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Tata Motor's Transformational Resource Acquisition Path

A Case Study of Latecomer Catch-up in a Business Group Context

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CASE STUDY

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Abstract:

In the mid 1990s India's Tata Motors Ltd. entered the passenger car business after having prospered for more than 40 years as a manufacturer of commercial vehicles. Based on archival data and on expert interviews the paper analyses the resource acquisition and internationalisation strategies and processes of this 'latecomer firm' which has evolved in only 15 years from an initial entrant into a medium-sized passenger car manufacturer. The case reveals a pattern of top-down driven overlapping strategic initiatives in a catch-up process which combine external international resource acquisition with internal capability building and deliberate learning and upgrading processes. As Tata Motors is an affiliate of India's largest private business house, the Tata Group, the case study examines in a second part the role of 'group affiliation' in the catch-up process. It is found that Tata Motors' rapid resource acquisition and creation process has been supported by dynamic group level capabilities, significant central group support and resource sharing across group companies; without the 'affiliation advantage' the much accelerated catch-up process would not have been possible. The case contributes to the on-going debate about latecomer firms (or emerging multinationals or 'challenger firms') and suggests to undertake further studies on the question which role business group affiliation plays in the catch-up and internationalisation processes of firms from emerging economies.

Zusammenfassung:

Nach mehr als vierzig Geschäftsjahren als Indiens führender LKW-Hersteller stieg Tata Motors Ltd. gegen Mitte der 1990er Jahre in das PKW-Geschäft ein. Auf der Basis einer umfangreichen Sammlung von Datenmaterial aus verschiedenen Quellen und von Experteninterviews untersucht die vorliegende Fallstudie den Ressourcen- und Fähigkeitsaufbau eines ‚Nachzügler-Unternehmens', das sich in nur 15 Jahren zu einem mittelgroßen Automobilhersteller entwickelt hat. Die Studie zeigt einen Top-Management-getriebenen Aufholprozess der in überlappenden strategischen Projekten verläuft, wobei externe internationale Technologieakquisition mit internem Kompetenzaufbau und bewussten Lern- und Modernisierungsprozessen kombiniert wird. Da Tata Motors zur Tata-Gruppe - Indiens führender privater Firmen-Gruppe - gehört, wird in einem zweiten Schritt die Rolle der Gruppenzugehörigkeit im Aufhol- und Internationalisierungsprozess von Tata Motors untersucht. Die Studie zeigt, dass der Ressourcenaufbau durch dynamische Fähigkeiten auf zentraler Ebene, Zentralfunktionen und Ressourcenbereitstellung anderer Gruppengesellschaften unterstützt wurde und dass der Aufholprozess in dieser Geschwindigkeit ohne Gruppeneinbettung nicht möglich gewesen wäre. Die Fallstudie versteht sich als Beitrag zur Diskussion über die ‚neuen multinationalen Firmen' aus den Schwellenländern (‚die neuen Herausforderer' wie sie in der deutschen Presse genannt werden) und zur Frage, welche Rolle die Gruppenzugehörigkeit oder ‚konglomerate Einbettung' im Aufhol- und Internationalisierungsprozess dieser Firmen spielen.

Content

1. Introduction

This paper deals with Tata Motors Ltd. (TML) which is an affiliate of the well-known Indian Tata Group, India's largest private business group (BG). TML was created by the Tata Group in 1945 and grew and prospered as a commercial vehicle manufacturer until the beginning of the 1990s when the New Economic Policy in India opened up new opportunities. Around this time the company entered into the passenger car business as a typical *latecomer firm* (LCF) in the global industry context. Over the last two decades it has built and expanded its resource base in this field and with the acquisition of Jaguar Land Rover (JLR) completed a transformational deal to become an international car manufacturer. The author's interest in the TML case was stimulated by an ongoing broad discussion about the particular strategies of LCFs - or 'emerging', 'third-world', 'new', 'infant', 'adolescent', 'challenger', 'non-triad' multinationals – in business research and consultant papers (see for instance Amighini et al. 2009, Athreye/Kapur 2009, Guillén/Garcia-Canal 2009, Mathews 2002a, 2002b, Ramamurti/Singh 2009, BCG 2009).

The selection of the case of TML was also inspired by a large stream of research on *business groups in emerging countries*. BGs have been defined as a collection of legally independent firms, operating across different industries, which are bound together by formal and informal ways (Granovetter 1995)[1]. The Tata Group is India's largest private 'business house' and a leading example for this type of organisational form which goes by the name of 'chaebols' in Korea, of 'grupos' in Latin America and Spain, of 'keiretsu' in Japan or of 'guanxiqiye networks' in Taiwan. The formation, ownership or control patterns of BGs, their interactions with their societal environment, their financial performance and resource building and leveraging strategies have been studied extensively (see the comprehensive review by Khanna/Yafeh 2007 as well earlier studies such as for instance Amsden/Hikino 1994, Caves/Uesuka 1976, Chang/Choi 1988, Chang/Hong 2000; Guillén 2000; Hong/Hong 2002; Daphne et al. 2005, Chang et al. 2006, often with the Korean BGs as the main example).

The following paper investigates the catch-up and internationalisation path of TML in the passenger car business mainly in a resource-based perspective. It tries to understand how TML has *acquired and created* the strategic resources and capabilities in order to compete in this industry and how *external* asset and knowledge acquisition and internal learning interact in this process. A second major question concerns the role of *organisational affiliation* of TML to the Tata Group, i.e. which contribution in the resource accumulation and internationalisation process can be ascribed to the Group rather than to coming from within TML. The author believes that this case provides interesting material and sheds some more light on the catch-up, capability creation and internationalisation of latecomer firms and, particularly, on BG affiliation as a major enabler of catch-up in a resource based perspective. In the author's opinion the case of TML and Tata is unusually 'revelatory' (Yin 1994) as it offers a comparatively large repository of data which has grown significantly in recent years. Moreover, as documented in the '2009 BCG 100 New Global Challenger List' (BCG 2009), there are a large number of other Tata companies among the leading LCFs as well as many other *Indian* Business Groups[2]2 which may provide a good basis for a later attempt to compare and extend the findings with case studies on other Indian LCFs.

This longitudinal case study stretches over more than 15 years and relies on a larger base of archival data such as case studies, press articles, interviews given by top managers and reported in the trade journals, academic or professional articles and material on the world wide web. The author has also

[1] The 'Business Group' is usually distinguished from the 'diversified firm' in which the various businesses are organized as divisions or subsidiaries under one corporate centre with formal decision rights. However, the boundary between the two organizational forms is rather blurred.

[2] Among the 100 'challenger firms' from Asia, Central and Eastern Europe, CIS, the Middle East, and Latin America 20 are from India (BCG 2009, 14). The list excludes firms from South Korea and Taiwan.

visited the Tata Central Archive in Pune and conducted a few expert interviews[3]. All these data have facilitated the 'triangulation' (Jick 1979) of information and helped to increase the validity of the account; using different lenses of the same event help also to reduce the bias from 'impression management' by company PR and from 'retroactive sensemaking' (Eisenhardt/Graebner 2007, 28). The study starts with an introduction to the Tata Group and its major organisational and structural changes during the last two decades (*section 2*). The next part analyses the resource acquisition and catch-up process of TML largely ignoring the role of group affiliation (*section 3*). In the following part we then investigate the role of the group in TML's catch-up process (*section 4*). The study draws some conclusions and speculations concerning the general applicability of its findings (*section 5*).

2. The Tata Group and its new dynamism

India is home to many large family controlled BGs such as Birla, Wipro, Reliance, Bajaj, Hero with different trajectories and performance (Kedia et al. 2006). The Tata Group, India's oldest and largest BG, consists today of some 28 publicly listed and a large number of private companies which are active in seven 'business sectors'. Based on a 'grand restructuring plan' already designed in the early 1990s and an internationalisation strategy starting to be implemented decisively after the turn of the millennium the Group went through a transformational period of business divestments and entries and a string of major and minor cross-border acquisitions (annex, exhibit 1&2). The external growth and internal development resulted in a more than six fold expansion in sales (in USD) in only six years with group sales of US$ 70,8 billon in FY 2008-09 (see figure 1). During the same period the share of international sales in the Group's turnover expanded from 10-20% at the beginning of the decade to 65% in 2008-09.

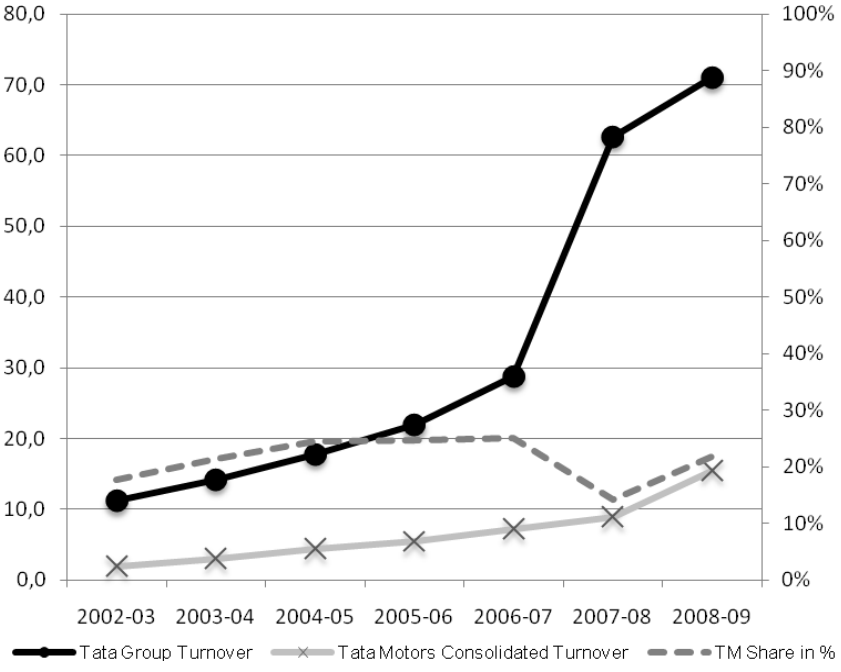


Figure 1: Tata Group and Tata Motors revenues 2003-2009, million US$
(Sources: Tata Group website, Annual Reports of Tata Motors)

[3] In fall 2009 until spring 2010 the author was affiliated to the Symbiosis Institute of International Business, Symbiosis International University in Pune as a 'Scholar-in-Residence'. He expresses his thanks also to Andreas Schreiber who helped in compiling the company financial data in the annex.

The role of group affiliation in TML's catch-up and transformation was very much influenced by the preceding and parallel changes in group organisation and management style under the chairmanship of Ratan Tata (RT), who became the fifth chairman of the group in 1991. When assuming the function of Group Chairman from his predecessor J.D.R. Tata who had been in this role for more than 50 years, RT took over a loose confederation of relatively autonomous companies headed by independent minded CEOs, many of the most influential ones being in their seventies or eighties. The companies shared a common name and culture, small inter-corporate shareholdings and interlocking directorates, but had been held together primarily by the emotional bonds and personality of J.D.R (Kumar 2009, Kakani/Joshi 2008). In a period of some ten years RT and his supporters managed a major change in the internal governance and organisation, in the role of central group functions and in the top management cadre, laying the foundations for the major expansion, transformation in business scope and internationalisation of the group mentioned above (Sen 2009, Khanna et al 2006).

The promoter[4] and primary holding company in the group, Tata Sons Ltd., is estimated to have the following ownership structure (Kakani/Joshi 2008, 10): 65,9% philanthropic Tata family trusts (chaired by RT), 12,8% Tata Group affiliates, 2,9% Tata family, and 18,4% P.S. Mistry (a major Indian business family in the construction business). Tata Sons acts as the major investor to facilitate growth in selected operating companies. While the Tatas control more than 83% in Tata Sons they also own more than 74% in Tata Industries Limited, another important holding company of the group geared to ventures in new businesses and technologies. The whole group is interwoven by a maze of cross-shareholdings which help the corporate centre to direct, supervise or control the major companies, and indirectly the more than hundred affiliated companies. The extensive network of interpersonal relations among managers from the various operating companies is a characteristic of this structure (for an analysis of the complex ownership structure only of the publicly listed companies see annex, exhibit 3 and Kakani/Joshi 2008 for more details). One of the major initiatives to achieve more group level control while still maintaining the decentralised group structure was a *significant increase in cross-holdings by Tata Sons* in the Group's core companies such as Tata Steel, Tata Tea or TML. In TML[5] for instance Tata Sons increased its stake from 2,3% in 1995 to 30,3% in 2009 (AR 20F 2009). Another more direct influence over the individual companies stems from the chairman of Tata Sons serving concurrently as chairman in most of the core companies of the group.

A new *core mechanism of group integration* around a common identity was established through the introduction of the 'Tata Brand Equity and Business Promotion Agreement' first initiated in 1995 (Khanna et al 2006, Khanna/Palepu 2006, Sen 2009, Branzei 2010). According to this scheme administered by a division of Tata Sons the meanwhile carefully promoted *Tata brand* can be used only by those Tata companies which subscribe to the scheme. Tata Sons receives an annual 'contribution' of 0,1% of net income before taxes for the right to be perceived as a Tata company and up to 0,25% for the right to use the name in both company name and products. Group companies participating in the scheme have to subscribe to a *Code of Conduct* to ensure uniform standards of quality and ethical business practices. Signatories are required to follow the letter and spirit of the code, make all employees aware of the code, and promote cooperation among Tata companies. Political nonalignment within India's political system and respect for the national interests of host countries of Tata subsidiaries were also stipulated. Another important part of the agreement is the participation in a Tata customised *total quality management* model, in various process improvement models and innovation schemes which serve also as benchmarks in assessing the companies' performance. The process was initially resisted

[4] In the Indian context, a 'promoter' is an individual or a legal entity who starts a business by investing personal and/or solicited funds and/or exercises substantial control over the company. The term "is inclusive in nature and is a term of wider significance which does not confine itself to de jure control". http://www.legalserviceindia.com/article/l276-PromoterPromoter-Group.html (accessed 19-08-2010)

[5] The aim was to achieve a shareholding of at least 26% in core companies, inter alia as a protection against possible foreign takeovers

by some of the group's leading managers but has eventually increased the reputation of the group, helped to drive major quality and excellence initiatives across group companies, and to align Tata managers and employees around a common identity. As kind of driver towards 'unité de doctrine' it has an implicit coordinating role in the daily decisions of managers across the group.

The efforts to transform Tata into a competitive and proactive group extended also to new ways to harness synergies among Tata companies and to add value to the individual companies as well as to the group as a whole. The introduction in the later 1990s of a *group level coordination structure* known as the Group Executive Office (GEO) and the Group Corporate Centre (GCC), which included senior leaders from the Tata group were instrumental in this vein (see for this an the following Khanna/Palepu 2006, Sen 2009, Kumar 2009). The GEO which like the GCC is chaired by RT reviews and defines corporate strategy, advises group companies on strategy, and aims at "making the Tata group more synergistic"; it is also involved in the implementation of important group initiatives (Tata Website). The GCC apart from providing a forum for the discussion of broader policy and diversification decisions is the promoter and protector of the Tata brand and provides a number of *services* to Tata companies in the areas of human resources, finance, legal and other functional areas (ibid). The guiding and advisory role of the corporate centre was also enhanced through the staffing of the various functions with a group of able and far-sighted managers and experts.

One important central function already introduced in the 1950s was *Tata Administrative Services* (TAS), essentially an internal management development and training institution for the Tata Group's future premium management cadre. TAS helps in the recruitment of talent, designs group-wide compensation packages, provides cross-business, cross-functional and cross-locational training modules and facilitates mobility across group companies (Tata Website; Khanna et al 2006, Wadia 2007, Tata 2007). The Tata Group engaged also in a whole range of CSR and environmental sustainability initiatives (see for a good description Branzei 2010).

While many Group functions were already established decades before the advent of a new group management the transformation of the Tata Group's central organisational and strategic routines in the 1990s and after the turn of the millennium can be aptly characterised in a resource-based perspective as the creation of new and strong *'dynamic capabilities'*, of the ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (on 'dynamic capabilities see for instance Teece et al. 1997, Eisenhardt/Martin 2000).

3. Tata Motors' Resource Acquisition and Catch-up in Passenger Cars

The entry of TML into passenger cars, its ascent as a relevant domestic player and its recent internationalisation of sales and manufacturing in the passenger car segment[6] has been underpinned by an intricate asset acquisition, accumulation and organizational learning process. In hindsight, four distinct but overlapping phases of this process can be discerned which were sometimes triggered by external events and usually driven inside the company through strategic initiatives or projects. The phases should not be understood as results of a 'grand strategy', but rather as the outcome of a strong strategic intent to overcome a situation of backwardness coupled with an evolutionary search under a changing institutional context and internal resource conditions[7]. The four phases are presented in turn.

[6] In the CV division a strong move toward internationalisation started with the acquisition of Daewoo's Commercial Vehicle Division in 2004 and of a 21% stake in the Spanish bus manufacturer Hispano Carrocera in 2005. Another move was a joint venture for the production of pick-up trucks in Thailand in 2006 and a joint venture to assemble commercial vehicles in South Africa in 2008. See Pradhan/Singh 2008.

[7] The strategic intent is reflected in many interviews given by Ratan Tata and Ravi Kant, see for example Kumra 2007; for the changing institutional context of the Indian automotive sector see for example Ranawat/Tiwari 2009. On 'strategic intent' as a management concept see Hamel/Prahalad 1989.

3.1. Pre-entry asset creation: Engineering Research Centre and Light CVs

When the management of TML decided to enter and compete in the passenger car segment it relied – apart from the support of the Tata Group which will be covered in the next section – to a considerable extent on strategic assets and capabilities built during its history as a 'pure' CV manufacturer. After its initial foundation as a manufacturer of locomotives and steam rollers TML started to manufacture commercial vehicles in 1954 through a 15-year collaboration with Daimler Benz AG. Based on this early technology transfer and capability creation TML began designing and developing commercial vehicles in-house and in the following fifty years set out for repeated sequential broadening of its product scope in CVs. By relying on own design efforts combined with the selective sourcing of technologies and assimilation of external know how TML established a range of reliable and hardy low cost vehicles, and maintained an unchallenged leadership position in the Indian CV market. After a longer period of organic and incremental growth TML was hit by a cyclical forty percent shrinkage of the Indian CV market in 2000/2001 which triggered a transformative phase of restructuring, process improvements and rejuvenation of its management preparing the ground for bolder strategic initiatives in the future (India Knowledge Wharton 2010, Kumar 2009)[8].

Already long before TML entered the passenger car segment in the early 1990s the company had taken some steps to extend its technological base and upgrade its capabilities in automobile design and manufacturing. The establishment of an Engineering Research Centre at Pune in 1966 which was 'to provide impetus to automobile research and development' (TM Website) facilitated the creation of an internal engineering force which would increase TML's absorptive capacity for external technologies and create a basis for indigenous product development. A more immediate facilitating condition was the antecedent development and manufacture of *light* commercial vehicles (the first one launched in 1986, followed by a pick-up in 1988) which provided a platform, engine technology, and manufacturing as well as tooling capabilities for the entry into passenger cars.

3.2. Duplicative development[9] and product sequencing: the Indica

The initial 'entry' of TML into passenger cars relied on an incremental extension or 'resource leverage' from its light commercial vehicles as both the Sierra (launched 1991) and the Estate (launched 1992) were built on the platform of the pick-up. As B. Bowonder, Director at Tata Management Training Centre, writes in his account of the TML's small car development project: "the learning needed for making a car essentially started with the pickup vehicle 207" (ibid, 300). While the initial entry was focused on the large car segment it had become increasingly clear that the Indian passenger car market would for the foreseeable future be a 'small car market' (Becker-Ritterspach/Becker-Ritterspach 2009). After careful market analyses and feasibility studies TML therefore started in 1994 its 'maiden attempt' to develop the first 'Indian' small car for the domestic market, the later Indica (Noronha 2008). The car was to be positioned as a competitor to the market leading Maruti 800 of the Japanese car maker Suzuki.

In terms of its principal approach in the Indica project TML… "*adopted the philosophy that all components critical to the car business were not to be sourced but should be produced internally. Specialised products were to be procured, especially those available in the market. Products for which suppliers had to make substantial investments would be done through joint ventures. Finally, generic com-*

[8] TML had a loss of some 110 million US$ in FY 2000-01 which was the biggest loss in the corporate history of India. Within two years the company managed a turnaround back to a profit of 176 million US$ (FY 2003-04), also commented as the fastest turnaround in India's corporate history. See the interview with Firish Wagh by Agrawal 2008. For the long-term growth of TML's revenues which were strongly influenced by the cyclical demand fluctuation in the Indian CV market see exhibit 4 in the annex.

[9] Li/Kozhikode 2008 suggest to distinguish 'emulators' and 'blind imitators' in latecomer catch-up rategies. Our term 'duplicative development' corresponds to the first category which is a superior learning strategy leading to 'flexible routines' which support the transition from an imitation to an innovation regime (ibid 439).

ponents would be procured from good suppliers in India. With this in mind, critical capabilities needed from a long-term perspective were identified. Potential partners were identified for all critical components not available. This was done keeping in mind that the alliance relationship should give Tata Motors some inherent learning value." (Bowonder 2004, 310)

The development process involved some 700 engineers and cost including tooling and setting up of production facilities $ 400 million, compared with well over $ 2 billion such a process would cost in a developed country (Sagar/Chandra 2004, 44). The following examples for major technology, know-how or consulting partnerships illustrate the integration of external resources in the Indica project:

- Exterior and interior design: I.D.E.A., an Italian design consultancy;
- Development of power train design and gasoline engine: Le Moteur Moderne (LMM) of France;
- Welding systems, process engineering: designed by German HLS and manufactured by TML;
- Design of robots: Nachi Fukikoshi, Japan;
- Skin panels die design: Ogihara from Japan;
- Production line: an unused production line from Nissan, Australia was bought;
- Supplier qualification, testing and quality assurance: Cummins, US/India assisted TML to develop state-of-the-art organisational capabilities (Bowonder 2004).

TML established also a new organizational structure for tiered supplier management and entrusted the Tata Group affiliate Tata Automobile Components (TACO), newly formed in 1995, with this task (ibid). In the time span of only four years TML significantly improved its capability to manage automobile development projects and used the significant learning opportunities to expand its organisational as well as staff level skill sets. The physical proximity of R&D, tooling and production in one place (Pune) can in this context be considered as an advantage in building the complex 'concurrent engineering' capabilities needed in automotive development projects (Bowonder 2004).

Based on the Indica platform TML introduced the Indigo in 2002 which was followed by a series of improved versions and an increasing number of variants. A new generation Indica build on a newly developed platform was introduced in 2008 (Indica Vista), and in 2009 a more upmarket version, the Indigo Manza was introduced. This co-evolution of organisational knowledge, capabilities and products over long time spans has been called 'product sequencing' and has been identified as an important resource accumulation approach (Helfat/ Raubitschek 2000; Kim 1998). Further know how acquisition and learning opportunities can be attributed to two alliances with international car manufacturers. In 1995 TML entered into a JV with DaimlerChrysler for the local assembly of the E220 Mercedes. The alliance failed for various reasons and was terminated in 2001. Starting in 2006 TML engaged in a strategic alliance with Fiat which includes Fiat's Indian manufacturing plant in Ranjangaon as well as an agreement about the distribution of Fiat cars by TML (Mitchell/Hohl 2008). The joint venture with Fiat gives TML fast access to additional manufacturing capacity, to Fiat's advanced diesel engines and implies further learning about Fiat designs and manufacturing methods.

In the first decade after the initial launch of the Indica TML established a portfolio of small and medium sized cars and gained the number three position in the Indian passenger car market after Maruti Suzuki and Hyundai (see exhibit 5 in the annex). It established a large dealer and service network throughout India and built significant brand value in the Indian car market. Despite this relative success in the domestic market the company's attempts to *export* the Indica or its derivatives have never crossed the mark of 3-5% of unit sales and have been limited to Malta, South Africa and few other developing countries. An attempt starting in 2003 to export the car to the UK under the badge of City Rover had to be abandoned in 2005 when the MG Rover Group went into receivership. With the increasing competitive rivalry in the Indian car market fuelled by a massive inflow of foreign FDI it was becoming increasingly clear that TML would have to face world-class car designs in its domestic market and would not survive in the longer run without significant upgrading of its products and capabilities.

3.3. Creative innovation and complementary upstream internationalisation: The Nano, TMETC, INCAT

While TML was still busy in extending its existing portfolio in the small car segment another major initiative, the development of an ultra low cost car, was conceived in 2003. The initial push for the Nano project has been described as a spontaneous commitment by Ratan Tata at the Geneva Auto show in 2003 in which he mentioned the idea of a Rs 1 lakh car (100000 INR=$2500 at the time) to a journalist (see for a background on this and the following also the interview with RT: Economic Times 2008). The car should not primarily be targeted at the *current* small car market, but rather at the large and growing number of Indian two-wheeler users who would be interested to upgrade to a real but still affordable car. The cheapest car at the time of the conception of the project was the Maruti 800 with a base price of around $ 5,000.

To pursue this project a new separate project organisation was created in 2005 headed by a 35 year old engineer (Girish Wagh) who had before headed the development team for the very successful low cost minitruck Ace launched in 2005. The young team (average age 30) was given only three broad parameters by Ratan Tata (RT) himself: acceptable cost ($ 2,500 price level), acceptable performance from the customers point of view, and regulatory compliance (safety and environmental standards) (ibid, 5). The project was consistently driven and monitored by TML's CEO, Ravi Kant, with RT as Chairman of TML being also often directly involved in testing of trial versions and major design decisions (ibid 9). The overall development process of the Nano can be characterised as a *reverse exploratory process* starting from existing available products - which were either insufficient in performance (e.g. the traditional Indian three-wheelers) or 'expensive' (e.g. Maruti 800) - through sequential design iterations toward a final product which met a performance/cost combination deemed previously impossible (see for descriptions of this process Narayan 2008 and Lim et al 2010, Palepu et al 2010) and the following account:

> *"The entire system was being re-invented, innovation at the aggregate level trickled down to system, then to sub-systems, then to parts. We went through a tremendous amount of iteration in the design process. The entire engine was redesigned thrice, the entire body was redesigned twice, and the floor plan of the car redesigned about 10 times, the wiper system redesigned more than 11 times. In any other project, you very clearly define layouts and target, and work towards it where execution excellence comes into play. Whereas here, it was more of iterating with design, re-defining targets as we are moving on, and working with suppliers through the redesign."*
> (Girish Wagh quoted in Palepu et al 2010, 8)

The principal approach was comparable to the development of the Indica: creation of a high pressure atmosphere through strong top management involvement, creation of an effective and dynamic project management organization, keeping of the overall architecture, of core components (e.g. engine design) and of all important design decisions internal. From the very beginning the Nano project included a large number of consultants and important component suppliers in the process. While Tata originally invited 600 suppliers these were eventually narrowed down to 100 for the platform (Auto Industry 2008). TML made a clear distinction between designs owned by Tata and proprietary designs of suppliers. For the latter Tata went with strong international automotive suppliers such as Bosch (engine management system, later diesel engine cooperation), Caparo Group, Denso, Johnson Controls, or Saint-Gobain Sekurit[10]. Roughly half of these suppliers co-located new manufacturing facilities with the manufacturing plant in Singur (later shifted to Sanand)[11]. The outsourced components of the Nano are claimed to

[10] For a list of major technology acquisitions by TML from 2000 onwards see exhibit 6 in the annex.
[11] Due to the heavy protest against the TML production plant in Singur, West Bengal which was built on expropriated land under Government land regulations Tata decided eventually to move the plant to Sanand in Gujarat. Significant investments were lost and Tata partly compensated the co-located suppliers for part of their lost investments. The shift of the production site led also to a two year delay in the full Nano launch. See Alfaro et al 2009

amount to more than 80% of the input cost and the production to achieve a local content of about 97% from the start of production (Autoindustry 2008).

A significant contribution in the development process came from what could be called *complementary upstream internationalisation*. In 2005 TML set up 'Tata Motors European Technical Centre' (TMETC) in the UK at the premises of the University of Warwick, in the centre of the British Motor industry (Agrawal 2007). TMETC started working on 'critical gap areas' in R&D in close cooperation with the ERC in Pune. As a 'window' on advanced technologies and organisational practices it allows TML to "plug into the expertise that is available in Britain and be in on key developments in automobile manufacturing" (Ravi Kant in Noronha 2008). Another even more important capability enhancing move was the acquisition of INCAT International in 2005, a provider of engineering outsourcing services to the world's major automotive, aerospace and durable goods manufacturers with some 3000 staff and major operations in North America (Novi Mich.), Europe (Stuttgart, D) and India (Pune). With the INCAT acquisition - integrated under the TML subsidiary Tata Technologies - and the creation of the TMETC TML managed to significantly broaden and upgrade its technology base and R&D capabilities in a short time span. Both organisations were then closely involved in the Nano development process by working directly with the ERC team and major suppliers.

Although the Nano does not represent an entirely new concept of a car it contains a whole range of cost saving innovations in components and manufacturability. With the successful integration of all these improvements in a product deemed to be ideally suited to an entirely new low end customer segment it can be considered a 'new-to-the-world' product and perhaps even a 'disruptive innovation'. Although TML and the Tata Group tied a considerable number of external collaborators into the development process the simultaneous rapid expansion of their capability base (INCAT acquisition, TMETC creation) and a remarkable capacity to learn how to manage a complex iterative and distributed development process enabled the company to always remain firmly 'in the driver seat'. While the knowledge assets created during this process remain partly with the suppliers (e.g. Bohr 2010), TML had also a significant share in proprietary knowledge gained in the process as reflected in its 37 patent application in India; no information is available on a global patent strategy while the possible lack of such a strategy has been deplored (Evalueserve 2009).

3.4. 'Instant up- and downstream internationalisation' and product scope expansion: The Jaguar Land Rover Deal

While the Nano development process was completed by early 2008 TML faced serious challenges on the manufacturing side due to the increasing problems with the Singur plant site (see ref. 11). Despite increasing strain on management and financial resources TML seized a 'strategic opportunity' by bidding for Jaguar Land Rover (JLR) which had been put up for sale by Ford Motors. The JLR acquisition was formally concluded in June 2008 with a final price of US$ 2,3 billion and total cost of over US$ 3 billion to be financed through a rather short-term bridge loan. The operation was 'transformational' for TML in several respects: (i) the acquisition more than doubled TMLs overall revenues and almost quadrupled its revenues from passenger cars; (ii) apart from some more direct product relatedness to TML's SUV segment with the Land Rover part of JLR the acquisition represents a diversification into the segment of larger premium class cars, an *entirely new market* for a vehicle manufacturer like TML which was predominantly specialised in low cost and small cars; (iii) While TML had some marginal exports of its passenger cars before the company went into a kind of *'instant outward internationalisation'* in passenger cars. From a company with marginal assets overseas TML transformed into a global player with the majority of its assets abroad (see figure 2).

Despite criticism for this move by financial analysts and experts a number of reasons can be put forward which made the acquisition attractive from TML's point of view or which are evident:

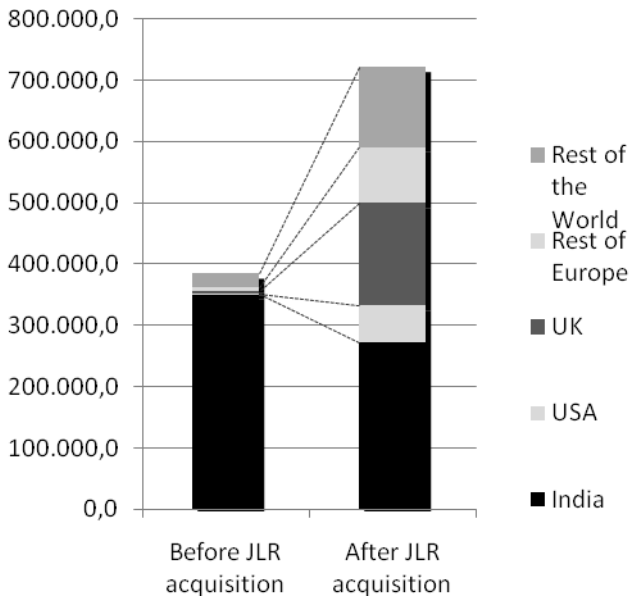


Figure 2: TML's internationalisation: consolidated assets, in million INRs
(Source: AR 20-F, 2009)

- *Internationalisation*: TML would instantly become an international player with operations in North America, Europe and Asia.
- *Brands*: Jaguar and Land Rover are two iconic British brands.
- *Product flow*: Ford had bought the company from BMW and had in addition to the preceding BMW funds invested an estimated $ 10 billion in modernising the JLR model range. Although it was loss making at the time of the deal a range of new models and additional variants from both Jaguar and Land Rover was close to launch.
- *Fit*: Land Rover fit in the position above TML's existing utility vehicles; there were likely synergies to be obtained with the SUV range in sourcing, design and engineering.
- *Scale*: Possible synergies in parts procurement (from India) might help reduce the costs for the British brands (although this has met with scepticism).
- *Demand*: there is a growing demand for luxury cars in emerging markets, including India, which TML might be able to exploit better then Ford.
- *Manufacturing*: TML would get access to three relatively modern production plants.
- *R&D*: TML would have access to the know how and human resources in JLRs R&D centers.
- *Technologies*: there would be access to proprietory designs and multiple learning opportunities and synergies between the R&D capabilities of JLR, INCAT, TMETC and the ERC in Pune.

The acquisition coincided with the world financial crisis and TML ran into serious refinancing difficulties which were initially overcome with support from the Group and the fast recovery of the Indian vehicle market and JLR sales (Bruche/Becker-Ritterspach 2010). Nevertheless while TML is engaged in the post-merger adjustment and integration a very high level of indebtedness is yet to be overcome (Leahy et al. 2010 and exhibits 7 in the annex).

4. The contribution of 'group affiliation advantage' to Tata Motors' catch-up

As outlined above in the preceding chapter TML was still a manufacturer of CVs when the environmental changes began to accelerate as a result of India's New Economic Policy with far reaching consequences for the Indian passenger car market. In a time-span of only 15 years TML managed to build an entirely new set of capabilities and a new product (the Indica), entered into creative innovation with the Nano development and finally transformed itself in one big 'leap' into a global car manufacturer through the JLR acquisition. How was this accelerated capability building process possible and could it have taken a similar trajectory if the company would have been a stand-alone automotive manufacturer (which had to rely on the capital market for its financing)? The following analysis sheds some light on these questions by taking a closer look at some of the *major contributions to TML's capability creation and internationalisation process which derive from its organisational affiliation to the Tata Group*. A careful consideration of the available materials and experts discussions lead to at least six areas of group support or *'affiliation advantage'* which we will discuss in turn.

Infusion of dynamic capability

At the end of the 1980s TML was a CV manufacturer which had grown over the last decades under the protective cover of the Indian 'Licence Raj'. It was the later group chairman RT who became TML chairman in 1988 and has held this position concurrently since 1991 who had the 'strategic intent' and the decision power to initiate and drive the entry into passenger cars and the three transformational projects (Indica, Nano, JLR). TML did hardly dispose of these capabilities *inside* its organisation as its top management and the core of its engineers had grown and prospered in the CV segment. However, RT could overcome the administrative heritage of a typical Indian 'licensed manufacturer' and the 'rigidities' of TML's organisation and instigate a transformational trajectory by 'providing vision, guidance and perspective' based on a broad group strategy which was owned and supported by the GEO (Kumar 2009). Apart from the mentioned projects TML undertook also significant efficiency enhancing restructuring initiatives which relied on the expertise of lateral transferees and experiences in central group functions and other group companies (India Knowledge Wharton 2010). In a more general vein these group dependent transformational changes and asset enhancements can be seen as reliant on 'dynamic capabilities' at group level and at the same time as an infusion of such capabilities into TML.

Improving project execution capabilities

The Tata Group supports its affiliated companies through various group level functions and initiatives and helps improving its overall efficiency as well as the ability to carry out major projects. As has been shown for the technology acquisition and internationalisation strategies of major Korean chaebols like Samsung or Hyundai a *'project execution capability' as a group level competence* was one of the core ingredients in their capability creation strategies (Amsden and Hikino 1994)[12]. In a similar vein the Tata Group contributes knowledge, experience and capabilities in handling complex projects like the Indica project, the Nano project or the JLR acquisition. In supporting affiliate companies in planning and managing complex projects the Group can rely on a number of organisations which are directly attached to the central group companies Tata Sons and Tata Industries Ltd (TM Website). These are inter alia Tata Strategic Management Group, the largest Indian owned management consulting firm which serves internal clients by about 50% or Tata Consulting Engineers Ltd with more than 2400 highly qualified and

[12] Amsden and Hikino define ‚project execution capability' as "the skills required to establish or expand operating and other corporate facilities, including undertaking pre-investment feasibility studies, project management, project engineering, procurement, construction and start up of operation". They argue that in comparison of a BG and a stand-alone company which decide to enter an industry "by unpackaging foreign technology and using selected project execution skills from in-house the BG which has already internalized such skills will have lower cost related to: (i) learning by doing, which increases efficiency and is greater the larger the number of project executions; (ii) utilizing capacity, which improves because the group can prorate the fixed, once-and-for-all, initial cost of acquiring a generic project execution subelement over more projects; and (iii) saving transaction cost, by having the human resources in-house necessary for project execution (detailed engineering, procurement, supervision, construction, and so forth)." (ibid, 130-131)

experienced technical professionals. Tata Quality Management Services provide group companies with support to implement the Tata Business Excellence Model. Tata Financial Services, its legal services and other group functions are available to support important development or acquisition projects. Apart from the various direct support functions at central group level there is also a very large reservoir of project know how, business process and knowledge management in the large number of affiliated companies (like for instance in Tata Consulting Services, one of the world's major providers in IT and BPO services) which can be accessed informally or through the Group's mediation.

Leveraging corporate and group human resources

The Tata Group has a long tradition of nurturing and developing talent, is engaged in the support of Indian science and arts and has a strong philanthropic tradition. It is considered a premium employer who attracts talented university and B-School graduates, an advantage which TML can exploit in its external recruitment process. The existence of the group level TAS which actively helps shaping Tata's image as a premium employer for the best university graduates, the availability of well designed training programs and the active promotion of inter-company mobility enlarge TML's access to a pool of qualified candidates. It may also help to overcome the 'liability of foreignness' in projects involving international exposure through the transfer of candidates with international experiences.

In the case of high priority projects like the Nano the recruitment of a capable and 'open minded' development team from within TML might have been difficult if not impossible if nothing else because of the absorption in ongoing developments in the existing model range.

Division	Campus recruits	Internal Transfer in TM	Lateral recruits
Central Quality	21,1	2,6	76,3
Eco Car Planning	0	33,3	66,7
Finance and Business Planning	0	33,3	66,7
HR/Admin/HDT/Security/ Safety/CSR	2,9	14,7	82,4
Kaizen Promotion Office	38,5	7,7	53,9
Manufacturing	8,3	5,8	85,9
Manufacturing Planning	13,5	19,2	67,3
New Product Introduction	14,3	57,1	28,6

Table 1: Manpower Pool Deployment for the Nano Project (Source: Palepu et al 2010, 18)

As table 1 shows TML relied to a some two- thirds on 'lateral recruits' from central functions or other Tata companies to complement transfers from inside the company and young campus recruitments. This arrangement has certainly attenuated the classic 'ambidexterity' problem (O'Reilly/Tushman 2007): in this case to simultaneously exploit current capabilities through further extending and improving the Indica/Indigo range and at the same time explore new frontiers with the Nano project. Another very different example of indirect group support in accessing talent can be found in the recruitment of two experienced German automotive top managers in 2010 to head TML (Carl-Peter Foster, former CEO of General Motors Europe) and JLR (Ralf Speth, former BMW and Ford manager). The personal relations qualities of the Group Chairman, but also the perspectives of TML as a company which has the support of the Tata Group may have been good reasons to join the company despite its still shaky financial condition.

Group reputation and relational contracting

One of the most important assets for TML is the Tata name, i.e. the chance to share and profit from Tata's superior image in India, which is carefully nurtured through corporate communication and PR. Tata as a corporate brand increases the trust of TML's external stakeholders in the company which in turn increases effectiveness and efficiency of searching for and contracting with external partners. Examples for this value enhancing and cost saving resource leverage are manifold. When the Indica was

launched (and now also after the Nano launch) there are the serious hick-ups and bugs to overcome which is often the case with new product introductions. The Tata brand serves as a kind of guarantee that the problems will be fixed. The Tata image is also helpful in establishing long-term relationships with world class suppliers which has been especially important in the Nano project and put to a test when the manufacturing site had to be shifted from Singur to Sanand. The strategic alliance with Fiat which was initiated by Fiat itself rests upon the trust in the Tata name and additionally on a close personal relationship of the two group chairmen (Mitchell/Hohl 2008). Dealings with local Governments in India or with the British Government and British trade unions during and after the JLR deal, even the JLR deal itself, and relationships with dealers and distributors in India or abroad are to a large extent underpinned by the trust in the Tata name. The access to the trust in the Tata name facilitates a 'relational contracting" approach which generally supports TMLs interfirm and Government relationships, enhances stability and supports the flow of information.[13]

Access to complementary technology assets, supplies and expertise

Although the Tata Group is a 'conglomerate' with many of its businesses 'unrelated' to each other TML is nevertheless embedded in a cluster of related companies in Tata's 'Engineering Products and Services Sector'. This group internal cluster comprises TataAutocompSystems (TACO), an automotive supply company which has engaged in 14 JVs with leading European, Japanese and American automotive suppliers and runs 30 manufacturing facilities in India and China. TACO was not only involved in the Nano development (Machinist.in 2009, Tata 2009), but is a valuable low cost supplier to TML, a knowledge resource and 'window to the world' through its many JVs. Another partner is TAL Manufacturing Solutions, a Tata Group company which provides manufacturing engineering, manufacturing IT and other services to TML and other OEMs. Tata Technologies with the INCAT acquisition belongs to TML and supports product development and a broad range of engineering services. All these companies and other group companies from Tata's 'Materials Sector', its 'Information Technology and Communications Sector' or its 'Chemicals Sector' can be considered as 'extended resources' or 'network resources'. These resources give TML access to technological knowledge and expertise and at the same time increase TML's absorptive capacity for external knowledge. It may also increase access to low cost inputs needed in car production (e.g. steel, chemicals, components) by either saving transactions cost of negotiating complex contracts or by improving TMLs negotiation position with external suppliers through reduction of potential information asymmetries.

Capital back-up, leverage and risk

TML came into being by an investment of the Tata Group in 1945. While the company has been listed on the Bombay Stock Exchange already for a long time it was listed in New York in 2004. As Tata Communcations Ltd. had already been listed at the NYSE in 2000 the Group has certainly been instrumental and supportive in getting TML to fulfil the financial and reporting requirements of a NYSE listing. Furthermore, the Tata name will have contributed to the credibility of and trust into the company. Since 2004 Citibank as a depositary for TML's ADRs has held between 8 and 14% of TML's ordinary shares. The internationalisation of TML's capital base with the help of the group is an important contribution to the company's position and reputation.The strain on the company's resources through the Nano project and much more through the JLR acquisition becomes visible in the fall of TML's equity ratio from a level of 61 % in 2004/05 to 50% and 42% in the two following years, and to a dramatically low level of only 15% in 2008/09 as a result of the coincidence of the JLR deal with the financial crisis (exhibit 7 in the annex). The Group generally acts either formally or informally as a guarantor or 'lender of last resort' for its group companies – no major Tata company could be let into bankruptcy without massive repercussions on the value of other Tata listed companies. This role was severely tested when the JLR takeover was followed almost without delay by the global financial crisis. When the rights issue which was sup-

[13] See on the initial idea of 'relational contracting' Macneil 1969 and a recent well written comment by Kay 2010. There exists a very large body of literature on 'relational contracting' from legal, business, economics and sociological perspectives.

posed to largely refinance the bridging loan for the acquisition did not get acceptance in the market the Tata Group absorbed the shares which led to an increase in Tata Group share holdings in TML from 30,7 to 39,1 % between FY 2008 and 2009 (exhibit 8 in the annex). The Group has also been deeply involved in securing additional funding for the refinancing and working capital needs of JLR in months and years following the deal.

5. Conclusions and concluding remarks

A number of insights and conclusions can be drawn from the case of TML's resource and capability creation process in the passenger car business. *First,* in a comparatively *short* period of less than 15 years TML has evolved from an initial entrant into a medium-sized passenger car firm which has not yet caught up with global industry leaders, but has become a force to be reckoned with[14]. *Second*, at the time of entry into the new business segment TML's resource creating strategy was *path-dependent* in the sense that it leveraged Tata's and TML's significant antecedent human, technological and reputational resources - beyond the financial endowment necessary for such a move. *Third*, the catch-up process and the accelerated resource and capability building was fuelled by a newly created *dynamic capability* at group level which also helped to speed up this process and reduce the effect of the usual 'time compression diseconomies' which are inherent in resource accumulation processes (Dierickx and Cool 1989). This dynamic capability has evolved from the interplay of a strong leadership personality (Ratan Tata) and an extended process of capability enhancing transformational changes at group level. *Fourth*, the proper technological catch-up process was focused around overlapping strategic initiatives or projects which were top-down driven and combined external resource acquisition (suppliers, consultants) and internal resource building with a clear focus on learning and upgrading. Furthermore, TML's internal resources were combined with central and group network resources and capabilities to achieve the ambitious goals of the initiatives. *Fifth*, while in the first decade attempts at a *downstream internationalisation* through exports of TML cars were not very successful the *upstream internationalisation* through acquisitions (e.g. INCAT), greenfield activities (e.g. TMETC), Joint ventures (TACO) and relational contracting with key suppliers is an important ingredient in the building of complex development and manufacturing capabilities. *Sixth*, the eventual transformation into a global passenger car manufacturer and internationalisation along the whole value chain through acquisition of a company bigger than TML and several times its size in passenger cars can be considered as taking advantage of a strategic opportunity which was only possible because of TML's affiliation as a Tata BG company. *Seventh*, the rapid catch-up and capability creation of TML in passenger cars can be understood as a co-evolutionary process of Group and internal company resource creation which would not have been possible in a stand-alone company setting, even less so if this company would have had to rely on capital market financing.

The analysis of this case has confirmed a pre-eminent role of group affiliation in the 'latecomer catch-up' of TML and demonstrated the complex processes in creating capabilities and in internationalisation processes of a latecomer firm. While it is not the intention of this paper to go much beyond this case study it may be used as one contribution in exploring a number of more general theoretical issues and questions some of which are outlined in the following. Guillén and Garcia-Canal (2009) have tried to characterize the 'new multinationals' from emerging markets (as compared to what they call the 'American Model of the Multinational Firm') and put together in their literature review a range of 'intangible assets' which have been shown to characterize the new MNEs. Some of these have also been found in the TML case such as the 'ability to absorb technology, combine resources in ways that reduce costs and enhance learning', 'expertise in the management of acquisitions', 'ability to develop networks of

[14] This could be compared to Hyundai Motors which needed some 30 years for a similar catch-up process in earlier decades.

cooperative relationships' (ibid, 31). These capabilities have been shown to become critical when extracting value from M&As and strategic supplier relationships, but also for sharing resources within a BG in cases of major expansion, diversification or internationalisation projects (ibid). The case seems therefore to confirm these findings. Another attempt at explaining the particular strategies of LCFs, the *'Link, Leverage, and Learn'* paradigm proposed by Matthews (2002a, 2002b, 2006), seems to reflect also some aspects of the TML case. Mathews resource-based view of latecomer catch-up and internationalisation defines the latter deliberately broad as "the process of the firm's becoming integrated in international economic activities" (2006, 16). In this process LCFs see the world full of resources to be tapped whereas traditional MNCs who dispose of these resources already perceive the world full of competitors who try to imitate their success (ibid, 17). TML fits the profile of Mathews' paradigm in the sense that its catch-up process was based on (initially upstream) *'linking'* up with external knowledge through several forms (acquisitions, technology purchase, interfirm networks in the form of direct consultancies or long-term supplier relationships). The *'leverage'* could be seen in the very deliberate strategy of TML/Tata to integrate these resources into the firm's own resource and capability base and their incorporation in platform products such as the Indica or the Nano. As suggested by Mathews the repeated application of linkage and leverage involves an organisational *learning* process which supports the accelerated internationalisation and the catch up of these firms (ibid 20). While the LLL framework seems to reflect in general the strongly network oriented and relational catch-up processes of LCFs it gives scant insights why some LCFs are successful in this process and others are not – here BG affiliation may be an important explanatory variable as has been show in the TML case.

Another aspect is the 'institutional void' hypothesis which postulates that BGs in emerging economies are a dominant and appropriate organisational form because they 'fill in' for shortcomings in the institutional context of developing countries such as or instance immature capital markets, insufficient contract security or undeveloped labour markets (for a study on the case of Indian BGs see for instance Khanna/Palepu 2000). Although firms related to BGs in these countries may have some advantage because the corporate parent fills in many of the 'voids' (internal labour market, internal capital market, contract power through Government relationships, etc.) these have been postulated to fade away as the countries establish more developed institutional systems. In this sense the 'affiliation advantage' of TML would diminish in the future as India is on a trajectory to a more liberal and rule-based economic system. This interesting issue cannot be dealt with in this study, but the contingent nature of TML's evolution and the 'replicability' across time and history are certainly questions which need further research.

There would be at least two avenues for future research. One could go along a more *inductive* path which explores catch-up strategies by other LCFs and confronts cases of group affiliated with cases of stand-alone firms. As the technology acquisition and learning strategies may vary by industry sectors it would make sense to confine this research to industries or segments with comparable characteristics, i.e. medium-tech R&D, need to access several technological competences, important role of manufacturing. The passenger car industry which is the setting for this case study is in this sense comparable to other industries like commercial vehicles, motorcycles, construction machinery, wind power appliances, or medical instruments. One interesting question to explore would be whether there are 'functional substitutes' for BG affiliation which might be the case in many state-owned LCFs from China where state organisations at various levels support catch-up strategies e.g. through soft loans and preferential access to Government sponsored research. A second more *deductive* approach might be to bring together the large research literature on catch up and internationalisation of LCFs and the largely separate research stream on BGs from emerging countries and formulate suitable questions based on the relevant propositions and findings which can be applied to the TML/Tata case. An outcome could then be that the case confirms or serves as an illustration of these propositions, or – in case the case casts doubt on the validity of the general theory – to develop modified propositions which would then have to be 'tested' across more cases and/or by using more quantitative approaches.

Annex

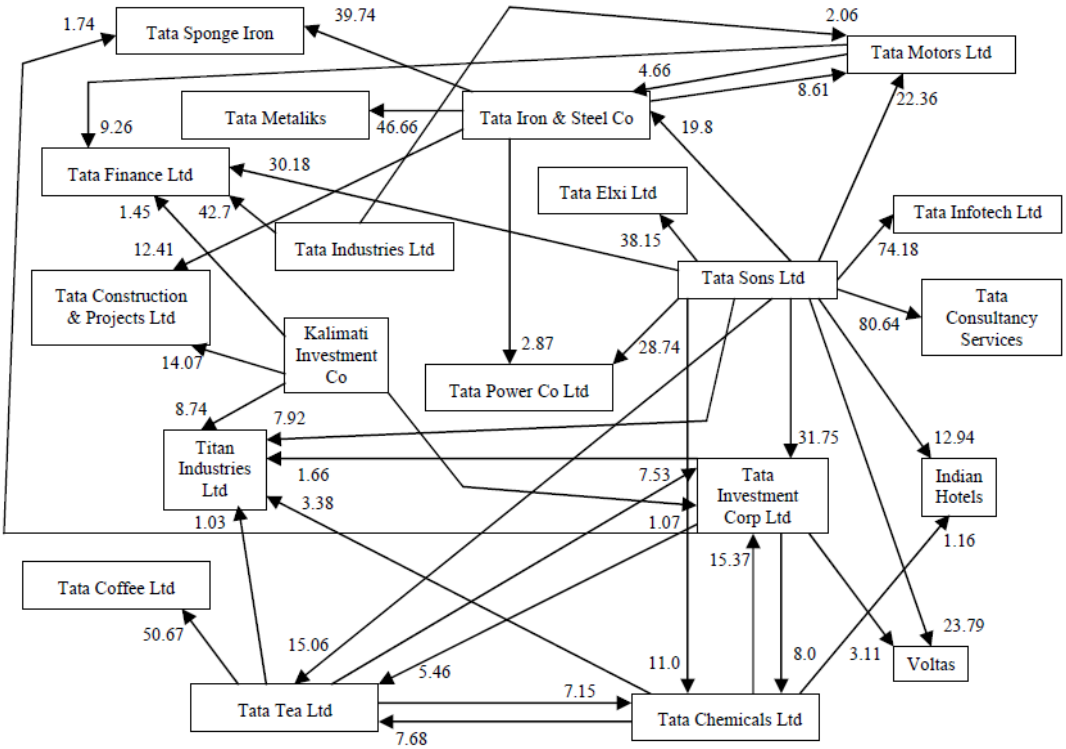
Exhibit 1: Overseas acquisitions by Tata Group companies after 2000 (selection)
(Source: www.tata.com and various sources)

Year	Company Acquired	Acquirer: Tata affiliate	Price paid (actual or estimated), US $ Million
2000	Tetley Tea Group, UK	Tata Tea	432
2003	Gemplex, USA	VSNL (Tata Communications)	n.a.
2004	Daewoo Commercial Vehicles, South Korea	Tata Motors	120
	Tyco Global Network, USA	VSNL (Tata Communications)	130
2005	Nat Steel Asia, Singapore	Tata Steel	468
	Teleglobe, UK	VSNL (Tata Communications)	239
	INCAT International, UK	Tata Motors	n.a.
	Wündsch Weidinger, Germany	TataAutocomp Systems	7
	Starwood Group, Australia	Indian Hotels	29
	Indo Maroc Phosphore (IMACID), Marocco	Tata Chemicals	38
	Good Earth Corporation, USA	Tata Tea	31
	Hispano Carrocera (21%), Spain	Tata Motors	12
	Indigene Pharmaceuticals, USA (<30%)	Tata Industries	n.a.
2006	Brunner Mond, UK	Tata Chemicals	160
	Millenium Steel, Thailand	Tata Steel	167
	8'O'Clock Coffee, USA	Tata Coffee	220
	Glaceau (Energy Brands), USA	Tata Tea	677
	Pearl Group, UK	Tata Consultancy Services	n.a.
	Comicrom, Chile	Tata Consultancy Services	n.a.
	Tertia Edusoft, Germany & Switzerland (90%)	Tata Interactive	n.a.
	Ritz-Carlton Boston, USA	Indian Hotels	170
	JEMCA, Czech Republic	Tata Tea	19
2007	Corus, Anglo-Dutch	Tata Steel	12000
	Campton Place Hotel, USA	Indian Hotels	58
	Transtel Telecoms, South Africa	Tata Communications	33
	PT Kaltim Prima Coal, Indonesia (30%)	Tata Power	n.a.
2008	PT Bumi Resources, Indonesia	Tata Power	1300
	General Chemical Industrial Products, USA	Tata Chemicals	1010
	Jaguar Land Rover, UK	Tata Motors	2300
	Serviplem, Spain (79%)	Tata Motors/Hitachi	n.a.
	Comoplese Lebrero, Spain (60%)	Tata Motors/Hitachi	n.a.
	Piaggio Aero Industries, Italy	Tata Sons	n.a.
	China Enterprise Communication, PRC (50%)	Tata Communications	n.a.
	Hispano Carrocera, Spain (remaining 79%)	Tata Motors	n.a.
	Milio Greenland/Innovasjon, Norway (50,3%)	Tata Motors/TMETC	n.a.
	Geodynamics, Australia (10%)	Tata Power	n.a.
	Citigroup Global Services, US	Tata Consultancy Services	512
2009	Neotel, South Africa	Tata Communications	n.a.
	Grand, Russia	Tata Tea	n.a.
	Dutch Lanka Trailer Manufacturers, NL	TRF	7
2010	Hewitt Robins International, UK	TRF	4

Exhibit 2: Major segments entered and exited by the Tata Group post 1991
(Source: www.tata.com)

Entries	Exits	
Passenger cars	Soap and toiletries	Telecon hard ware
Auto components (mostly JVs)	Cosmetics	Oil drilling services
Retailing	Consumer electronics	Cement
Telecommunications	Pharmaceuticals	Printing and publishing
Insurance	Branded white goods	Textiles
Home entertainment	Paints	IT hard-ware
Pharmaceuticals (R&D)		

Exhibit 3: Structure of Tata Group's Listed Firms during Financial Year 2005
(Source: Kakani/Joshi 2008, 18)



Note: (a) Shown above is the Equity Ownership Pattern of major Tata affiliates having more than 1% as of Year 2005; (b) Tata Sons is the primary holding company of the group. Most of the firms are held by Tata Sons, Tata Industries, Tata Investment Corporation, and Kalimati Investment Company. The Tatas control more than 83% in Tata Sons and more than 74% in Tata Industries. Information on the other holding arm, Kalimati Investment Company is not available.

Exhibit 4: Annual Growth Rates of Tata Motors Ltd. and of Indian GDP
(Source: Worldbank, Tata Motors Annula Reports)

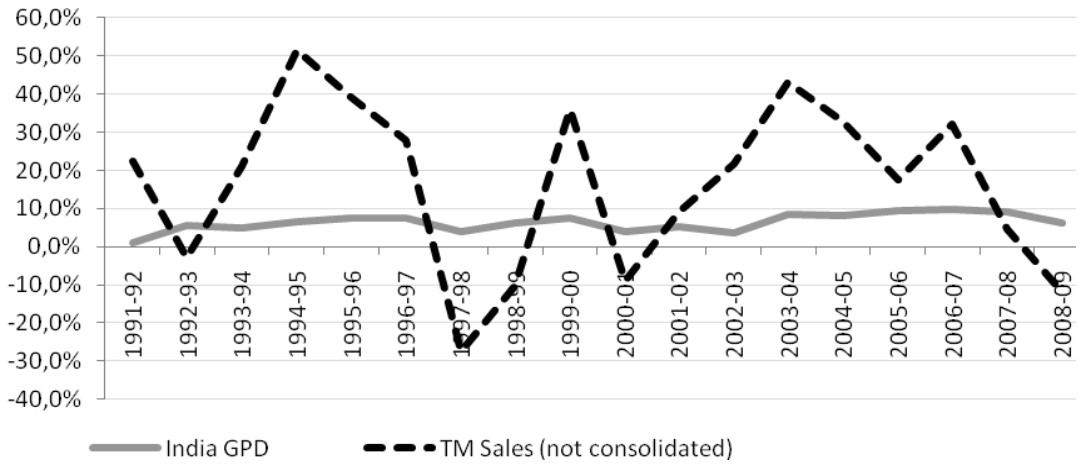


Exhibit 5: Unit Sales for Passenger Cars in India – Share of Tata Motors
(Source: Society of Indian Automobile Manufacturers (SIAM) and TML Annula Reports)

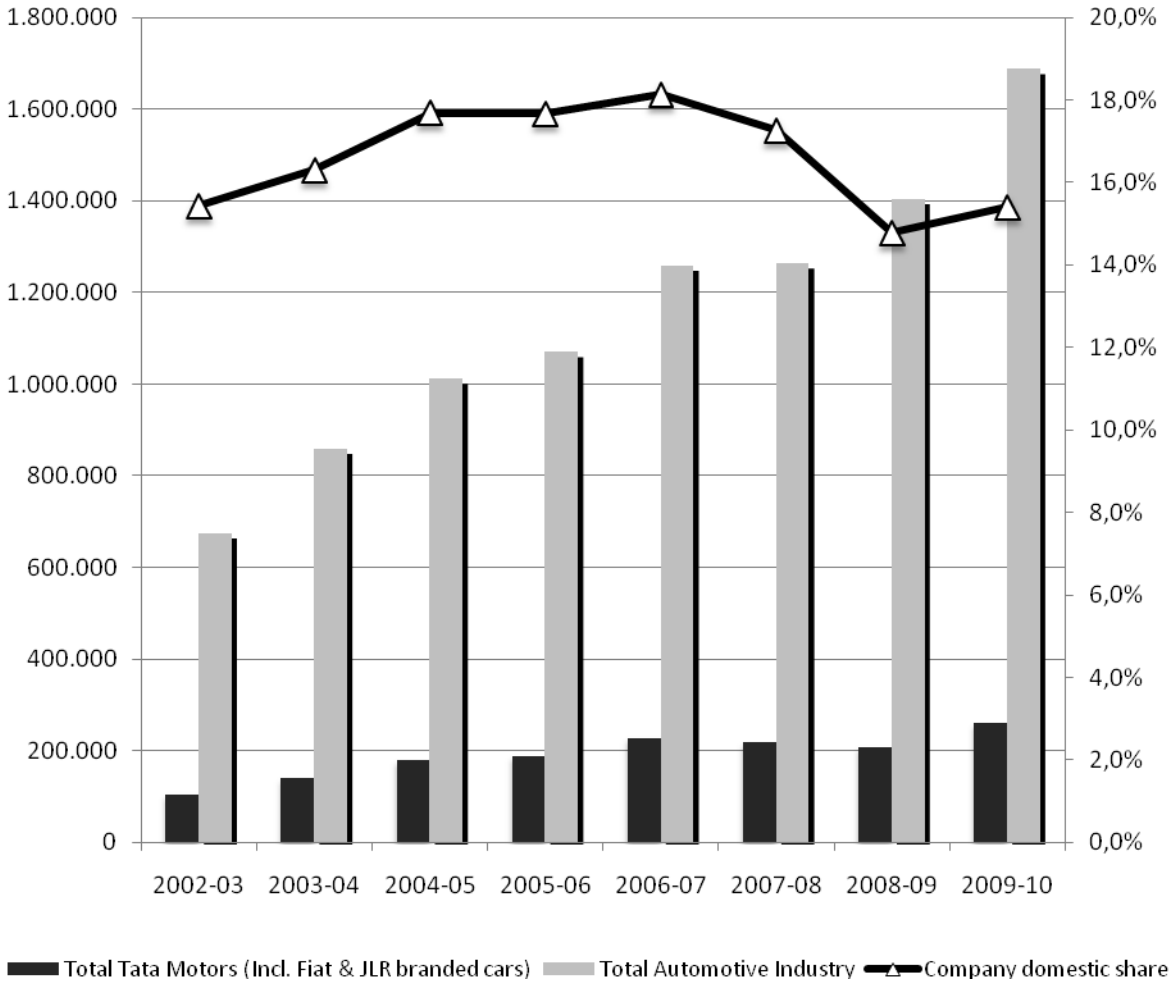


Exhibit 6: Tata Motors - Major Technology Absorptions and Imports
(Source: Compiled according to TM Annual Reports since FY 2000-01)

Technologies for commercial vehicles only in italic

Technology	Technology Provider	Year
Design & Styling of variants of passenger car platform (Sedan and Estate)	Institute of Development in Automotive Engineering S.p.A, Italy	2000-01
Design and Development of modular cabs for commercial vehicles	*Stile Bertone, Italy*	*2002–03*
Safety and NVH Integration in passenger vehicles	MIRA Ltd UK	2004-05
Design and Development of passenger vehicles	Institute of development in Automotive engineering S.p.A Italy	2004-05
Direct injection common rail E IV engines for passenger vehicles	AVL GMBH Austria & Delphi Diesel systems France	2004-05
Design & Development of New Generation engine platforms for LCVs and UVs	*Ricardo UK Ltd, UK*	*2006-07*
Vehicle NVH (Noise Vibration & Harshness Improvments)	LMS, Belgium	2006-07
Safety Integration	DIADA, Spain	2006-07
Craftsmanship for Company's vehicles	*TMETC, UK*	*2006-07*
Sealed Integrated brake systems	Safe Effect Tech, Australia	2006-07
In vehicle networking	BOSCH, Germany	2006-07
Development of body panels	IAV, Germany	2007-08
Vehicle Styling	TRILIX, Italy	2007-08
Vehicle NVH (Noise Vibration & Harshness Improvments)	LMS International, Belgium	2007-08
Transmission technology	TOROTRACK, UK	2007-08
Engine Development	FEV, Germany	2007-08
Design & Development of New Generation engine platforms for ICV / MCV	*AVL List GMBH, Austria Delphi Diesel Systems, France*	*2007-08*
Design & Development of Infinitely variable transmission based on full toriodal traction-Drive variators for various vehicle platforms.	M/s Torotrak (Holdings) Ltd, UK	2007-08
Design & Development of flush sliding and plug window	Wagon SAS, France	2007-08
Development & application of a two cylinder common rail diesel engine for small passenger car and small commercial vehicles.	FEV, Germany	2007-10
Vehicle Electrical and Electronic Architecture Development methodology	INTEDIS, Germany	2008-09

Vehicle Mechatronics Reliability Validation process.	IDIADA-NSI, Spain	2008-09
Door system integration and development of master body side	IDIADA-NSI, Spain	2008-09
Body and trim design on mini truck	*LG-Vens, Korea*	*2008-09*
Styling Development of exteriors and interiors of new goods and people carrier	Trilix, Italy	2008-09
Trim design and development of new LCV	*NESC, Korea*	*2008-09*
Design & Development of Electric Hatchback in windows Vehicle – Indica Vista EV	Tata Motors European Technical Centre plc, UK (TMETC)	2008-09
Model based development for Engine Stop Start functionality	KPIT Cummins, India	2009-10
TALC (Touch, Appearance, Light, Colour) Interior Harmony development methodology	Delphi, Germany	2009-10
Acoustic tuning for Infotainment system	Delphi, USA	2009-10
EMC reliability through design specifications & verification on vehicle	IDIADA-NSI, Spain	2009-10
Parallel Hybrid Technology for Buses	*Eaton*	*2009-10*
Hardware in Loop (HIL) System and Test Framework development for Body Control Module and Instrument Cluster	KPIT, India	2009-10
Gas Injection technology for LCV, MCV & HCV engines	AEC, Australia	2009-10
Stop-Start feature for various vehicle platforms	Lucas, UK Continental, USA	2009-10
Concept -Automated Manual transmission for commercial vehicles	*Prodrive, UK & Porsche, Germany*	*2009-10*
Multiplexed wiring systems for bus platforms	*Continental, USA*	*2009-10*
Gas Injection technology for Ace, Xenon, Winger engines	AFS, Canada	2009-10
Engine Management for Series Hybrid Technology for Buses	*AEC, Australia,*	*2009-10*

Exhibit 7: Equity ratio of TML (%) and equity/liabilities (million US$)
(Source: Compiled from TM Annual reports, translation into USD using World Bank exchange rates)

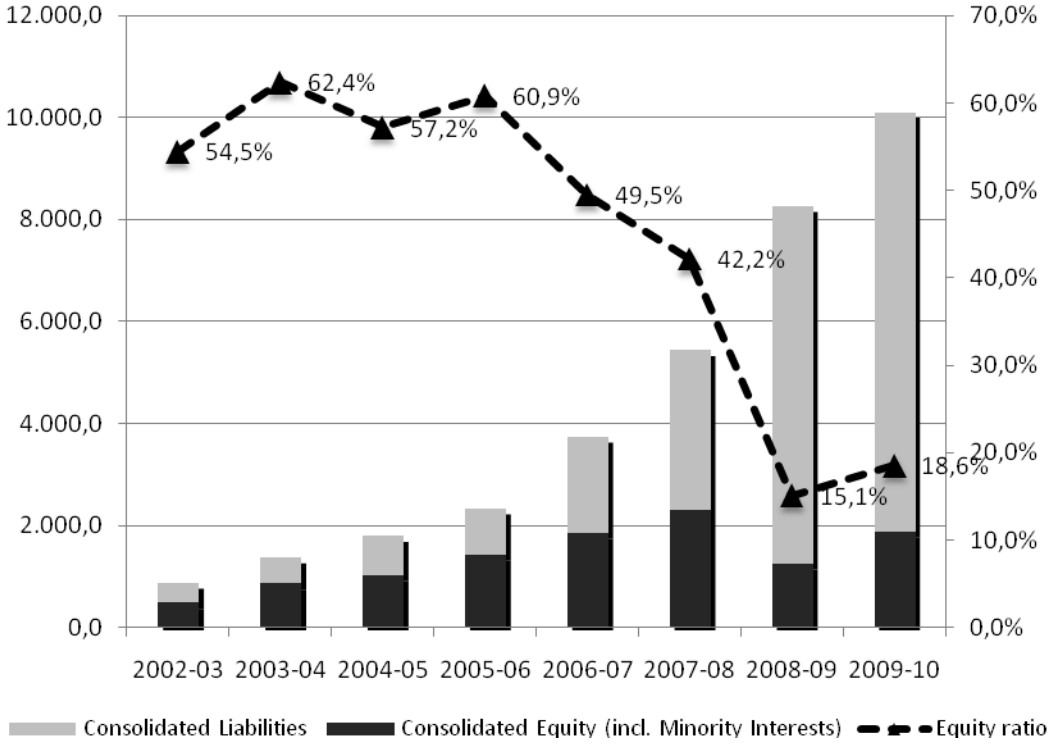
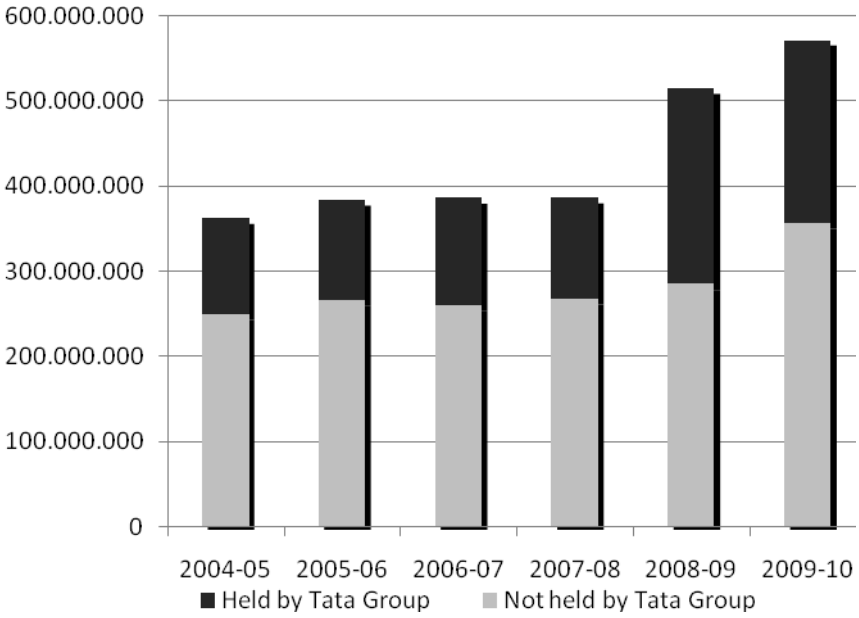


Exhibit 8: Total Number of Shares (Ordinary & A-Ordinary Shares) of TML at the end of FY
(Source: Compiled from SEC 20-F filings and TM Annual Reports)



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