

**Engaging the New Global Interlocutors: Foreign Direct
Investment and the Transformation of Tamil Nadu's
Automotive Supply Base**

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Introduction:

Economic integration and the growing movement of capital across international borders has dramatically altered the sources of local industrial growth. As multinational firms look toward regions across the world for relocation opportunities to lower costs and enter new markets, policy makers are vying for these investments as tools to generate jobs, boost exports, and upgrade local skills and technical capabilities. The automobile industry is one example of a sector that has seen massive flows of foreign direct investment in emerging markets such as China, India, Eastern Europe, and Latin America in the past decade. The changing nature of the global automotive industry, with growing consolidation among major assemblers and their increasing reliance on a tight tier of internationally mobile primary suppliers has however, complicated the realisation of these hoped for developmental benefits in host countries. In Brazil, for example, intensifying competition between assemblers' global supply sources and domestic component producers, according to some accounts, is squeezing established domestic auto-industry players out of the top segments of the value chain into other sectors (such as telecommunications) (Fluery 2000). Similarly, in South Africa, follow sources have seriously challenged local supply capabilities in the auto industry (Barnes 2000). A key question that emerges then, from the perspective of host countries is: when and under what conditions does foreign direct investment in key manufacturing sectors, like the auto industry, lead to improved regional competitiveness, employment and growth, and why do some regions and countries do better than others in this process. What public policy lessons does this generate for governments struggling to manage the impact of liberalization and internationalization on their regional industries.

This paper uses the Indian automobile industry as an illustrative case, and draws on field-based evidence from the Indian state of Tamil Nadu to examine how the formation of new global linkages is transforming the region's automotive supply base.

The Automobile industry: What are the mechanisms of diffusion and spread?

The automobile industry has long been regarded as a core manufacturing sector that has the potential to drive national economic growth and the development of technological capabilities through its powerful backward and forward linkages and the localization of high value added manufacturing processes. As many researchers have pointed out, two key policies have traditionally been the core instruments that governments have used to support their auto-sector: national ownership¹ and protection (tariff protection, limits on the imports of second hand cars and so on) (Kaplinsky 2000, Humphrey 1999). The globalization of trade and investment in the auto industry has seriously undermined these instruments, and has generated an urgent debate in many developing countries about alternative strategies for nurturing domestic industry. Even as policy makers continue to avidly court new investments in the auto-sector, and regard the export and technology induced expansion of the auto-sector as an important driver of national economic growth and technological capability, many critics have raised the specter of the “dying local firm” (Barnes and Kaplinsky 2000). As the global auto assemblers that are locating in developing countries rely overwhelmingly (in the first instance) on follow sourcing as a procurement strategy, or on a small group of locally-based first-tier suppliers with global reach, researchers argue that existing supplier networks tend to get progressively undermined and marginalized (Humphrey 2000). While there is ample evidence to support this view, there is also evidence that under some conditions, new technical and organizational knowledge does spread to local firms far beyond the first tier in quite innovative ways. Why and under what circumstances does FDI in the auto-sector of emerging markets sometimes lead to better diffusion and wider developmental effects on local firms and sometimes not?

¹ Not necessarily government-ownership, but there has long been a view that building a nationally owned supply and production base is important to anchor the benefits of a growing automobile production capability within the national economy, instead of leaving the ownership of this key sector in the hands of multinationals.

The Tamil Nadu Case: How is the upsurge of recent Foreign Direct Investment in the region's auto-industry re-shaping local supplier networks and employment?

Over the last six years the auto industry in Tamil Nadu has been transformed dramatically by the arrival of three major global automotive assemblers: Ford, Hyundai and Mitsubishi (via a licensing agreement with Hindustan Motors); and a significant number of their follow sources. From being a domestically oriented auto-components hub servicing mainly non-passenger car vehicles (trucks, buses, tractors, Jeeps), till the early 1990s, Tamil Nadu now finds itself a player in the export strategy of its new global assemblers. These shifts are rapidly restructuring Tamil Nadu's automotive supply base. This is both an opportunity as well as an area of concern for local policy makers. Tamil Nadu's auto-components industry has been one of the state's strong suits. It has provided a substantial share of industrial employment, output and income to the region since the turn of the century. As new assemblers arrive, and bring their own suppliers, what will become of the existing suppliers?² Who is able to survive and who is not? What does field-based evidence from the ground tell us about the ongoing processes of adjustment?

Summary of Findings:

The paper finds that while the arrival of large auto assemblers, and their first tier follow sources has led to an intense struggle among leading local component suppliers to decide "what to do and who they want to be," and many smaller firms have indeed gone under, a surprising mechanism seems to be infusing new dynamism into the region's supply base, and especially among small and medium sized firms. The medium sized follow sources of the auto-assemblers are voraciously forming alliances across sectoral lines with a diverse group of domestic small and medium firms. More than the assemblers, it is this expanding tier of medium sized (overseas) firms that are the most potent mechanism for the diffusion of new and innovative production technologies

² A key trend in the past 10 years has been the integration of the new foreign assemblers with the global operations of their parent companies. While most assemblers entered the Indian market as joint ventures—e.g., Ford-Mahindra, GM-Birlas, Fiat Auto India, by the late 1990s, most of them had acquired majority (equity) stakes and in the bulk of cases become wholly owned subsidiaries of their parent companies. This trend is apparent across the country (as table 3 below shows), and gives the foreign assemblers enormous control over supply decisions, local content questions and vendor development.

among domestic producers. Yet, ironically, this process is proceeding on the margins of government policy. Official policies remain focussed primarily on the large assemblers. The paper argues that re-focusing innovative and strategic policy focus on this growing group of medium sized firms might be important to strengthen and sustain the diffusion and spread of new knowledge that is already occurring. By tracing how the emerging supplier networks interact with the regional government's past policies, and the resurgent politics of federalism in India, the paper illustrates how the political links of a new group of policy makers with the national coalition has created space for the implementation of such policy interventions.

The paper also finds that the question of ownership remains an important one, but is harder to answer. In recent years, many analysts have pointed to the case of Mexico and the US to question how important it really is to build a domestic base of suppliers and assemblers in the auto industry for countries to benefit from the sector's FDI-driven employment and output increases. Some (e.g., Thun, personal communication) point to the Mexican experience with Volkswagen and argue that even though VW had built a large local supply base for 30 years as a result of the Mexican government's local content rules, it did not ensure the viability of this base in the long run. Local Mexican suppliers got almost entirely pushed aside when VW decided to introduce new models and focus on exports in response to the financial crisis in Mexico in the 1990s, and the Mexican government was not in a position to make policy demands on VW to do things differently. So they ask, how important is it for host country development to build a domestic supply base, when the large players have the power to make sourcing decisions across the globe?

This paper argues that the evidence from the Tamil Nadu (and Indian) case shows that it is not inevitable that global assemblers located in a developing country market will necessarily choose global sourcing over local supplier development. In fact, it argues that employment and income are not the only benefits of a dynamic high-end industry such as automobiles; but that the diffusion of technology and new knowledge that this

industry has the potential to generate, can move the region as a whole up the learning and technological frontier through crucial impacts on human capital development across related industries. Government policies—past and present—have an important role to play in this regard. In Tamil Nadu, for example, the suppliers who are doing very well are those who have been able to continually upgrade their technical capacity through joint ventures or technical tie-ups with overseas partners much before the recent arrival of multinational auto assemblers. These suppliers, like the TVS and Rane groups have also made strategic use of government policies and are now quite well positioned in the field of global suppliers. A similar story emerges from the Chinese case (Thun 2000). Ownership does matter, but the processes through which it leads to effective host country development are far from straightforward or predictable. The nature of domestic policy and the strength of local institutions are important variables.

Section 1:

Global shifts in the Automobile Industry and emerging linkages with the Indian market

This section discusses recent trends in the global auto sector, and then locates the emerging structure of the Indian and TN automobile industry in this context. The second part of this section focuses on the policy history of the Indian auto sector, and how it has played out in the Tamil Nadu case. The findings of this section of the paper are organized around three phases of the Indian auto-industry: the pre-Maruti phase of protection, licensed technology and state ownership of production; the “Maruti” phase, or the first episodes of openness; and the post-Maruti Phase of liberalization and intensified FDI.

The changing nature of the global auto industry. The automotive industry is often regarded as a classic example of a producer-driven commodity chain (Gereffi 1994). Characterized by large scale, capital intensive, technology-driven product-cycles, producer driven commodity chains are networks of global production where small numbers of final assemblers (such as Ford, GM, Toyota, Honda, Volkswagen, Benz and

BMW) dominate the industry's main markets. The power—and profitability—of these integrated final producers comes from their control over volumes, technology and command over the chain's forward and backward linkages, including product design, product specification, brands and R&D networks. Below the top assemblers are many layers of parts-suppliers located in different production sites and linked to the assemblers in various degrees of closeness.

Three key trends, by now well documented in the literature, have shaped the current structure of competition in the global automotive industry; and the same trends have created new opportunities for competition for developing country auto-firms. The three elements of global changes in the auto industry over the past fifteen years are : **(1) consolidation** in the top tiers of the industry through a wave of mergers and acquisitions in the 1980s and 1990s; As a result, the same set of key players dominate markets worldwide; **(2) A tighter tiering of suppliers** that has heightened the importance of a small group of design-capable and global first tier suppliers, while segmented the rest into contract manufacturers and lower-tier subcontractors has radically transformed customer and supplier relations, as well as employer and employee relations. And **(3) a growing and relentless focus by the primary assemblers and their first tier suppliers on benchmarking suppliers down the chain on the basis of “cost, deliverability, and quality”³** has shifted the basis for determining who gets to participate in the global supply base of the automotive industry away from price, to an increasingly complex and learning-intensive criteria.

Many developing countries are therefore facing a dilemma: despite the rising spate of FDI flows into their Auto sectors, they are finding that the domestic automotive supply industries that they nurtured for decades behind tariff walls during the import substitution period are not necessarily automatic beneficiaries of supply linkages with the new assemblers arriving on the domestic scene. Most domestic auto producers now have little global space within which to compete. On the one hand, remarkable productivity increases among global auto producers (and their first tier suppliers) in recent years, and

³ In the words of a senior Visteon executive.

rapid advances in technology and design (in “frontier” areas such as new materials, new processes, and information technology) have made it much harder for indigenous auto-makers in developing countries to catch up with the industry’s technology frontier, or compete in international markets without equity partnerships with the major players or their key suppliers.

On the other hand, four features stemming from these very changes, have created new opportunities for a subset of well performing automotive firms in developing countries as they seek new niches in the global market. These four features are: **(a)** The rapid **infusion of information technology** in the design, management, and bidding for components globally; **(b)** the concurrent rise in the importance of **logistics** on the supply side; **(c)** the growing importance of the **aftermarket** (domestic and international) in sales and profitability; and **(d)** the **global sourcing networks** that key assemblers are bringing with them as they establish local manufacturing bases. A few examples below illustrate their significance to the ongoing structuring of TN’s auto industry.

The growing importance and diffusion of information technology across Tamil Nadu’s manufacturing sector, for example, has made it easier for non-proximate regional suppliers in the auto-components sector to work closely with distant customers and their multi-locational networks. These technologies not only help diffuse information between customer and suppliers more rapidly—and where the infrastructure exists—more cheaply; they are also altering strategies of monitoring, accountability, and exchange. Several Tamil Nadu based suppliers reported bidding for contracts for small, standard parts on-line and receiving RFQs from global buyers [like GM (US) and others] on line.

A growing number of firms in several sectors—including automobiles and textiles in Tamil Nadu—have realized, often having initially backed into it, that logistics (including warehousing support) is a key comparative advantage for well-linked and globally aware Indian companies. Some textile companies have used logistics as a point of entry into equity ownership in first world countries like Italy (Tewari 2000). Likewise, logistics support played a key role in helping TVS, a large Tamil Nadu based auto-

components firm, win General Motors' global contract for radiator caps recently. "We won GM's global sourcing contract, and managed to reduce costs by 2% every year for four years," while still making a profit and at the same time earning GM's global quality award for four years in a row" (Interview, March 2000). Clearly, the Radiator cap is not a very engineering intensive item, but it is an area where logistics is key: "consistent quality, low defects, low costs, prompt delivery and warehouse support—a combination of this helped lower costs," and a lot of these issues went into their winning GM's international quality award a year after they won the initial contract (Interview, Chennai March 2000).

Similarly, despite concentration at the top, the aftermarket (domestic, regional, international), and access to global sourcing platforms of large OEMs are emerging as important avenues of growth for developing country suppliers who have the capacity to upgrade themselves. We will see later in the paper how some of Tamil Nadu's frontline firms have positioned themselves to gain incremental access to both these avenues of demand.

Clearly, these opportunities are not available to all firms. The challenge for developing countries, however, is that only a very small tier of cutting-edge, highly capable local firms has succeeded in capitalizing on these spaces to form independent linkages with global assemblers and suppliers in the automotive sector. How can host country governments increase the spaces within which more local firms can acquire the skills and knowledge to compete in this new landscape, or at least to not go under? Let us first examine the recent evolution of the Indian auto industry.

The old and new geography of India's Automobile Industry and Tamil Nadu's place in it

In Indian automotive circles, Tamil Nadu has often been referred to as the "Detroit of India" Its long tradition of engineering-based manufacturing included a strong reputation as one of India's key auto-component hubs. The first major component

producer in Tamil Nadu—India Pistons—was set up in 1949 under technical collaboration with Britain’s Associated Engineering Group. Soon after, the Standard Motor company established a car manufacturing facility in Chennai in the early 1950s , only to close down fifteen years later. Between then and mid-1990s when Chennai became host to Ford, Hyundai and Mitsubishi (-HM), a prestigious tier of frontline component and heavy vehicle producers dominated the region: Ashok Leyland, the TVS group, The Amagations group, Brake India, Wheels India [state others], India Pistons among others.

Till 1981, India’s automotive industry was only loosely linked to the rapidly evolving global automotive supply networks. Focused mainly on the domestic market, Indian companies were linked with foreign producers largely through licensing arrangements in the passenger car, two-wheeler and heavy vehicle (tractors, trucks and buses) industry. As the wave of consolidations and the adoption of new “lean” management techniques in the 1970s and 1980s transformed the automotive industry globally, India’s auto producers remained sheltered behind tariff walls where licensing policies determined who entered the industry and how much they could produce. Government policy restricted passenger-car production to less than 25,000 cars a year, and emphasized instead the production of utilitarian vehicles such as buses, trucks, tractors, jeeps, heavy vehicles through its licensing policies.

This changed, starting in the early 1980s, when Japan’s Suzuki Motor Company first entered the Indian automarket (in partnership with the Government of India) and began to produce over 75,000 cars per year, single-handedly increasing the country’s total car-production capacity four-fold. Between 1982, when Suzuki arrived in India, and 2000, 16 international auto-makers have established equity stakes in the Indian auto-market, either as joint ventures or by establishing wholly owned subsidiaries (and in one case through a licensing agreement) [See Appendix]. Today, with licensing dismantled, and tariffs on components down to an average of 35%, total installed capacity in the Indian passenger car industry is 1.4 million vehicles annually (Acma, Humphrey 2000:256).

This growth is concentrated in three centers that define the emerging geography of the auto-industry nationally: the Northern region around Maruti-Suzuki, Daewoo and Honda; the Western region in the Maharashtra-Pune-Nasik-Baroda belt dominated by Telco, Mahindra, Fiat, and GM, and the Southern region in Tamil Nadu with Ford, Hyundai, Mitsubishi and Toyota (in Karnataka). The Eastern region, in West Bengal, continues to be the production site for Hindustan Motor's Ambassador car, but is regarded in industry circles as the "old" center, where the culture of hierarchy around the production of a fifty year old model holds center stage. Yet, it is important to note, that with each wave of new competition in the auto sector, HM has been forced to revise—and upgrade—the quality of its traditional car. After a dip in sales, the Ambassador currently sells at about 2-2,500 cars a month (Gupta, HM Interview, 2000). The government's policy of using the Ambassador as its official car, as well as the car's popularity in the taxi-cab industry have played a key role, no doubt, in shoring up its viability.

The regional nature of the domestic automobile industry led to a division of labor of sorts in the structure of the components industry. Different regional specializations emerged in each of the four regions where the auto industry initially developed. In the "old" center in the East, Hindustan Motors's integrated plant spawned a small but important aftermarket and repair industry, but also a handful of large input suppliers—mainly Paints (ICI), Tires (Dunlop) and batteries (Exide) in addition to wheels and fastener manufacturers. In the West, the specializations in the components sector included sheet metal parts, mechanical cables, small (non-essential) components and some engine making expertise. In the South, Tamil Nadu's component industry was influenced by Ashok Leyland and developed an expertise in electrical components, engine components, filters, wheels, pistons and chassis components. Maruti-Suzuki's arrival in the North changed this structure, by developing a new crop of core suppliers in the area of sheet metal parts, seats, glass components, and tooling. Secondary electrical components continued to be sourced from Tamil Nadu, and Paint from Japan and Bengal.

Policy history and changing supplier relations

To understand how these supplier relations have changed in the last decade, it is useful to look more closely at the policy regimes that shaped the key stages of the Indian auto industry and its production relations.

India's automotive policy history can be divided into roughly three regime: (I) the Protectionist, Import Substitution phase from the late 1950s to 1981; (ii) The Maruti Era-- or the early episodes of modernization from 1982 through the early 1990s; and (iii) the Post-Maruti Phase from 1991 through the present period. (ii) By some accounts, a fourth, WTO phase will commence in 2002 when all quantitative restrictions will be removed and the only measure of restriction that the government can offer is a structure of bound tariffs.

(1) The Import Substitution Phase 1950s-1981: Four features characterized this early phase of the auto industry. (1) *Limited number of players and high degrees of government control:* Firms needed licenses to operate, and the government restricted capacity in all product lines—e.g., trucks and heavy vehicles for Telco, Buses and trucks for Ashok Leyland, passenger cars for Hindustan Motors, Premier, and Standard. (2) *Small volumes, slow growth, slow technical change.* With no new players coming into the market, and little direct competition, volumes grew very slowly; and technology changed very slowly. Most technology was licensed—as in the case of Fiat and Premier Auto, Standard Auto and even Ambassador-Morris. And production was characterized by high degrees of vertical integration. (3) *Confrontational industrial relations, and hierarchical, arms-length supplier relations.* The big manufactures used the “exit” strategy of supplier development, and encouraged the development of a large number of suppliers to bid down prices as low as possible. “Buyers thought cultivating multiple, competing sources of supply was the cheapest way to buy components” (Rane interview, March 2000). (4) *Focus on the domestic market.* High tariff barriers and import restrictions led to minimal exports, and a primary focus on the domestic market.

This period has two effects: it created a large **skilled, technical workforce** in the centers and regions where government allowed investments; and it contributed to the rise of a **regional auto-parts industry**—which was unlicensed and came up indigenously around the production centers. Tamil Nadu was one of the key sites of both these developments. In sum then, the ISI period laid the basis for a local automotive industry, but did so in a way that produced supply-side rigidities, kept demand restricted, and the low-volumes gave producers few incentives to introduce new technologies, designs or upgrade product quality.⁴

(2) The Maruti-Suzuki era and the first episode of modernization: The arrival of Suzuki Motor Company in 1982 and its establishment of a 50% Joint venture with the Government of India (Maruti Udyog Ltd -- MUL) shook up the domestic auto market and brought three key changes: (a) With public pressure to make this JV succeed, the government gave Suzuki quite a free hand. It introduced the concept of *volume production* and economies of scale to local car manufacturers as opposed to capacity fragmentation encouraged by the policy of licensing. (b) MUL introduced the industry to a *new approach to quality*. Maruti “brought in a sea change in the industry’s approach to quality by introducing modern elements of manufacturing, such as continuous improvement and zero defect manufacturing, rapid product development and the introduction of new models, especially in the small-car segment. MUL introduced 3 models in a decade. And finally, (c) it *transformed vendor relations*. MUL pioneered the introduction of Japanese-style supplier relations in India—even though they remained limited to MUL, this exposed firms to new practices: especially the tiering of suppliers, single sourcing, long-term supplier relations, JV’s at the first tier level, and a tight localization of key suppliers around the assembler, and massive transfer of technology and continuous technical assistance to its key suppliers.

⁴ As noted, while passenger car technology was acquired through technology licensing agreements with foreign producers, such as Fiat, Standard and the Morris, indigenous development of technology characterized mainly heavy-vehicle manufacturers—Telco and Ashok Leyland for trucks, and Bajaj for two-wheelers.

MUL laid the basis for the current structure of production by creating, around itself a small circle of high quality suppliers, who virtually monopolize key operations today (Sheet metal work, die-casting, tool and die making, headlamps, glass, sub-assemblies, painting, and so on.). And it created for the first time, **greater flexibility in supply** despite being located within a rigid policy environment, and despite unionization, which has long been used by critics as a scapegoat for poor performance. It is important to note that **protection from competition** was key to Suzuki's decisions to expand production substantially during this period. It came in under tariff protection, with tight restrictions against imports of fully assembled old or new cars, and eventually came to dominate the passenger car market with 75% market share. Together with the previous period, this new phase deepened the tri-regional locational structure of automotive production in India.

(3) The Post-liberalization phase: Although the arrival of MUL introduced modern management systems in Indian industry, the diffusion of these techniques across industry has only occurred with the wider liberalization that followed in 1991. In the early 1990s, the government made several changes in its auto sector policy. It lowered general tariffs to an average of 40%, with 35% tariffs on components, and much stiffer restrictions on the import of fully assembled cars. It abolished the old licensing policy and permitted FDI with 100% equity. As mentioned above, 16 new assemblers including Ford, GM, Fiat, Daewoo, Hyundai, Honda, Toyota, Mitsubishi and Benz have located in India in the past decade. While most assemblers view their Indian investments as part of a larger Asia strategy, the size of the domestic market was a key draw for all (even though unrealistic initial predictions of large volumes by McKinsey never materialized, and led to some disappointment and cutbacks of capacity, including the withdrawal of one assembler—Puegeot).

It is important to reiterate the distinct nature of India's liberalizaion strategy. Unlike many other countries that have liberalized in recent years (such as Brazil, Argentina, South Africa), India's liberalization has been less directed toward opening up

trade than at dismantling internal restrictions on production, such as licensing and limits on MNC equity stakes (Humphrey 2000). Even while tariffs have fallen, they remain high by international standards (40%). Similarly, local content policies remain firmly in place, with assemblers required to localize 50% of content within 3 years, and 70% within 5. As a result, it is the *domestic market* that has become the site of intensified competition –with growing competition in every product line across the automotive supply chain. What impact has this had on the existing suppliers in the key production centers, and in particular, in Tamil Nadu?

Section 2:

Different Models of Insertion: 3 assemblers, 3 different patterns of localization

This section focuses on interviews conducted with fifteen auto-component firms and three multinational auto assembly firms to analyze the emerging pattern of component sourcing, exports and vendor development in the region. The main emphasis in this section is on showing that there is important variation within the sourcing strategies of key assemblers (Hyundai vs. Ford vs. Mitsubishi). As some researchers have pointed out in other contexts, it is likely that these variations of strategy reflect different national models of the assemblers⁵ (i.e., how they carry out production in their home countries) and are interacting quite differently with the institutions in Tamil Nadu's auto industry---especially with respect to training, skill development, technology transfer, R&D and the timing/sequence of consolidating stakes in the domestic market vs. exports. This comparative portrayal sheds important light on how the government can better understand and interact with the key players of Tamil Nadu's auto industry.

Varying localization patterns

One of the most surprising findings in the field was the stark differences in the way in which Tamil Nadu's three new OEMs have inserted themselves in the local

⁵ See the work of Teresa Lynch (1999 and ongoing) and others at the Industrial Performance Center, MIT for detailed arguments about the influence of national organizational models on firm choice and supplier strategy.

environment. All three have located in industrial estates around Chennai. The locational distance from the city, from the airport, and from the Ports is roughly the same for all three. They all are in the same state, and hence the same policy environment. They face the same local government, the same state politics, and the same industrial culture. They tap into the same workforce, and the same local supplier pool. They all confront the same physical and institutional infrastructure, and since all have arrived during the same 5 year window, they face quite similar external costs as well as opportunities. Why then are their localization strategies so different?

Part of the reason their strategies are different, we will see, is because of who they are. HM-Mitsubishi is a licensing-technical assistance agreement between Mitsubishi (MMC) and Hindustan Motors. There is no equity from MMC. HM's tentative and small scale operation that relies almost entirely on the assembly of components imported from Japan exemplifies the challenges faced by a defensive, domestic 'globalizer.' Its current strategy appears to be one of "wait-and-see." Hyundai is the 10th largest producer of cars in the global market, but carries little of the global glamour and reach of the top tier suppliers such as Ford, GM, Honda and Toyota. Its target is to produce a cost-effective base in Asia (outside Korea) to both export as well as supply the subcontinent with small and mid-size cars that provide "good value for money." It runs a tight, no-frills operation in Chennai and has succeeded in capturing the largest market, after Maruti, in the small-car segment (with its highly popular Santro) by emphasizing safety (diagonal braking systems), fuel efficiency, customized design for Indian road and climate conditions, Euro-II compliance, and a 'commitment to stay.' Its primary objective was to reduce costs of imports and build a local base as soon as possible. Ford is the 'star' among the three, and one with the largest global reach and presence. It has a global sourcing network that both its counterparts lack, and gives the impression that it can afford to not be in a hurry. It looks as much to building its global platform, as to establishing itself in the Indian market, even though it is serious about both. Its corporate strategy is that of a classic global, corporation. It is striking that both the "serious" players in Tamil Nadu—Ford and Hyundai—do not have large operations in China, or any other Asian market (except for Korea in Hyundai's case, and Australia in

the case of Ford. Mitsubishi, by contrast has a successful presence in the Chinese market. How reflective is this Asia presence (or not) of the localization decisions of these assemblers is a question that is open for future exploration. Let us, instead, take a closer look at their different strategies of local insertion.

- 1. Hyundai: Fully integrated plant;** largest investment outside South Korea; only 7 of 70 suppliers are Korean follow sources; almost all suppliers are single sources
- 2. Mitsubishi: Fully based in imported components from Japan;** Less than 40 suppliers are local, accounting mainly for hardware, packaging and non-critical components.
- 3. Ford: Mixed strategy—of imports and local production;** A large manufacturing operation; but operates heavily on basis of sourcing designs and platforms from its global operations. Several key parts are imported; some produced locally; On paper, the firm has 75% local content, but the local content is very shallow. Follow sources and JVs account for 84% of value of all out-sourced parts.

At one end of the spectrum lies **Hyundai**, with its fully integrated plant. The plant imports only steel sheets from Korea and East Asia (and one or two components), and manufactures everything else locally—inhouse and with local suppliers. Of its 70 suppliers, only 7 are Korean joint ventures (follow sources). The rest include local and MNC suppliers already located within a 50 km radius around the plant.

At the opposite end from Hyundai is Hindustan Motor's highly import-intensive production of the **Mitsubishi Lancer**. All key components are imported and assembled locally. Recently the firm has localized 30% of the vehicle's value, but most are simple, non-critical components.

In the middle is **Ford**, with its long term commitment to build a domestic and export platform from its Chennai base, but after a tentative start, the plant still relies heavily on its global sourcing platform. It has brought its key follow sources to Tamil Nadu (e.g., Visteon), and has relied heavily on its Fiesta platform and on its European design division to introduce its first two models in India—Escort and Ikon. It is only slowly, and after some initial miscues (e.g. the failure of its Escort) that Ford has begun to gradually localize production (eventhough its officials point out that it always planned to, but after measured scrutiny of local capabilities). Even this strategy is mixed. On the one hand, it relies heavily on existing suppliers of Maruti-Suzuki as well as its own follow sources, even while seeking out new suppliers from the top tier of local suppliers to service its *global* operations. Within two years of locating in Chennai, Ford has made presentations at ACMA (the local chapter of the Auto-component manufacturers Association) about its intent to develop suppliers for its global sourcing platform. It has already identified twenty “global” suppliers from ACMA’s top tiers, and has begun working with them on detailed projects (Interview, March 2000). Furthermore, even while India is a potential export platform for Ford, its structure is that of a diversified company: Ford has localized three other operations in India: Ford Credit (Bombay), The Ford Business Service Center that focuses on Accounting in Tamil Nadu, and of course, it has brought its fully owned subsidiary, Visteon to Chennai.

These differences are reflected in the cost structure of the companies, as well as in their ability to attract suppliers. Mitsubishi’s costs are the highest, given its import intensity, the existing tariffs on imports as well as fluctuations in the value of the yen. In addition, having entered a high-end segment of the market, Lancer is plagued by low volumes. This has made it difficult for HM-Mitsubishi to attract suppliers, especially in products that require heavy tooling costs. Hyundai, by contrast has the lowest cost, and the most cost-effective operation. It has huge volumes relative to Mitsubishi (5-6000 cars per month, relative to Mitsubishi’s few hundred), and has put pressure on itself to localize as many operations, as soon as possible (even if within a handful of long-term suppliers). Its large investment signals long term commitment, and it has been able to attract many high-calibre Indian and MNC –JV suppliers. Ford’s costs remain high, but its deeper

pockets, long term commitment to develop its Indian operation, as well as the draw of its extensive global supply platform has allowed it to pick and choose as it builds its local supply network.

Section 3:

The Supplier Response

As these new supply networks emerge, it might seem that local suppliers are at the mercy of large assemblers. But evidence shows that they are less powerless than they might appear. Several of TN's mid- and top-tier component suppliers have been very strategic about which assemblers they build relationships with. In this decision, the power of image (of commitment), and intent of the assembler is critical.

As one well-established local first tier supplier said, "at first we thought we should try to supply every car manufacturer that located in India, or in Tamil Nadu; but now we are more discriminating." (TVS interview, March 2000). They, and other suppliers now look at volumes, the size and nature of the assembler's investment, and at the price range of the automakers car before approaching them. Luxury cars will inevitably have small volumes in the price-sensitive Indian market. ("India is still a small-car market." Therefore, vendors are reluctant to go with assemblers producing high-end cars. Ford has a mid-size car at Rs. 4-5 lakhs, but the Lancer at 8.5 lakhs has very limited demand. Few suppliers interviewed expressed any eagerness to work with HM-Mitsubishi unless they introduced new models were to increase volumes. Indeed, Ford's Escort, which was discontinued after it sold only 14,000 units in three years, had similar problems.

Suppliers also talk about underlying tooling costs and who will bear these costs in making decisions about which suppliers to work with. As another supplier noted, "The key here is to decide who to latch on to and who to avoid. If the customer wants the

vendor to invest in tooling, then you have to look at volumes. From Hyundai's investments—of 1000 crore, it is clear that they are serious investors, the volumes are clearly there, and the plant is long term.” (Interview). So vendors are willing to make investments in tooling. Similarly with Ford, several local firms including TVS, Rane, Clayton and others, have already made investments in tooling for gear shifters, and other items.

By contrast, HM-Mitsubishi had to bear the cost of all the tooling that went into the development [and production] of its harness system by a local MNC-JV supplier. Ultimately, the cost was passed on to the customer through Lancer's markup, but suppliers were unwilling to bear the cost. “You can't participate with every manufacturer. There are limitations to how many products you can invest in developing, and there are interim costs, and concerns about the longevity of the customer's own investment and their order...It is clear from the way they have invested that Ford and Hyundai are here to stay. Cannot say the same about Mitsubishi and Honda” (Interview, March 2000).

Similarly, as more time has passed, and as the unrealistic initial expectations of India's domestic demand have died down, and with it the confidence of some of the global assemblers, local firms and the new assemblers have got to know each other's potential better. As the chairman of one large Tamil Nadu based component company said, the arrival of the OEMs has gone through at least two phases. “At the outset, when McKinsey projected large volumes [of passenger car consumption in India,] the car manufacturers rushed in, along with their own suppliers.” Ford brought Visteon, GM brought Delphi to make their own specialized components. Phase two arrived a few years later when those projected volumes did to materialize. “They took a closer look at the reality of the volumes, and took a closer look at the Indian suppliers. Now they have settled down and are using Visteon and Delphi where there are gaps in the existing supply base. They are now interested in getting to know us” (Interview, March 2000).

The Smallest Suppliers

The above story, of finding that there is some room to maneuver among the top tiers of the local supply base is reassuring from the host country point of view. But as one government official in charge of small industry development in Tamil Nadu put it, the smallest producers face very different pressures. “I haven’t seen any Ford or Mitsubishi knocking on the door of any small supplier” (Gandhi interview, March 2000). Local component manufacturers’ associations (such as ACMA) also admit that many of the smallest firms have, or are likely to drop out of the industry. What does a focus on small, local component producers in the context of the transformations taking place in the leading local firms (such as TVS, Wheels India etc) tell us about the prospects of Tamil Nadu’s smallest auto suppliers? The findings are decidedly mixed.

First, far from absorbing and lifting up most existing suppliers, the dramatic increase in passenger car production capacity (from 25,000 annually in the early 1980s to over 1.4 million today) has instead led to a rationalization and consolidation within the domestic supplier firm sector. As in many other parts of the world, larger suppliers are taking over smaller ones. The TVS group, one of the largest domestic component producers, recently took over the local water-pump producer, Autolec. Other large producers have dropped low value added activities such as casting and moved toward consolidating higher value added items (Rane group). Especially large first tier suppliers who are engaged in direct business with OEMs are following the lead of their customers and developing single source supply links down the chain. One supplier to Ford said how it had gone from over 60 suppliers [for a particular component] to thirty in a year, and now is down to ten. This has meant that the less “efficient” small producers are being dropped just as public sector efforts have moved away from shoring domestic firms to encouraging exports. This clearly hurts the weakest players.

But a key finding here is that although a large number of small firms are falling behind, there are important and quite simple lessons to learn for policy makers about

what is working in the cases where small firms do succeed in upgrading their production systems. Simple, innovative programs of exposure, support, and training by the government could go a long way in diffusing these “successful” processes more widely. Here the developmental potential of the middle tier firms (both MNC-JV suppliers as well as local firms that supply to OEMs) clearly stands out. First, JVs are making voracious links with other sectors of the economy to expand their output, defray risk, and take advantage of new opportunities in the region. For example, some of Hyundai’s JV suppliers are diversifying into making tooling for a variety of customers (other than Hyundai); some want to expand into new components geared primarily toward the aftermarket; yet others talk of diversifying into toys, other labor intensive consumer goods for which there is massive demand in East Asia. These mid-sized firms are overwhelmingly turning toward quite small, very local producers to develop their new supply base. Some of these firms have recently lobbied SIPCOT, the TN agency that operates several highly successful auto industrial estates to carve out new plots and serviced sites on the existing estates to help bring their smallest (8-10 worker firms) closer to their own operations. Others have lobbied the government for water, power and other connections for their small suppliers. The most important form of assistance, however, is the training that some of the middle tier suppliers are giving to their smallest firms. This includes financing consultancies, to assigning their own engineers to work with their small suppliers on their factory floors. This area of customization of training is one where local government officials could complement what individual firms are already doing and diffuse it more broadly to poorly performing firms.

A second striking issue concerning the changing links between large domestic suppliers of OEMs and their second and third tier subcontractors is that a number of quite progressive **organizational and human resource** changes forced on to first tier suppliers by the OEMs have diffused surprisingly broadly across firms of different sizes that are directly or indirectly linked into OEMs or MNC –competing domestic networks. Local firms (such as TVS, Rane, Clayton, India Rings, Wheels India, even HM-Mitsubishi) who cannot match the salaries that Ford, Visteon, and Hyundai are paying their hires are adopting a wide array of progressive and paternalistic human resource strategies to build

worker loyalty. To create a “culture” of loyalty and satisfaction—personal involvement, blunting of hierarchies, better welfare policies—retirement, health care, bonuses, rewards, training, and family-friendly policies. The challenge to government is to set up institutional arrangements that will help diffuse these lessons to firms that are outside these successful circles.

One way in which the state could assist these small firms is by helping link them with the aftermarket. As in many auto markets, the aftermarket has emerged as critical to the growth strategy of Indian component producers. Currently, some of the larger suppliers are positioned to be players in this vast market. Firms like Rane see the aftermarket (domestic) as providing over 30-60% of the total sales of most component producers. Especially in India, “road conditions and usage is such that there is a lot of replacement of parts. The geography is dispersed, and there are a number of small dealers. A lot of players in India who say they are interested in OEM labels, are really interested in the aftermarket” (Rane Interview, March 2000). The government, together with industry groups could help form associations or “clusters” of small firms who can be helped to upgrade and improve their production capabilities with an eye toward capturing some of the stakes in the aftermarket. While several of the MNC-JVs also see the aftermarket (domestic and overseas) as an important market to capture [e.g., Visteon expects 10% of its sales to be in the after-market], many others [such as Hyundai’s JV suppliers as well as Hyundai “cannot [see themselves] compet[ing] with local producers in the aftermarket (domestic)” (Sung Woo, Interview). At a time when dominant strategies regarding this vast market are still forming, the government has an important opportunity to help improve the productive capabilities of small local suppliers, and steer them—or groups of them-- toward it.

The state’s changing role in the development of Tamil Nadu’s Auto supply sector

This section briefly examines the state’s changing role in the automotive sector’s ongoing development. Here the main findings are that certain policies instituted by the government during the period of protection have had surprising successes. For example,

the government's policy in the 1970s of compelling firms to fulfil export obligations to finance imports appears to have worked quite well in establishing a robust auto-component base. The challenge of current efforts is to help alter the competitiveness of this base; and in this regard, recent efforts of the government have met with mixed success. Many of the areas where firms called for deeper and urgent reforms are under central government control: such as customs reforms, an end to procedural delays at the Ports which makes it "impossible for firms to implement a Just-in-Time delivery system." However, the single most important policy facing the automotive industry in the coming months is the decision by the government of India in April 2001 about the import of second hand cars. The automotive industry in Tamil Nadu, including Ford India and Hyundai⁶ are deeply opposed to liberalizing imports of second-hand cars for another 3-4 years. Many said that "the next five years are critical for the development of the industry. In five years Tamil Nadu's (and India's) component industry will be very competitive. The government should be very wary of disrupting the growth that is underway." The hook many firms use to describe the benefits of going slow on second hand imports is that of job-creation. They point to the large number of jobs that are being created as a revitalized components industry takes root in India—and Tamil Nadu—alongside the new assemblers.

Yet, the other side of the story—which the large firms leave out—is equally compelling.⁷ Evidence from several Latin American countries shows that imported second hand cars have a strong positive effect on the local repair industry, where most firms are small and medium in size. Opening up the domestic market to second hand imported cars then, levels the playing field to some extent away from the powerful first tier suppliers and assemblers to the smaller producers further down the production chain. Second, imported second hand cars put strong downward pressure on prices of locally produced cars, forcing producers to improve productivity, improve aftersales service and lower costs. The consumers clearly benefit from allowing second had imports to come in. However, the down side of allowing second hand auto imports is that they militate

⁶ Ironically, the Japanese companies that have a smaller stake in the production within India—Honda and Toyota feel just the opposite, that imports should be allowed.

⁷ I thank Judith Tandler for her discussion with me about these debates.

against anti-pollution laws that many developing countries such as India have recently instituted (Euro II compliance in the Indian case), unless emission caps are imposed and monitored by the importing country.

Other areas of policy reform that are under the state government's jurisdiction include areas where progress has been made, but more needs to be done: e.g., power sector reforms, exemption of diesel (for generators) from sales tax, clarifications on captive power-generation policies, and rationalization of telecommunication costs—as well as further improvements in connectivity, physical infrastructure (such as roads and public services), and encouragement by government to logistics investors and business service providers. In this regard, a major area of attention that will only become more of a problem down the road, is the issue of water treatment, water access, drainage and sanitation. Virtually all large and medium sized automotive suppliers said that a sizeable range of critical wet processing activities that auto component firms need can be localized successfully only if the issue of water treatment, water supply, and drainage are dealt with systematically, without quick fixes and with an eye toward long-term sustainability.

Finally, the government can play an important role in complementing vendor development and localization efforts that are underway. First, it needs to complete and build on the impressive success of SIPCOT's new industrial estates such as in Irungattukotai and Maramalai Nagar by creating conditions for small-scale, second tier suppliers to locate near their first tier customers (such as Visteon, or Hyundai's frontline suppliers). Firms spoke repeatedly of the importance of public efforts that will make it easier and cost-efficient for small firms to do business with their larger customers by enforcing, for example, a "real" single window approach that goes beyond the good work done by GUIDANCE.

Localization involves not just attracting good quality first tier suppliers to locate near their customers, but improving the quality of firms across the production chain—down to the second and third tiers. In the networks where small intermediary firms are

linked to demanding customers or exporters (like TVS, Clayton, Rane, Siemens, and suppliers of Hindustan Motors, Ford and Hyundai), first tier suppliers are exerting pressure on small firms and helping pull them up. As one small supplier whom the Clayton group had recently helped turn around noted: “our supplier is our government now.” But many of the smallest firms are left out of this upgrading loop. This is where the government can build innovative assistance programs that provide information that such firms lack; support efforts to benchmark supplier performance, provide innovative and demand-focused training in partnership with local firms, and expose the smallest firms to instances of good practice through firm visits and, eventually through access to better locations in and around the new industrial estates. Most importantly, the government can use its public voice and bully pulpit to diffuse more widely the emerging importance of human resource management, skill development and worker training in improving productivity in the new competitive environment where a combination of innovation, cost, quality and deliverability—and not just cheap labor—are the key to productive success.

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TABLES:

Table 1: Size and growth of the Indian Automobile Industry (All vehicles): Turnover and Production Trends

Gross Turnover in Rs. Million per year
Production figures in numbers

Year	1993-4	1994-5	1995-6	1996-7	1997-8	1998-9
Gross Turnover	163290	221410	313580	364450	365411	368262
% Change		35.6%	41.6%	16.2%	0.26%	0.8%
Passenger Cars & Multi-utility vehicles	NA	NA	NA	NA	167198	156778
Commercial veh.	NA	NA	NA	NA	104761	102962
2&3 Wheelers	NA	NA	NA	NA	86283	100488
Engines	NA	NA	NA	NA	7169	8034
Production Trend	2248790	2837191	3504358	3983519	4004083	4223469
% Change		26.2%	23.5%	13.7%	0.52%	5.5%
Cars & MUVs	259591	313739	454491	542122	535655	504037
Commercial	141436	194999	217437	240551	160894	135891
2 Wheelers	1756155	2195260	2656017	2979227	3072667	3374508
3 Wheelers	91608	133193	176413	221619	234867	209033
Exports (Total) (in numbers not value)	119507	182594	193578	201057	191176	159366
% Change		52.8%	6.0%	3.9%	-4.9%	-16.6%
Cars and MUVs	18920	24142	31838	39705	32993	28118
Commercial	12393	15882	15555	14248	14084	10108
2 Wheelers	77109	117629	113971	125131	125504	100002
3 Wheelers	11085	24941	32214	21973	18595	21138

Source: Society of Indian Automobile Manufacturers. 2000. *Profile of the Automobile Industry*. New Delhi, India; and ACMA, Facts and Figures

Table 2: Structure of the Automobile Industry: recent trends

	1997-8	1998-9
Production (in numbers)	4.01 million	4.22 million
Sales (in numbers)	3.98 million	4.27 million
Exports (in numbers)	0.19 million	0.15 million
Gross Turnover (Rs. Million)	365411.00	368262.00
R&D expenditure (Rs. Million)	3335.00	2986.00
(as % of gross turnover)	0.9%	0.8%
Employment (numbers of workers)		
Direct	0.2 million	0.2 million
Indirect	10.00 million	10.00 million
Installed capacity (in numbers)	6.7 million	6.94 million
Four wheelers	1.1 million (16%)	1.5 million (21.6%)
Two/three wheelers	4.67 million (69.7%)	5.14 million (74.6%)
Engines	0.3 million (4.5%)	0.3 million (4.3%)

Source: Society of Indian Automobile Manufacturers. 2000. *Profile of the Automobile Industry*. New Delhi, India.

Table 3: Passenger Car Manufacturers and Multi-Utility Vehicles: Industry trends

Manufacturer/Location/ (Year of inception)	Gross Turnover*		Orig. Invst. (Rs.mn)	Inst. Capacity (In numbers)	Sales (incl X)* (in numbers)			Employment (1998-9) (in numbers)
	1997-8	1998-9			96-7	97-8	98-9	
<u>CHENNAI and SOUTHERN REGION</u>								
Ford India Ltd/Chennai 1926/'69/'95-MFIL/1999-FIL (WOS)	4280	1870	NA	100,000	3,606	6,451	3,233	608
Hyundai Motrs/Chennai 1996 (WOS)	NA	5334	15615	120,000	NA	NA	17,648	1,465
Hindustan Motors/ Chennai& multiple locations/1942; Mitsubishi-1996 (JV)	13271	14861	8067	64,000	25,828	22,589	20,115	15,000
Toyota Kirloskar (JV) Bangalore /1997	NA	NA	221.00	50,000	NA	NA	NA	502
<u>DELHI and NORTHERN REGION</u>								
Maruti Udyog/Gurgaon- Delhi/1981	84737	77814	24740	350,000	330,414	345,303	326,523	5,719
Daewoo Motors/Delhi/ 1994	4427	3874	39888	87,000	16,866	10,108	10,121	2,319
Honda Siel/Noida-Delhi 1995 JV	582	6182	3400	30,000	NA	1,340	9,631	820
<u>WESTERN REGION</u>								
Fiat India Auto./Mum. 1905/1951/1998 (WOS)	NA	NA	2004	50,000	NA	NA	Na	2,352
General Motors/Gujarat 1994-GML-JV/1998 (WOS)	5232	2463	3336	25,000	7,482	7,548	3,524	555
Mercedes-Benz/Pune 1994 (JV Diamler-Chrysler & TELCO 86-14%)	3246	2130	1670	9000	1,885	3,042	1,116	338
PAL-Peugot/Maharash.	3853	NA	NA	60,000	7659	5301	434	NA
Premier Auto/Mumbai	6290	NA	NA	60,000	10,250	11,369	2,754	NA
TELCO/Mumbai 1945/* indicates sales of passenger cars only; installed capacity, original cost of invest. and turnover is for all vehicles	NA	66371	56987	345,000	7,385*	4,669*	4,750*	NA
M&M/Pune/ 1945/ LCVs+MUV	41280	42250	15321	113,000	75,195	76,168	69,905	16,805

WOS: Wholly Owned Subsidiary

JV: Joint venture

Source: compiled from: Society of Indian Automobile Manufacturers. 2000. *Profile of the Automobile Industry*. New Delhi, India.

Table 4
Car Models by Manufacturers and Domestic Price Range

Manufacturer	Model	Price Range	Avg. mo. sales in 1999
Luxury Models			
Mercedes Benz JV - Diamler-Chrysler-Telco 86% --14%	Benz	Rs. 2 million (20 lakhs and over)	tens; targeted toward the small elite and corporations
High End			
Mitsubishi Mitsubishi-HM-licensing	Lancer	0.75-0.85 million 7.5-8.5 lakhs – gas/diesel	650 cars/mo in 1999
GM JV – Birla-GM 50% each	Opel Astra	0.75-0.85 million	Performed poorly/variable Sales – a few hundred/mo
Ford JV – Ford-Mahindra 90% -10%	Escort	0.75-0.85 million	Perception that the Technology is poor, underpowered engine; not suited to local road conditions. Sold about 380/mo or a total of 14,000 in 3 years before being discontinued
Honda JV Honda – Sriram 90% -10%	City	same	1000/mo (doing very well)
Mid-size segment			
Daewoo 91% -DCM-9%	Cielo	0.55-0.65 million	Doing very well – high 00s
Maruti	Esteem Baleino	same 0.55 million	Popular-1000s/mo ?? New
Hyundai 100% WOS	Accent	same	New – 1000/mo ??
Ford 100%	Ikon	0.45-0.55	New, about a 1000
Fiat 100% WOS	Siena	0.55	00s
GM	Corsa	0.55	00s
Tata	Indica	0.55	High 00s

Toyota JV – Toyota-Kirloskar 70% -30%	Wagon	0.5-0.6	Popular, low 000/mo
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Small Cars

Maruti	800 Zen Wagon R	0.22-0.38 million	several 1000 per month
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Hyundai	Santro	0.38 million	5-6000 per month
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Daewoo	Matiz	0.25-0.35 million	3-4500 per month
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Fiat	Uno	same	high hundreds to low thousands/mo
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