informationless (e. g. an exporter selling dollars).

A market mechanism has two responsibilities: (a) aggregation of the order flow into a single market, and (b) transparency. The ideal market would involve a convergence of all orders coming from any location in India into one single trading place, and the ideal market would make the state of the market visible to all traders, located anywhere in the economy.

Ideally, aggregation should additionally result in price–time priority, whereby every order is matched against the best price available on the entire market, mechanism guarantees price – time priority, the search cost of users
for the best price is eliminated.

There are two forms of market organisation which excel at these attributes: the electronic limit order book market and the electronic call auction market. These forms of market organisation feature very strong aggregation – orders from the 1600 offices of NSE members are aggregated into one single trading screen. They also feature complete transparency of quotes, prices and market liquidity. This is in sharp contrast with distributed dealer markets, where each dealing room observes a small part of the order flow, and the full state of the market is unknown to all dealing rooms. Any user of the limit order book market can accurately know the market impact cost faced before doing any transaction. This is in contrast with the distributed dealer market, where impact cost is not easily forecasted. Finally both these market mechanisms guarantee strict price – time priority, in contrast with the distributed dealer market, which imposes the cost of search of the lowest price upon users of the market.

Trading floors, as in the BSE prior to automation or the NYSE and the CMIE today, are successful in obtaining *aggregation* of the order flow, but fare poorly on *transparency*.[3] We should also note that trading by open outcry (e.g. on the CME) involves a breakdown of price-time priority. At any instant in time, trades taking place on the floor a few metres away from each other would involve different prices. An order delivered to one end of the floor would generally obtain a different price from that obtained at the other end of the floor.

The distributed dealer market fares poorly on both aggregation and transparency. This would be expected to generate poor price discovery and reduced liquidity.

Intermediaries
There are two polar kinds of market intermediaries: brokers and dealers. Brokers are pure intermediaries: they perform transactions on behalf of users, never committing their own capital to bearing risk. Dealers adopt principal positions against users, buying from a user at a stated price with the expectation of being able to sell off to others at a higher price. The distinction between brokers and dealers is not watertight, but it proves to be useful in the analysis.

Entry Barriers

3Trading floors also generate unequal access to the market. For example, prior to VSAT technology, the equity market was concentrated in Bombay. Today, only 36% of the trading volume on NSE comes from Bombay. This has generated a massive expansion of the financial industry in locations outside Bombay, and reduced the importance of being in Bombay. This has generated a massive expansion of the financial industry in locations outside Bombay,and reduced the importance of being in Bombay. It has also enhanced market liquidity by harnessing the order flow, which was otherwise latent, in locations outside Bombay.

Regardless of whether a market uses brokers or dealers, the basic economic of competitive markets suggests that the cost of intermediation. Would be minimised if there were no entry barriers into intermediation. The ideal competitive market would have no market power, thus driving down user fees to levels consistent with zero economic profits. When the market is not competitive to this extent, the fees charged by intermediaries' rise above the zero-profit level, and generate illiquidity (i.e. the fees serve to elevate the transaction costs faced by users).

How do entry barriers in intermediation arise? There major routes can be isolated:

Broker-owned exchanges
The financial exchange, a central trading place where the order flow aggregates, is a major advance over primitive from of market organisation. However, when exchange are owned by brokers, the exchange has incentives to set up entry barriers which diminish the supply of brokerage services and elevate the profits of existing brokers. The extent to which this is present is easily measured by observing the seat price on the exchange. If seat prices (not including the value of any bundled real estate) are positive, then entry barriers exist. Market like NSE (in India) and OM (in Europe) are an interesting new variant, where the exchange is a corporate entity which has no incentives to introduce entry barriers into the brokerage industry. The simplest and most obvious impact of NSE upon India's equity market has been a three - fold reduction in the overt brokerage fees, owing to the 1,000 new brokerage firms which entered India's equity market as members of NSE

Club markets
The other major source of entry barriers is a consequence of counter party risk. Without a clearing corporation, the market reduces into a "club market" characterised by homogeneity of credit risk of the players. This generates entry barriers where an entrant cannot easily compete with the existing intermediaries. The credit enhancement service of the clearing corporate are hence essential to reducing entry barriers into intermediation.

Technology
Primitive technology also plays a role in generating entry barriers.

(a) If a physical trading floor is used, then there is a physical limit to the number of traders who can enter the floor. If trading floors are made extremely large, the breakdown in price- time priority (discussed on page 27) becomes acute. The largest physical trading floors in the world accommodate roughly 1,000 individuals.

(b) Some distributed dealer markets rely on a bank of telephone lines connecting together the dealers. If the N+1th dealer enters the market, he has to obtain N phone lines, which gets harder as N rises. The limitations of human information processing also play a role: it is hard for a trader to attend to more than a dozen telephones. This hinders entry of intermediaries, and reduces the speed with which information propagates through the market.

Modern computers and computer networking are vital to enabling the concept of a single market populated by an extremely large number of traders. Equity trading at NSE often involves above 3,000 traders connected into one single trading system; this is far in excess of the largest physical trading floors imaginable.

Agency Problems
The relationship between the user of a market and the intermediary is fraught with agency conflicts. We will first focus upon the broker-customer relationship. Brokers can elevate the costs faced by customers in many ways:

Customers could be charged prices which are different from those which the broker actually faced on the market. This is the old practice of gala which was once ubiquitious on India,s equity market.

Frontrunning can take place against the user. If a user wishes to buy 10,000 shares, the broker could first place an order for 1,000 shares on own account, then buy 10,000 shares for the user, and sell off the 1,000 shares on own account. Frontrunning would elevate the impact cost faced by users.

Allocation of trades is another contentious issue;users may fear that they are being allocated poor trades which were incurred by the brokerage firm in its own trading.

Market transparency is all-important in checking these abuses one common mechanism used in India's equity market is that of users being physically present before an NSE terminal, Placing orders. This eliminates the potential for gala, frontrunning and trade misallocation. In the future, similar relationships could be conducted over telephone, without requiring physical presence before the trading terminal, once the limit order book is accessible in realtime over the Internet.

This discussion of agency conflicts is based on the institution of a broker, who is a transactional intermediary between the user and an exchange (the repository of liquidity). The problem is much more ambiguous with dealers on distributed dealer markets. By definition, the dealer is a profit-maximiser who seeks to earn profit off trades against users. Ethical conduct on the part of the dealer is thus hard to define. The furore generated by gala on India's equity market is in sharp contrast with norms on a distributed dealer market: the explicit objective of a dealer is to charge any price that he can get way with (subject to competition from other dealers), a situation which is not unlike that of the BSE prior to automation.

The broker is supposed to allow users to transact at prices available on an exchange the brokerage fee is unbundled and showed explicitly as a charge to the user. Users can shop amongst alternative brokers and find the lowest brokerage fee (something which does not change intra-day), knowing that the execution that they obtain when an order is placed is protected by price-time priority, no matter which broker is selected. In contrast, the profits of a dealer are built into the price and there is no distinct notion of a brokerage fee. Users would need to shop amongst alternative dealers, seeking the best price. This is difficult given the intra-day fluctuations of prices in this sense, the relationship between the user and the intermediary is fraught with greater dangers in dealer markets than in broker markets.

The discussion so far has dealt with agency conflicts between the user and the intermediary. The picture is considerably complicated when we consider the agency conflicts between the dealer (the individual) and the organisation he works for (e.g. a bank). The same problems exist at the user organisation as well

A variety of abuses can surface at this level, whereby employees act in ways which are not in the interests of the organisation. The simplest abuse is the use of trade at unusual prices in order to achieve "transfer pricing" to move funds from one firm to another. The scam of 1991 is replete with examples of such transfer pricing (Basu & Dalal 1993). The basic issue at stake is the absence of strict price-time priority. As long as price-time priority is enforced, it is not possible to do transfer pricing and move profits from one place to another In distributed dealer markets, where there is no price-time priority, transfer is much easier.[4]

Better design of employer compensation is one of the crucial ways through which the Indian firms will obtain diminished conflicts of interest amongst their employees. To the extent that the distortions of India's labour market might take many years to eliminate, it becomes more important to have market mechanisms which are intrinsically safe through the use of anonymity and strict price-time priority.

Anonymity
Some market mechanisms support complete anonymity in trading, other market mechanisms have less anonymity. Anonymity influences market quality in myriad ways.

4Negotiated trades, "all or nothing" and "minimum fill "orders are all market practices on India's equity market which violate strict price –time priority.

The economists' ideal market is one where myriad economic agents compete without market power and strategic behaviour.Markets where anonymity is lacking often exhibit strategic gaming. This is exacerbated by the existence of "club markets" where only a few major players dominate. The ideal market" where only a few major players dominate.The ideal market should generate prices through supply and demand; the existence of strategic games on the market generates noisy prices.

The lack of anonymity can also lead to the formation of cartels. Episodes like the scam of 1991, or the short equeeze on the US treasury bills market (by Salomon Brothers and their associates in 1991) were only possible in the absence of anonymity (Mayer 1993)

Finally, the lack of anonymity enables a variety of ethics lapses, particularly the transfer pricing under market mechanisms which do not enforce price-time priority.

Counterparty risk
One conception an ideal Market involves electronic networks for payment of funds and securities, so that delivery and payment take place one millisecond after the trade. In this event, if one leg of the trade fails to supply funds or securities, the impact upon the Counterparty is Counterparty is minimal. Such a post-trade procedure is obtained using real –time gross settlement (RTGS) (Folkerts -Landau, Garber & Schoenmaker 1997).

In the Real world, all financial markets even spot markets, are forward markets to the extent that delivery and payment take place with a certain delay after the trade takes place. In This intervening period, both legs of each transaction face counterparty risk. If prices go up, the seller is tempted to declare bankruptcy, and vice versa. This risk of bankruptcy is a component of the transaction costs faced by users. On exchanges, counterparty risk sometime exerts a domino effect, where the faillure of one member leads to the failure of another, and so on, and the entire exchange is paralysed in a payments crisis.

The club market is one method through which counterparty risk is contained (though not eliminated). Only a small club of entities is effectively permitted to participate in the market, and each market participant often uses "counterparty exposure limits" against each other member.

The functioning and price discovery on the club market can be improved in two directions: (a) entry of members,[5] and (b) anonymity in trading. However, both these run afoul of counterparty risk An existing club would not wish to trade with members of inferior credit risk, and trade which did take place would involve a risk premium for the credit risk, thus generating noisy prices. An existing player would not be willing to trade in the blind against unknown counterparties, in an anonymous trading system.

The vital institution which markes unrestricted entry into anonymous trading possible is the clearing corporation. The clearing corporation performs novation, i.e. it interposes it self into every trade, buying from one leg and selling to the other, thus insulating each leg from a default on the other. The clearing corporation market safe trading possible between strangers. Its credit enhancement services ensure that traders on the market focus on liquidity and prices with out fear of default. The creation of the national Securities Clearing Corporation (NSCC) is a major milestone in the institutional development of India's securities industry.

Counterparty risk is also present in any institutional mechanism which gives traders access to borrowed funds and securities, which are (in turn) essential for enabling speculative long or short position. This counterparty risk is best addressed by interposing the clearing corporation into every lending transaction;the clearing corporation would borrow the securities from the lender and lend them to the borrower, thus shielding both legs from the risk of default of the other.The clearing corporation would be well equipped to know the full risk exposure of the member of the an exchange, including any borrowing/ lending activities, and can calculated margins appropriately.

5Madhavan (1992) shows that when entry into market making is free, the dealer market is equivalent to a continuous action market

Settlement
Trading culminates in the exchange of funds for securities. This is a step which is fraught with dangers. The scam of 1991 centred around settlement procedures in India's fixed income market India's equity market has been plagued by counterfeit and stolen certificates. Book entry procedures for settlement can dramatically reduce transaction costs. The two depositories in India, RBI's SGL and NSDL, are clearly sources of major gains in transaction cost and reduced complexities of supervision.

Enforcement and Prosecution
The ideal market would leave few opportunities for malpractice. If trading is anonymous with strict price-time priority, if users can ensure that brokers deliver the correct trade to them, and if clearing and settlement work flawlessly, then users face few risk from malpractice.

However, when anonymity is lacking, when market mechanisms lack strict price-time priority, when counterparty risk exists and settlement is vulnerable, when agency conflicts generate risk exists and settlement is vulnerable,when agency conflicts generate malpractices on the part of employees of finance companies, there is a vital role for the threat of punishment in reducing the incidence of malpractice, and thus reducing transaction costs on markets. Our experience in India of white collar malpractice reliably leading to swift imposition of punishment is (as yet) unsatisfactory.

It is remarkable to observe that effective enforcement and prosecution can enable traditional market mechanisms to work well even if intrinsic qualities like anonymity and price- time priority are lacking. The tradeoffs in reforms hence concern the relative ease of evolving market mechanisms or evolving strong enforcement and prosecution. If implementing enforcement and prosecution is easy, then traditional market mechanisms like the BSE floor or the distributed dealer market can be considered acceptable.If the human ingredients that go into enforcement and prosecution prove to be had to create to create, then new market mechanisms are the easiest path for market reforms. The electronic limit order book and the electronic call auction are uniquely attractive from this perspective.

Futures Trading
Futures trading supplements the spot market by increasing the incentives for economic agents to invest in research and information gathering about the future. The onset of futures trading is also often correlated with improved liquidity on the spot market .

Futures trading thus improves prices discovery and market efficiency. The development of futures markets is hence a tool for improving market quality on the spot market.

In many cases, If a spot market is functioning poorly but reforms of market mechanisms on the spot market are hard to implement, a strong futures market, can prove to be the focus for price discovery. This is particularly relevant when facing distributed dealer markets on the spot market where reforms of markets of market mechanisms prove to be politically infeasible. Since futures markets mostly do not exist, the opposition of existing market participants would not be encountered in the creation of healthy market mechanisms on the futures market. In this sense, if the spot market is considered to be beyond reform, the development of liquidity and price discovery centered around the futures market is a second opportunity for improved market quality.

CASE STUDIES

The Real Estate Market
Real estate is an area where a liquid and efficient market is intrinsically difficult to obtain. Each unit of real estate is different, hence liquidity is fragmented. The distributed nature of the market results in an absence of data about transactions, so that participants are not able to infer values from recent transaction prices. In an environment where unaccounted value, market participants are unwilling to even disclose prices. Of course, even when recent transaction prices are known, their usefulness is limited owing to the heterogeneity of traded objects.

In addition to these difficulties, transactions costs on the real estate market are driven to extremely high levels, owing to the 10% stamp duty (which one leg of the transaction faces). This can be interpreted as a one-way transactions cost of 5% Even if all other aspects of the real estate market were functioning well, this addition of a transaction tax of 5% would suffice to mark it a highly illiquid market.

We can obtain an intuition into the 5% transaction tax by visualising the impact of such a tax on transaction in the equity market The shares of Reliance, under such a tax, would achieve the liquidity that we presently observe (without this tax) of a company with a market capitalisation of under of under Rs.15 crore.

If the institutional development of financial markets is about reducing transactions costs, then transaction taxes are distortionary and should be eliminated. This is particularly relevant for the real estate market, which is intrinsically handicapped with poor price discovery.

The Equity Market
The experience of India's equity market from 1993 to 1996 is a success story of the role that an activist state can play in fostering the development of a liquid and efficient market.

1. The entry of 1000 new brokers at NSE resulted in a sharp drop in brokerage fees.

2. The use of VAST technology by NSE and now the BSE has spread equities trading all over the country, in contrast with the earlier concentration of the equity market in Bombay. VAST technology coupled with the open electronic limit order book market yields equal access to the "trading floor", regardless of physical location. This has given enhanced liquidity, by harnessing the order flow from all over the country.

3. The transition from floor –based trading to the open electronic limit order book generated a sharp reduction in market impact cost.

4. The transparency of screen-based order matching greatly greatly diminished the incidence of gala, the covert component of brokerage fees.

5. The creation of NSCC eliminated counterparty risk, and enabled an enormous growth in trading among members of heterogeneous credit risk.

6. The creation of National Securities Depository Ltd.(NSDL) would yield massive reductions in post –trade transactions costs on the equity market.

The equity market is now the best development financial market in India, and features superior institutional arrangement as compared with the equity markets of many OECD countries. For the further institutional development of the equity market, the agenda now is:

- Complete adoption of the depository.

- Integration between the "upstairs" market for negotiated trades and the main limit order book, thus pooling the liquidity. And price discovery of both markets.

- The introduction of equity derivatives.

- Transition out of the weekly futures market into a true T+5 spot market.

- The introduction of 'margin trading' facilities for borrowed funds and shares

- The use of market mechanisms other than the open electronic limit order book in order to produce better liquidity for small and medium capitalisation stocks.