Internal Policy Reforms and Evolution of Market Structure in an Emerging Economy: The Case of India[1]

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Abstract

This paper addresses the issue of how do domestic incumbent oligopoly firms, which functioned under the institutional conditions of protected markets and pervasive government intervention for a long period adjust to a relatively sudden change in market institutional conditions caused by market reforms in the Indian context. It focuses especially on the issue of response mechanism of local firms to competition from new entrant multinational companies (MNCs) and possible strategies of MNCs in penetrating the Indian market. It develops a conceptual framework by incorporating institutional elements into a simple sequential entry oligopoly model. This yields interesting insights into qualitative behaviour of firms in the post-reforms period. A few hypotheses drawn from the conceptual discussion are empirically tested on the basis of firm level panel data drawn from a set of Indian industries.

JEL Classification: L13, F12, F23

1   Introduction

In recent times, industrial structure in several developing economies has been subjected to competitive forces through rapid policy reforms. In India, as in several other developing economies, internal market reforms eliminated policy based entry barriers first and trade policy reforms such as devaluation and reduction of import tariffs were introduced. Industrial delicensing and liberalization of policies concerning entry of multinational corporations (MNCs) were initiated in the mid-eighties and trade policy reforms in the early nineties. The reforms in the capital and labour markets in India continue slowly.

Although there is still a lot of room for reforms, the reforms that have been implemented can be seen as a sudden partial shift in the market institutional conditions in the Indian industry. An understanding of the evolution of industrial structure in response to these reforms from a highly protected one to a more contestable one requires addressing of inter-related issues concerning technological, organizational and strategic behaviour of firms. This paper addresses the issue of how do domestic incumbent oligopoly firms, which functioned under the institutional conditions of protected markets and pervasive government intervention for a long period adjust to this shift. It focuses especially on the issue of response mechanism of local firms to competition from new entrant multinational companies (MNCs) and possible strategies of MNCs in penetrating the Indian market.

Following the recent theoretical developments in new institutional economics we could argue that the reforms have reduced or eliminated certain transaction costs but others still remain high in the Indian economy owing to the presence of inefficient market institutions (Williamson, 1985, North, 1990). For example, transaction costs associated with lobbying the government to obtain industrial licenses and permits were reduced. But several other market institutions remain inefficient causing high market transaction costs in labour and capital markets, information collection, and contract formulations and enforcement (Patibandla, 1998b). These institutional conditions in the post-reforms period (the period from the mid-80s), [2] provide certain relative advantages and disadvantages to incumbent local firms in relation to new entrant MNCs. To illustrate this

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[2]   See Ghemawat and Khanna (1998) for the illustration of the reforms introduced into the Indian economy.

observation, in entering emerging markets, MNCs possess significant advantages in superior technology and products, financial resources and highly advanced marketing and management skills. In standard oligopoly models, a low cost new entrant is able to take away market share from (or even eliminate) a high cost incumbent. But local market institutional conditions impose different levels of transaction costs to new entrant MNCs and incumbent firms, which yield more interesting qualitative behaviour of firms than the straightforward results of oligopoly models.[3] For example, incumbents' accumulated experience in dealing with the Indian labour markets, well-established dealer networks and distribution, mechanisms of contract formulation and enforcement could provide an advantage over new entrant MNCs in the short run. These different factors determine the qualitative behaviour of local firms and new entrants in the post-reform period. To briefly illustrate this, new entrants invest in promotional assets to acquire experience in dealing with local institutions and building and capturing distribution channels.[4] Local firms have to make efforts at discarding inefficient technological and organizational assets and acquiring more efficient ones in order to compete with new entrant MNCs.

For tracing out these different relative advantages and disadvantages of local incumbent firms and new entrant MNCs and their behavioural response in the post-reforms period of the Indian economy, I combine the simple oligopoly theory of sequential entry with Williamson's theory of asset specificity in the following section. A few of the propositions drawn from the theoretical framework are empirically tested on the basis of firm level panel data for a set of Indian industries in Section 3 of this paper.[5] Section 4 presents the concluding remarks.

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[3]   The general impression is that MNCs from advanced countries could eliminate high cost local firms in developing economies. But in countries like India, certain local firms could effectively co mpete with MNCs and several MNCs struggle to get a foot hold in the market. See Dawar and Frost (1999).

[4]   As the relative advantage of incumbents in terms of accumulated knowledge of the local market and institutional conditions would be with managers, new entrants attempt to attract them away from incumbents. A simple proof of this behaviour is that since the early nineties, quite a few organizations specializing in head hunting have come up in India.
    Recent press reports show that some of the new entrants attempted to capture the vendor firms cultivated by local firms by providing incentives for opportunistic behaviour.

[5]   In India, as in most developing economies, the policy reforms are about a decade old and the dynamics of market evolution is still subject to fluidity. A few recent empirical studies, as to the knowledge of the author, have examined the issue of evolution of markets in developing economies that have been subjected to rapid policy changes (Ghemawat and Kennedy, 1997 for Poland, Liu Lili, 1993 for Chile; Aitken and Harrison, 1993 for Venezuela). These studies look at the effect of policy reforms on market concentration and its explanation by

2   The Theoretical Framework

Incumbent firms are those that entered the Indian market prior to the reforms introduced in the mid-80s. New entrants are MNCs that have entered the Indian market after the reforms. [6] Firms are strategically interdependent in the domestic market and they compete with capacities. We take the domestic and export markets segmented through import protection. [7] On the basis of small country assumption, firms are price takers in the world market.

In sequential entry models, given all other things equal, a first entrant will always have an advantage over a late entrant. First entrant will be Stackelberg leader and the late entrant the follower firm (see Appendix 1). Furthermore, a first entrant can have low cost advantage because of learning economies that are internalized and also low demand elasticity owing to consumer inertia, switching costs in consumption and advertisement induced brand allegiance. Apart from this, the leader firm could undertake pre-emptive investments that constrain new entrants (Dixit, 1980). A new entrant can dislodge a leader firm by superior technology (lower cost of production and differentiated goods). This is pertinent in this context because incumbent firms are local firms in a developing economy and new entrants are MNCs.

Following from the above observation, market shares (and profits) of firms are determined by time of entry and relative production costs. Relative cost of production is a

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relative efficiency, R&D expenditure and advertising intensity, and the implication of entry of MNCs on the relative efficiency of domestic firms.

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function of technology and organisational efficiency. [8] Firms differ in technology level and organizational practices as incumbent firms are local firms in a developing economy and new entrants are MNCs from developed countries. We take MNCs to have lower costs owing to superior technology and organizational practices.

Relative production inefficiency of local firms was a result of operating in a highly protected Indian market with high degree of market power for a long period (Patibandla 1998a). The optimal response for an incumbent to the entry of more efficient MNCs is to sever itself from the past investments and adopt more efficient technologies and organisational practices. Williamson's concept of asset specificity can be used to elaborate on possible dynamic inconsistency in local firms' response. [9] Asset specificity is defined as the difficulty of the owner in redeploying the assets "to alternative uses and by alternative users without sacrifice of productive value" (Williamson, 1996, p.59). Asset specificity concept is developed by Williamson in the context of relational contracts to show how it could cause opportunistic behaviour by parties and high transaction costs. In the present effort, we take asset specificity in relation to specific institutional environment and its implications when there is an exogenous shift in the institutional environment. In principle, these assets can be considered use-specific rather than user-specific. The asset specificity is in human, physical assets and locational specific assets. The assets acquired by local firms in relation to institutional environment of the pre-reforms saddles their optimal response to entry of MNCs in the post-reforms period depending on the degree of stickiness of different assets.

Under competitive (contestable) market conditions, incumbent firms invest in capacities towards pre-empting entry (for example, excess capacity and sunk costs in

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Dixit's model). Under the institutional conditions of the pre-reforms period, Indian oligopoly firms were able to pre-empt entry by cornering industrial licenses and blocked competition from imports by investing significant human and physical resources in cultivating politicians and bureaucrats. This investment would not be useful for entry prevention in the post-reforms period. A major part of this specific asset becomes redundant in the post-reforms period.

To recapitulate, the optimal response of local firms to entry of MNCs is to replace some of these assets acquired in relation to the institutional conditions of the pre-reforms period with the ones that improve production efficiency. The following issue is where is the asset specificity higher and how sticky are these assets?

The organizational culture of Indian firms saddles them with specific human assets which can not be easily deployed into a more productive mode. Most Indian firms have been family run businesses with a highly centralized organizational structure. Economizing principle of designing organizational structure was not a major concern for Indian firms as they had access to highly protected and non-contested home market in the pre-reforms period. Lebenstein's (1966) theory of X-inefficiency shows lack of competition pressure causes cultivation of less efficient operation modes within the firm. Indian firms appeared to have fondness for creating too many hierarchies – part of the explanation can be drawn from the cultural factors.[10] In a typical Indian large firm, hierarchy levels range between 15 to 20 categories and within six or five broad categories, there are three or four sub-categories (Patibandla, 1998a). It is well established in the literature on economic organization that higher the centralization and larger the number of hierarchies, the more imperfect will be informational transfer and higher is the susceptibility to information overload at the top and consequent organizational inefficiency. On the technology front, most Indian firms were observed to have made minimal investment in R&D assets in the pre-reforms period (Lall, 1987). Generally, older vintage technologies were imported and minimal efforts were made in adapting them and building technological dynamism. Consequently, most Indian firms were far below the international technology frontiers.

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[10] Organizational policies and procedures tend to be derived from the early history of the organization (Kreps, 1999).

Local firms in India appear to replace technological assets with less difficulty than organizational assets. In response to new entrants, local firms adopted more efficient technologies through imports and increased expenditure on R&D.[11] My interviews with managers of two leading Indian firms in automobile industry and two wheeler industry suggests that organizational change among Indian firms is subject to high degree of path dependency and inertia.[12] The inertia and other institutional factors such as India's labour laws and trade unions constrain firms in firing or replacing employees,[13] make organizational change a difficult process. Secondly, as most Indian firms are family run businesses, owner-managers themselves are reluctant to change the prevailing organizational conditions and bring in decentralization (Business Today, 1999). A few local firms while starting new plants in the post-reforms period were able to adopt more efficient organizational practices but the employees in older plants resist the change. [14]

So far we have taken domestic market share of firms as a function of relative production efficiency and new MNCs firms have a cost advantage over local firms. Low cost is necessary but not sufficient for a new entrant MNC to penetrate the Indian market when we bring in the institutional elements. New entrants' knowledge of or experience in dealing with Indian market institutions is negligible in the beginning of entry into the Indian market. This implies, unlike in the one shot game of the sequential entry oligopoly model, it takes time for a new entrant to penetrate Indian market irrespective of its

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[11] Imports of capital goods and intermediate products were allowed more liberally than finished goods since the mid-eighties in India.

[12] Hannan and Freeman (1989) argue that `inertial pressures prevent most organizations from radically changing strategies and structures' (p.22). They argue that organizations respond relatively slowly to the occurrence of threats and opportunities in environment. They argue that most fundamental variations in organizations arise from the appearance of new types of organizations.

[13] The industrial dispute act (1976) in India stipulates that plants with more than 300 workers are required to take permission from the government before retrenching workers. New entrants can overcome this institutional constraint by setting up plants with number of workers less than 300. In other words, they have to adopt capital intensive technologies and generate lower employment. In several instances the policies to protect the workers works against workers under the Indian institutional conditions.

[14] The other source of inefficiency for Indian firms is in the location of plants (location specific assets). During the pre-reforms period, the government used the licensing policies and fiscal incentives to firms to locate in backward areas and those regions patronized by powerful political groups. In the case of public sector firms, the economically inefficient location was even more dominant because politicians made the decisions regarding location of plants. An example is the largest small car producer in India, Maruti Udyog. This firm was set up in the early 80s as joint collaboration with a Japanese firm (Suzuki) and the Indian government. Although the economic efficiency criteria was setting up the plant closer to the coast, political interference resulted the plant being located in the central part of Northern India. It became the largest small car producer through government protection. In the early 90s, the small car sector was opened up for new entrants which has led to entry of quite a few MNCs and new local firms. The new entrants could decide location of plants purely on the basis of economic efficiency criteria. Once the new entrants establish themselves, Maruti Udjog will have a disadvantage in the locational asset specificity for competing with the later entrants.

superior technology and organization. For example, replicating a local distribution network and building long term relationship with vendor firms may take years for a new entrant. Local firms have an advantage over new entrant MNCs in their experience in dealing with Indian institutional conditions that still cause high market transaction costs. For example, transaction costs associated with private economic agents dealing with government bureaucracy were reduced by the reforms but still remain high because government intervention in the market is still prevalent.[15] Local firms also cultivated long term contract relations with dealers and vendor firms, which may take years for a new entrant MNC to replicate.

These (exogenously given) relative advantages (disadvantages) of incumbents and new entrants determine their behavioural response in the post-reforms period. In other words, to compete in the post-reforms period local firms and new entrants have to acquire different types of assets. Local firms increase their investment in research and development (R&D) assets to enhance technological efficiency. As MNCs bring in advanced technologies developed and market tested in the international markets, they do not have to invest in RD in their Indian subsidiaries. If the relative technological and organizational advantage of MNCs can be dampened by their lack of well established distribution network and knowledge of Indian institutions in gaining market share, they invest more in the promotional assets (distribution, marketing and advertising). This task of acquiring experience of local institutions and building effective distribution network takes time. To realize the production advantage, new entrants have to produce at the minimum efficient scale. If sales in the Indian market at the initial stage of entry fall short of efficient scale, exports can be used to realize it in their initial period of entry (see Appendix 1 for this result).

While new entrant MNCs invest in promotional assets to build distribution networks and for gaining knowledge of local institutions, domestic firms increase investment in promotional assets (distribution and advertising) to safeguard their market shares in the face of new competition. To recapitulate, stickiness in some of the assets such as organizational structure dampens efforts of local firms in augmenting their production efficiency. Given this relative disadvantage, domestic firms could concentrate

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[15]Apart from this, the transaction costs imposed by Indian political system are still large which can be a source of relative disadvantage to new entrant MNCs.

on their relative strengths. For example, they make efforts at strengthening their distribution channels.[16]

3   Empirical Analysis

On the basis of the discussion of the previous section, we can bring out the following hypotheses for empirical verification.

Following from the sequential entry model:

1   *Market share of firms is a function of production efficiency[17] and promotional expenditure.*

2   *New entrant MNCs export more than incumbent for realizing minimum efficient scale.[18]*

Following from the discussion of the importance of institutional factors:

3   *For gaining market share, investment in promotional expenditure is more important for new entrant MNCs than for incumbents.*

4   *Production efficiency is a function of R&D expenditure. Investment in R&D assets is more important for incumbent local firms than for new entrant MNCs.*

The empirical analysis tests for the hypotheses on the basis of firm level panel data for a set of Indian industries. It examines behaviour of firms in the post-reforms period. Given the data set, we could not empirically test for some of the observations regarding organizational structure and inertia of Indian firms which require primary survey data. Nevertheless, the arguments are used for bringing out the underlying explanations for the empirical results. To illustrate, if the hypothesis (1) is true, local firms have to enhance upon technological and organizational efficiency to survive competition from MNCs. This requires not only getting rid of some of the assets acquired in relation to institutional environment of the pre-reforms period but also acquire different assets such as R&D.

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[16]   One of the executives of the leading domestic scooter manufacturer observed that before the reforms, the managers used to visit the dealers once in year. After the reforms, the visits increased to four times. Also see Dawar and Frost (1999).

[17]   Needless to say that this hypothesis is very obvious for competitive markets. But in the case of Indian industries, several studies had shown large (market share) firm size had nothing to do with relative production efficiency during the pre-reforms period (see Little et al, 1987; Patibandla, 1998a).

[18]   A few previous empirical studies had shown that in several Indian industries, multinational firms, in general, export at lower intensity than domestic firms (Panth, 1993). Except in those industries where labour cost advantage is significantly high (for example, electronics and garments), most MNCs firms enter Indian market to capture its growing home market.

3.1 Data

The empirical analysis is based on firm level panel data for a set of Indian industries. The time period covers 1990 to 1996. The data sources are the publications of the Centre for Monitoring Indian Economy. Six Indian industries in which there had been noticeable new entry of multinational firms were chosen. Firms with 50 per cent and above foreign equity are treated as MNCs. MNCs that had entered the industry after 1986 were taken as new entrants. The six industries are: 1. Motor cycles (M); 2. Television sets (TV); 3. Television sub-assemblies (TVSB); 4. Light commercial vehicles (LCV); 5. Electronics process control instruments (EPC); 6. Diesel engines industry (DISL)

The panel data analysis, as well known in the literature, has several advantages as it captures the dynamics of change because of inclusion of both cross-sectional and time-series dimensions. It utilizes information on both inter-temporal dynamics and individuality of entities being investigated which controls for the effects of missing or unobserved variables (Cheng, 1986). Fixed effects are controlled by dummy variables that separate firms in each sample. One can treat some of the variables as exogenous without violating the underlying theory. Furthermore, the dependent variables, i.e., exports intensity, domestic shares and also relative technical efficiency are limited to take values ranging from greater than zero and less than or equal 1. Exports also can take zero values. In such a case, OLS estimates will be biased. To avoid this, the Tobit method of estimation is used (Maddala, 1983)

3.2. Variables

TE   *relative production (technical) efficiency of firms in an industry, (see the Appendix 2 for a discussion of the measurement of technical efficiency).*

DS   *domestic market share of firms*

ES   *(*E_i/S_i*), export intensity of a firm (exports to sales ratio)*

RDS *(research and development expenditure/sales).*[19]

D   *dummy variable that takes value 1 for new entrant multinationals and 0 for incumbent firms.*

ADS *(promotional expenditure/sales): promotional expenditure includes expenditure on advertising, distribution and marketing.*[20]

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[19] Empirical research in transaction economics takes R&D expenditure as a proxy for physical asset specificity. See Shelanski and Klein, 1999.

V	value-added (production - raw materials)
L	salaries and wages as labour input
GFA	gross fixed assets
K	rental value of capital,, (GFA*r)+ DP, where TK is gross fixed assets, r is the bank lending interest rate, and DP is depreciation.
D1,	
D6	firm specific dummy variables that capture the fixed effects.

Table 1 provides the summary statistics of the industries. In the case of motor cycles, light commercial vehicles and electronic process controls and TV industries, all firms in them are included in the sample (the sample represents the population). In diesel engines and television sub-assembly industries, several private limited small firms exist. The CMIE provides data only for the public limited companies. The market shares of firms in these industries are measured by the total sales figures provided by CMIE for the corporate sector. Because of the omission of small firms, there will be a bias in the measurement of market shares.

Table 1 sheds some light on the arguments of the previous section. In most of the industries, local firms show higher average value of gross fixed assets which indicates that incumbents possess higher physical asset specificity. MNCs exhibit far lower R&D assets than the industry average which provides support to the argument that R&D assets are more important to local firms than for new entrant MNCs. In the case of promotional assets, MNCs show higher average expenditure in M, LCV, and DISL industries. The nature of promotional expenditure differs in different industries. In case of consumer goods industries such as TV and Motor cycles both direct advertising and distribution network are important where as in capital goods industries such as LCV, DISL and EPC, distribution assets are more important. The present variable includes both the dimension of promotional expenditure.

3.3 The Results

Table 2 presents the econometric results for Hypotheses 1 and 3 – the explanation of domestic market shares by TE and ADS. The estimated coefficient of relative technical

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[20] This variable can be taken to capture Williamson's characterization of brand name asset specificity- intangible assets reflected in buyers' perceptions.

12

efficiency variable (*TE*) is positive and statistically significant in most cases which implies higher production efficiency is crucial for gaining domestic market share.[21] This implies that local firms can survive in the long run only by enhancing production efficiency through technological and organizational restructuring.

The estimated coefficient associated with the promotional expenditure variable (*ADS*) is statistically significant only in the cases of TV and TVSB industries and in the later case it has a negative sign. One plausible explanation for the negative sign in the case of TVSB industry can be drawn from Sutton's (1991) argument of endogeneity of advertisement expenditure by firms which causes a two-way causality between market shares and advertisement expenditure. In the post-reforms period, firms that lose market shares might be the ones that increase advertisement expenditure. The interactive variable, D. ADS is introduced to test for Hypothesis 3. The estimated coefficient is statistically significant in three cases and out of these three it has a positive sign in case of M and EPC industries. The positive sign of the coefficient implies that new entrant MNCs undertake larger investment in promotional expenditure than local firms for penetrating the Indian market.

Table 3 presents the results for Hypothesis 3. The results show statistically significant positive explanation of relative production efficiency by RDS variable. The statistically significant positive sign of the estimated coefficient associated with the dummy variables (*D*) in all the cases implies that new entrant multinational firms exhibit higher production efficiency than incumbent local firms. The negative sign of the estimated coefficients associated with the interactive variables (*D*RDS*) supports the conjecture that research and development expenditure is more important for incumbent local firms to realize higher *TE* than for new entrant multinationals.

Table 4 presents the results for Hypothesis 2 – the explanation of firm level export intensity for the six industries. The signs of the estimated coefficients of variable *(D)* shows that except in the case of motor cycles, new entrant MNCs have higher export orientation. The motor cycle industry is an interesting case as it is one of the few industries that had been subjected to the entry of new MNCs since the mid-80s (early in the policy reform period) and has been subject to severe competitive pressures. As mentioned in the previous section, the industrial policy reforms such as removal of

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[21] Owing to multi-colinearity among dummy variables (capturing the fixed effects), we have used those

industrial licensing policies and liberalizing of entry of MNCs of the 80s led to increase in domestic demand by removing capacity constraints. New entrants such as Honda and Suzuki have been able to become major players within a short period. Apart from this, the brand recognition of Honda and Suzuki in India is high which helped them to establish themselves in the Indian market quickly. The growing domestic market makes entry and growth of new firms easier. As a result, new entrants did not have to depend on exports in the initial years for capacity utilization. As the new entrants cut into the market share of incumbents, incumbents would be pushed to augment their exports to extend market size and realize optimum capacity utilization.[22]

4 Conclusion

The industrial and trade policy reforms implemented in India since the mid-80s can be observed as a sudden partial shift in the institutional conditions. The reforms caused entry of quite a few multinational firms into Indian industries. The general view is that MNCs from developed economies with superior technology and marketing practices should walk over high cost local firms in developing economies. But evidence shows that certain local firms in countries like India have been able to compete effectively with MNCs and quite a few MNCs struggle to get a foothold in the market. The explanation for this comes from the importance of local institutional conditions. This paper has brought out a conceptual framework by making use of simple sequential entry oligopoly model and the theory of transaction costs for tracing out different relative advantages of incumbent local firms and new entrant MNCs. These different factors determine the qualitative behaviour of local firms and new entrant MNCs in the post-reforms period in the Indian market.

Local firms acquired physical and human assets specific to the institutional conditions of the pre-reforms era. The optimal response of incumbent firms to entry of MNCs in the post-reforms period is to sever themselves from inefficient assets and acquire those assets that enhance their production and marketing efficiency. Differing

14

degrees of stickiness of the assets saddle this response and determine the behaviour of incumbent firms. Local firms make efforts not only towards overcoming the disadvantage but also strengthen their prevailing relative advantage in their experience with local institutions and distribution network. On the other hand, new entrant MNCs that possess superior technology concentrate on acquiring promotional assets that enhance their experience with local institutions and build and capture distribution networks.

Several previous empirical studies had shown that larger firm size in Indian industry in the pre-reform era was not determined by higher relative production efficiency. The empirical results of this paper have shown that relative production efficiency of firms determine their market share which implies a shift of Indian industry into a more contestable market in the post-reforms period. As the market reforms in India progress, long run survival of local firms depends on their ability to get rid of inefficient assets and acquire new assets that enhance organizational and technological efficiency. We can observe that Indian firms have been able to acquire new technological assets with relative ease by increasing imports of capital goods and investing in R&D but organizational change is subject to higher degree of stickiness.[23] In this context, one way local firms could buy out time in facing competition from MNCs is concentrating on their relative strengths in their cumulative experience of local institutions and on their well established distribution net work.

In the case of new entrant MNCs, acquiring experience with local institutions and building distribution network takes time. In order to realize optimum capacity in the immediate period of their entry, they could resort to exports. There is reasonable empirical support for this proposition in this paper.

The observations in this regarding organizational stickiness of local firms are based on qualitative information. The examination of organizational change in local firms in the context of market reforms in the emerging economies could be interesting area for further work and it requires detailed primary survey data. This also raises the question of whether there is a single best organizational structure in the context of increased global competition or firms in different countries could still differ on the organizational practices and face up to the process of globalization.

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[23] Qualitatively speaking this observation is true in the case of Japanese industries in the present. Despite their technological competence, organizational rigidities appear to put Japanese industries in a relative disadvantage in the present.

References

Aitken, B., A.Harrison, and G.Hanson, 1994, Spillovers: Foreign Investment, and Export Behaviour, Working paper 4967 (NBER).

Aitken, B and A.Harrison, 1993, Does Proximity to Foreign Firms Induce Technology, Working paper (World Bank).

Business Today, 1999, Fathers, Sons and CEOS, cover story, June.

Caves, R.E.,1996, Multinational Enterprise and Economic analysis (Cambridge: Cambrige University Press).

Cheng. H, 1986, Analysis of Panel Data, (Cambridge: Cambridge University Press).

Cornwell, C., P.Schmidt and R.Sickles, 1990, *Production Frontiers with Cross-sectional and Time-series Variation in Efficiency Levels*, Journal of Econometrics 46, pp.185-200.

Dawar, N and T. Frost, 1999, *Competing with Giants: Survival Strategies for Local Companies in Emerging Markets*, Harvard Business Review, March-April, 119-129.

David, P. 1985, Clio and the Economics of QWERTY, American Economic Review, Papers and Proceedings, 75, 332-337.

Dixit, A, 1980, *The Role of Investment in Entry Deterrence*, Economic Journal 90, pp.95-106.

Dosi, G., D.Teece, and S.Winter, 1991, *Toward a Theory of Corporate Coherence*, in Dosi, G., R.Giannetti and P.A.Toninelli, (eds). Technology and the Enterprise in a Historical Perspective, (Oxford: Oxford University Press).

Farrell, M., 1957, *The Measurement of Production Efficiency*, Journal of Royal Statistical Society, A 120, no.3, pp.253-281.

Ghemawat, P and T.Khanna, 1998, The Nature of Diversified Groups: A Research Design and Two Case Studies, Journal of Industrial Economics, XLVI (1), 35-61.

Ghemawat, P and R.E.Kennedy, 1997, Competitive Shocks and Industrial Structure: The Case of Polish Manufacturing, (Harvard Business School).

Hannan, M.T, and J.Freeman (1989) Organizational Ecology, Harvard University Press: Cambridge, MA.

Kreps, M.D, 1999, Markets and Hierarchies and (Mathematical) Economic Theory, in Glenn R. Carroll and D.J. Teece (eds), Firms, Markets, and Hierarchies, (New York: Oxford University Press).

Lall, S.,1987, Learning to Industrialize, (London: Macmillan Press).

16

Lebenstein, H, 1966, Allocative Efficiency vs. X-efficiency, American Economic Review, 56, 392-415.

Little, M. D., Majumdar, D. Page J. M., 1987. Small Manufacturing Enterprises: A Comparative Study of India and Other Economies, (Oxford: Oxford University Press).

Liu Lili, 1993, *Entry-exit, Learning, and Productivity Change: Evidence from Chile*, Journal of Development Economics, 42, pp.217-243.

Maddala, G.S., 1983, Limited Dependent and Qualitative Variables in Econometrics, (Cambridge:Cambridge University Press).

North, Douglas, 1990, Institutions, Institutional Change and Economic Performance, (Cambridge: Cambridge University Press).

Patibandla, M, 1998a, *Structure, Organizational Behaviour and Technical Efficiency*, Journal of Economic Behavior and Organization, March, vol.34 (3), 419-434.

Patibandla, M, 1998b, Economic Reforms and Institutions, Economic and Political Weekly.

Patibandla, M, 1996, Exports and Liberalization: A Simple Industrial Organization Approach, Indian Economic Journal, January- March, 100-104.

Panth, M., 1993, *Transnational Corporations and the Manufacturing sector: A case study of Indian Industry*, Indian Economic Review, January-June.

Pitt, M and L.Lee, 1981, *The Measurement and Sources of Technical Efficiency in the Indonesian Weaving Industry*, Journal of Development Economics, 9, pp.43-63.

Shelanski, H.A., and P.G. Klein, 1999, Empirical Research in Transaction Cost Economics: A Review and Assessment, in Glenn R. Carroll and D.J. Teece (eds), Firms, Markets, and Hierarchies, (New York: Oxford University Press).

Sutton, J., 1991, Sunk Costs and Market Structure: Price Competition, Advertising, and the Evolution of Concentration (Cambridge: MIT Press).
Williamson, O.E, 1996, The Mechanisms of Governance (New York: Oxford University Press).

Williamson, O. E, 1985, The Economic Institutions of Capitalism (New York: The Free Press).

Appendix 1

The Sequential Entry Model

The linear inverse home market demand function

$$P = a - b \, (X) \tag{1}$$

$$X = x_i + x_j$$

$$P \geq P_w \, (1+t)$$

x_i refers to domestic sales and x_i^* refers to exports of firm i. P_w is the world market price and t is the tariff rate on imports and P refers to the domestic market price. In equilibrium, $P > P_w$. The profit function of firms facing protected domestic market and competitive export market is:

$$\prod_i = P() \, x_i + P_w \, x_i^* - c_i / 2 \, (x_i + x_i^*)^2 \tag{2}$$

$$\prod_j = P()x_j + P_w \, x_j^* - c_j / 2 \, (x_j + x_j^*)^2 \tag{3}$$

C_i is cost parameter. The premium on domestic sales can be viewed as arising from the condition that in equilibrium $P > P_w$: a firm having higher share of the protected domestic market will have higher profits. By equating the first order derivatives with respect to exports to zero, we obtain

$$x_i^* = (P_w / c_i) - x_i \tag{4}$$

$$x_j^* = (P_w / c_j) - x_j \tag{5}$$

The follower firm j takes x_i as given and solves;

$$\prod_j = (a - bx_i - bx_{jj})x_j - c_j / 2 \, (x_j + x_j^*)^2 \tag{6}$$

$$\partial \prod_j / \partial x_j = (a - bx_i - 2bx_j) - c_j \, (x_j + x_i^*) = 0 \tag{7}$$

From equation *(5)*, we know that $x_j + x_j^* = (P_w / c_j)$. By substituting this into equation *(7)*, we get;

$$x_j = (a - P_w - bx_i)/2b \tag{8}$$

Equation *(8)* is the reaction function of a new entrant who believes incumbent's capacity choice does not change to its capacity decision, a la Cournot. As the incumbent firm behaves like a Stackelberg leader, the reaction function of j enters the profit function of firm i. By solving for the profit function of firm i, we obtain:

$$x_i = (a - P_w)/2b \tag{9}$$

By substituting equation (9) into equation (8), we obtain the equilibrium home market sales of the follower:

$$x_j = (a - P_{w\,i})/4b \tag{10}$$

The exports of firms in equilibrium:

$$x_i^* = (P_w/c_i) - (a - P_{w\,i})/2b \tag{11}$$

$$x_j^* = (P_w/c_j) - (a - P_w)/4b \tag{12}$$

$$a > P_w$$

The implications of asymmetric advantages across domestic firms and new entrant MNCs on the their competitive behaviour can be traced by the following cases: (1) asymmetry in time of entry and $c_i = c_j$, ;(2) asymmetry in time of entry and $c_i < c_j$ and (3) asymmetry in time of entry and $c_i > c_j$.

In Case (1), from equations *(11)* and *(12)*, we can observe that new entrant has higher export orientation than incumbent. The leader *i,* by the sheer advantage of entering first, is able to capture a higher share of the protected domestic market. When the incumbent's (the leader) costs are sufficiently lower than the new entrant's ($c_i << c_j$), however, the outcome can be reversed. The reason is as follows. When the follower has high costs, its domestic market share is lower than the leader's (this would be true even in a Nash-Cournot setting). Consequently, the follower is less restrained in expanding its sales at home as the perceived impact on the domestic price is correspondingly lower. The follower becomes more like a perfectly competitive firm, and hence less incentive to withhold sales to prop up the price. This could lead to the follower having a lower export orientation than the leader.

Even in Case (3), where new entrant has lower costs than incumbent firm, it has a lower domestic market share and exports more than incumbent. The intuitive explanation for this is that it takes time for a new entrant to dislodge an incumbent in the domestic market. Exports, at the initial stage, help a new entrant to realize minimum efficient scale in production. This outcome may be more applicable to a new entrant MNC because the relative advantage of intangibles associated with export markets (international markets) is with MNCs rather than domestic new entrants. Asymmetries in production costs across firms have implications only on exports but not on domestic sales. The explanation is that as firms face oligopolistic competition in the protected domestic market and are price

19

takers in the export market, exports are undertaken to restrict domestic supply at higher price as a part of the price discriminatory behaviour (Patibandla, 1996).

In Case (3), if incumbent's costs are sufficiently higher than a new entrant such that it can operate only in the domestic market which means its marginal cost of production is higher than the world price, the new entrant will have higher domestic market shares. This point is illustrated in Figure 1. In the Figure, *MR* refers to marginal revenue in the domestic market, P_w refers to the world price, C_i and C_j refers to the marginal costs of the incumbent and the new entrant respectively. If *Ci* intersects MR in the AB range and C_j is lower to C_i, the new entrant will have higher domestic market shares.

Figure 1

a

P

Ci   Cj

B   Pw

MR

0

Q
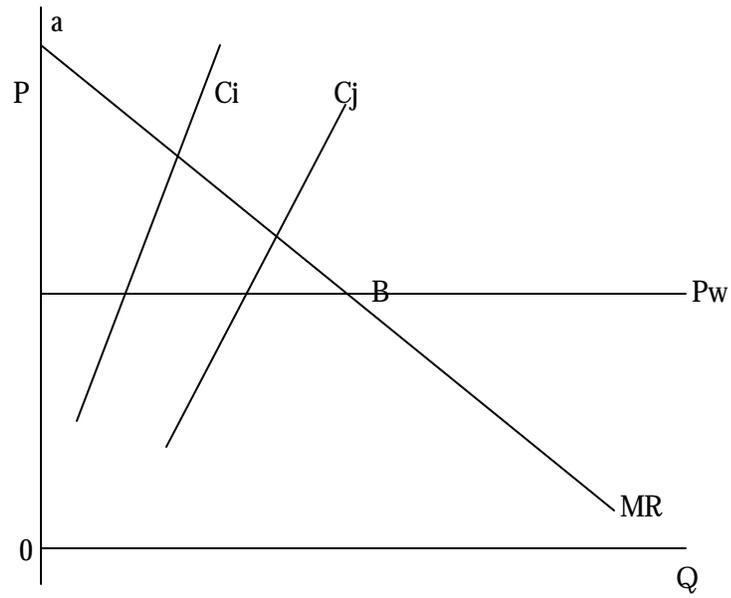
Appendix 2

Measurement of Production Efficiency

Firm level efficiency indices are measured on the basis of Farrell's (1957) production frontier approach. Recent developments in the efficiency frontiers literature show the derivation of plant-specific time-variant technical efficiency indices by using panel data. The production function defines the maximum possible output a firm can realize for a given level of inputs employed and the technology level. Farrell's method shows relative technical efficiency as the extent of deviation of output realized by a firm (for a given level of inputs employed) from the best practice in an industry.

The panel data techniques of measuring efficiency overcome several well-known shortcomings of the estimates based on cross-sectional data (see Pitt and Lee, 1981). The panel data capture cross-sectional information of firms in an industry and also repeated observations over time for a given firm. This, in turn, overcomes the shortcomings of strong distributional assumptions about composed error terms. Furthermore, this method does not impose the assumption that technical efficiency is independent of factor inputs.

By taking the Cobb-Douglas functional form, we can represent the technology as follows:

$$Y_{it} = \alpha + \beta \ X_{it} + v_{it} - u_i \tag{13}$$

where Y_{it} is the observed output, X_{it} is a vector of K inputs: i index firm (i=1....N): t index time (1....t). a and ß are the unknown parameters to be estimated. v_{it} represents random errors. u_i (u_i ³ 0) represents technical inefficiency with one-sided distribution which means that output must lie on or below the frontier.

The random error v_{it} is assumed to be identically and independently distributed across firms and time with identical zero mean and constant variance. It is also assumed to be un-correlated with factor inputs. The other error component, u_i, is assumed to be independently and identically distributed across plants with mean m and variance s_m^2.

We can rewrite the above equation (13) as:

$$Y_{it} = (\alpha - u_i) + \beta \ X_{it} + v_{it} \tag{14}$$

Cornwell et al (1990) introduce a parametric function of time into the production function to replace the coefficient of plant-specific technical efficiency. The functional form is:

$$Y_{it} = X_{it} \ \beta + \alpha_{it} + v_{it} \tag{15}$$

22

where:

$$a_{it} = w'_{it} \, 0_i, \quad w' = (1, t, t^2), \quad 0_i = (0_{i1}, 0_{i2}, 0_{i3})$$

and other variables are as defined before.

The model allows the rate of productivity to vary over time and firms. The production function can be estimated by OLS, which is referred to as the `within estimator' in the literature (Krishna and Sahota, 1991). The residuals of the estimated function are used in deriving the efficiency indices. OLS estimation of the production function can be justified in terms of the Zellner-Kmenta-Dreze proposition that, under the assumption of maximization of expected profits, the explanatory variables and the disturbance term are un-correlated. However, a'_{it} is not consistent as T goes to infinity if factor inputs are correlated with firm and time specific effects. Under these conditions, the consistent estimators of a'_{it}, as time goes to infinity, can be derived by estimating equation (3) using OLS directly (see Liu, 1993). The production function is estimated by the two input Cobb-Douglas functional form with value-added as output, and L and K as inputs. Table 5 provides the econometric results for the estimated production function for the six industries.

Table 1: Summary Statistics

Industries		Averages: New MNCs				Averages: Total Industry		
	Total number of firms	Number of New MNCs	GFA	ADS%	RDS%	GFA	ADS%	RDS%
M	5	2	191.8 (58.6)	3.36 (0.005)	0.002 (0.002)	1160 (355)	3.0 (0.003)	0.44 (0.002)
LCV	7	2	108.0 (73.0)	4.2 (0.7)	0.04 (0.05)	3117 (1190.9)	2.5 (0.2)	0.8 (0.3)
TV	7	2	21.44 (11.09)	3.0 (0.9)	0.05 (0.02)	394 (176)	4.5 (0.7)	0.15 (0.16)
TVSB	4	2	61.3 (49.7)	5.8 (1.4)	0.06 (0.06)	329 (280)	6.9 (2.1)	0.02 (0.02)
PC	5	2	24.40 (7.0)	0.42 (0.19)	0.07 (0.03)	290 (150)	1.1 (0.1)	0.3 (0.2)
DISL	5	2	39.14 (16)	1.6 (0.7)	0	307 (113)	1.17 (0.16)	0.46 (0.3)

Figures in the parentheses are standard deviations.

Table 4: Explanation of Export Intensity

Industry	TE	D	D_1	D_2	D_3	D_4	D_5	Log-likelihood
M	0.08 (3.60)**	-0.02 (1.80)**	-0.007 (0.55)	6.003 (0.22)	-	-	-	87.54
LCV	0.02 (0.90)	0.039 (2.20)*	0.08 (4.80)*	0.04 (2.30)*	0.07 (3.90)*	0.08 (4.60)*	0.04 (2.64)*	98.80
TV	0.02 (0.51)	0.02 (0.60)	0.02 (0.80)	-0.02 (6.67)	0.009 (0.31)	0.22 (7.80)*	0.007 (0.25)	73.71
TVSB	0.008 (0.20)	0.061 (2.05)*	0.028 (0.91)	-6.05 (1.96)*	-	-	-	42.00
EPC	0.02 (0.65)	0.03 (1.21)	0.04 (2.20)*	-0.01 (0.60)	0.10 (3.80)*	-0.003 (0.24)	-	73.00
DISL	-0.25 (2.08)*	0.11 (1.90)**	0.25 (3.60)*	0.39 (4.90)*	0.16 (2.10)*	0.19 (2.90)*	-	44.60

$D_1...D_5$ are firm specific dummy variables
Figures in parentheses are `t' values
*Significant at 0.01 level. ** Significant at 0.05 level

Table 2: Explanation of Domestic Market Shares

Industry	TE	ADS	D	D. ADS	D_1	D_2	D_3	D_4	D_5	Log-Likelihood
M	0.16 (3.70)*	-0.33 (0.61)	-0.013 (0.60)	0.4 (1.7)**	0.48 (21.00)*	0.03 (1.80)**	-	-	-	74.00
LCV	0.078 (5.38)*	0.30 (1.07)	-0.03 (3.3)*	0.67 (0.98)	0.11 (8.30)*	-0.04 (3.80)*	-0.0003 (0.03)	0.43 (44.00)	0.17 (19.00)*	131.00
TV	0.05 (1.97)*	0.60 (2.12)*	0.004 (0.2)	-0.3 (0.5)	0.23 (14.00)*	-0.01 (0.66)	0.48 (31.00)*	0.007 (0.49)	0.611 (0.87)	106.00
TVSB	0.10 (4.30)*	-1.30 (3.80)*	0.08 (1.4)	-8.1 (2.3)	0.78 (29.00)*	0.008 (3.10)*	-	-	-	48.00
EPC	0.03 (1.30)	-0.04 (0.08)	0.04 (2.13)*	31 (2.1)*	0.03 (2.50)*	-0.01 (0.37)	0.74 (33.00)*	0.03 (1.50)	-	85.00
DISL	0.11 (1.50)	-0.50 (0.37)	0.02 (1.31)	-12 (2.3)*	0.39 (11.60)*	0.35 (10.00)**	-0.004 (0.15)	0.015 (0.38)	-	63.40

Figures in parentheses are t-values.
* Significant at 0.01 level.
** Significant at 0.05 level.

Table 3: Explanation of Relative Technical Efficiency

Industry	RDS	D	DXRDS	D_1	D_2	D_3	D_4	D_5	Log-Likelihood
M	42.00 (3.50)[*]	0.82 (4.40)[*]	-51.00 (1.40)	0.42 (2.9)[*]	-0.14 (0.67)	-	-	-	-13.80
LCV	18.70 (4.20)[*]	0.50 (6.20)[*]	-105.00 (1.47)	0.46 (5.66)[*]	0.56 (6.01)[*]	0.08 (0.67)	0.42 (4.40)[*]	0.44 (5.30)[*]	10.16
TV	29.00 (2.30)[*]	0.32 (1.40)	-135.00 (0.32)	0.40 (4.60)[*]	-0.029 (0.11)	0.25 (2.70)[*]	0.22 (2.60)[*]	0.22 (2.50)	4.01
TVSB	126.00 (3.70)[*]	0.57 (4.00)[*]	-	0.79 (7.12)[*]	-0.15 (0.80)	-	-	-	-4.50
EPC	3.90 (0.41)	0.84 (13.00)[*]	-86.00 (1.70)[**]	0.38 (6.20)[*]	0.64 (13.00)[*]	0.016 (0.20)	-	-	25.00
DISL	-2.00 (0.30)	0.18 (4.00)[*]	-	0.28 (6.40)[*]	0.43 (5.80)[*]	0.36 (8.40)[*]	0.42 (6.80)[*]	-	29.00

Figures in parentheses are t-values.
[*] Significant at 0.01 level.
[**] Significant at 0.05 level.

Table 5: Estimated Production Function (Log V)

Industry/ Independent Variables	M	TV	TVSB	LCV	EPC	DISL
Constant	2.03 (3.4)*	326 (2.48)*	223 (1.0)	323 (2.9)*	152 (0.68)	177 (0.75)
t	-4.4 (3.5)*	-6.98 (2.45)*	-4.7 (1.0)	-6.9 (2.98)*	-3.2 (0.67)	-3.84 (0.75)
t^2	0.024 (3.6)*	0.037 (2.44)*	0.02 (1.0)	0.037 (2.97)*	0.017 (0.67)	0.021 (0.77)
Log L	0.16 (2.13)*	0.34 (2.7)*	0.69 (2.42)*	0.60 (5.7)	0.63 (3.4)	0.70 (5.2)*
Log K	0.77 (11.5)*	0.58 (4.1)*	0.37 (3.27)*	0.30 (2.3)*	0.30 (1.7)**	0.23 (1.6)**
R^2	0.96	0.89	0.84	0.96	0.96	0.89
F	254	95	26	332	186	61

Figures in parentheses are t-values.
* Significant at 0.01 level.
** Significant at 0.05 level