MULTINATIONAL ENTERPRISES IN INDIA

Nagesh Kumar

Also available as a printed book
see title verso for ISBN details

Multinational Enterprises in India

Multinational enterprises play an important role in the economic activity of most developing countries, including India. The interindustry pattern of their domination in a country is, however, uneven, and depends upon the ownership of intangible assets and the existence of internalization incentives. Furthermore, because of their ownership advantages, centralized decision-making, and global outlook, MNE affiliates adopt different competitive strategies from their host country firms.

This book analyses the inter-industry pattern of operations of MNEs in India in the framework of the internalization theory, and examines different aspects of the conduct and performance of multinational and local firms. It further analyses the determinants of profit margins to detect the importance of mobility barriers, and assesses the role of MNEs in the promotion of Indian exports.

Nagesh Kumar is a Fellow at the Research and Information System (RIS) for the Non-aligned and Other Developing Countries, based in New Delhi. He has written a number of research papers on foreign investment, multinational enterprises, and technology transfer in developing countries, particularly India. In 1989, Dr Kumar was the winner of the Exim Bank's first International Trade Research Award.

Multinational Enterprises in India

Industrial Distribution, Characteristics, and Performance

Nagesh Kumar

Routledge
London and New York

First published 1990 by Routledge
11 New Fetter Lane, London EC4P 4EE

This edition published in the Taylor & Francis e-Library, 2002.

Simultaneously published in the USA and Canada
by Routledge
a division of Routledge, Chapman and Hall, Inc.
29 West 35th Street, New York, NY 10001

© 1990 Nagesh Kumar

All rights reserved. No part of this book may be
reprinted or reproduced or utilized in any form or
by any electronic, mechanical, or other means, now
known or hereafter invented, including photocopying
and recording, or in any information storage or
retrieval system, without permission in writing from
the publishers.

British Library Cataloguing in Publication Data

Kumar, Nagesh, *1958–*
Multinational enterprises in India: industrial
distribution, characteristics, and performance.
1. India. Multinational companies
I. Title
338.8'8854

ISBN 0-203-04142-9 Master e-book ISBN

ISBN 0-203-16203-X (Adobe eReader Format)
ISBN 0-415-04338-7 (Print Edition)

Library of Congress Cataloging-in-Publication Data

Nagesh Kumar.
Multinational enterprises in India: industrial distribution,
characteristics, and performance/Nagesh Kumar.
p. cm.
Includes bibliographical references.
ISBN 0-415-04338-7
1. International business enterprises—India. I. Title.
HD2899.N34 1990
338.8'8854–dc20 89–35966
CIP

For
my beloved mother,
Shrilata

Contents

Foreword

John H.Dunning

This is a welcome and timely study. As the author points out in his first chapter, after a long period in which there was very little inward direct investment in India, the Indian government is now adopting a more liberal and constructive policy towards collaboration with foreign firms, particularly where this collaboration takes the form of joint ventures. This heralds well for the future, for there can be little doubt that there are tremendous opportunities for multinational investment in India. For, apart from the Peoples Republic of China, India is the most populated of the developing countries, and almost certainly has the technological capacity and educational facilities second to none.

There have been several academic studies of the determinants and impact of foreign direct investment in India over the past twenty or more years, but, in at least two respects, Dr. Kumar's contribution is quite unique. The first is that he has systematically applied the eclectic paradigm of international production to explaining both the industrial structure of foreign participation in Indian investment and why such participation takes the form of equity investment rather than some form of contractual agreement between foreign and Indian firms. Second, and even more impressively, the author has sought to identify the specific and distinctive characteristics of foreign owned firms in India, and has made a careful and systematic comparison of the ways in their conduct and performance differs from that of Indian owned firms. The monograph also presents a lot of useful statistics about the role of foreign direct investment in the Indian economy in the 1980s, using data provided by the Reserve Bank of India.

I am happy to commend this short book; and I hope it will be widely read and studied. I believe it will be particularly useful and appealing to students of foreign direct investment and the economics of the multinational enterprise. Analytically, it follows in the tradition of

distinguished scholars such as Richard Caves and Sanjaya Lall, and provides a good example of the use that can be made of economic theory and statistical techniques to understand and evaluate both the importance of foreign ownership to an economy, and the ways such ownership affects the profitability and export performance of the Indian economy.

University of Reading
and Rutgers University
October 1989

Tables

Acknowledgements

This book is a revised and updated version of my doctoral dissertation submitted to the University of Delhi in 1987. The dissertation was completed under the supervision of Professor N.S.Siddharthan of the Institute of Economic Growth (IEG), and Dr Pulin B.Nayak of the Delhi School of Economics (DSE). I am deeply indebted to them. Professor Siddharthan generously spared lots of his time for discussions, comments, and advice, and the study benefited a great deal from his deep insights into the subject. Dr Nayak has been a great source of encouragement throughout and offered many valuable suggestions. I owe enormous debt also to Professor K.L.Krishna of DSE who introduced me to the subject and has been a constant source of inspiration and advice throughout.

The work embodied in this study has been spread over my tenure at three institutions, namely, the Research and Information System (RIS) for the Non-Aligned and Other Developing Countries, since August 1985; the National Institute of Science, Technology and Development Studies, 1984–5; and the Indian Institute of Public Administration (IIPA), 1981–4. My grateful thanks are due to the authorities and staff in these institutions for understanding and generous support provided to the work. The study has benefited immensely from the valuable comments and encouragement received from Dr V.R.Panchamukhi, Director, RIS. My stay at the Corporate Studies Group of the IIPA and interactions with Professor S.K.Goyal, its Programme Director, proved to be quite fruitful for the data base of the study.

Different parts of this study have benefited from comments, suggestions, and reactions of, among others, Professors John Dunning (University of Reading), Alan Rugman (University of Toronto), K.K. Subrahmanian (Centre for Development Studies, Trivandrum), Homi Katrak (University of Surrey), Surendra Patel (formerly of UNCTAD), Ashok Desai (DSE), B.N.Goldar (IEG), R.G.Nambiar (RIS), and Nirmal Chandra (Indian Institute of Management, Calcutta).

An earlier version of the analysis contained in Chapter 3 was published in the *Welwirtschaftliches Archiv* in 1987 and that of Chapter 2 in the *Economic and Political Weekly* in November 1988. Some other parts of the empirical work have been exposed at research seminars in DSE, RIS, the EIBA conference in Antwerpen in December 1987, and at a workshop held in Bangkok in September 1986 on Foreign Investments in the Asian Economies and have benefited from the comments of the participants.

Several of my friends and colleagues have contributed to the study in various ways. Among those who deserve special mention are B.M. Gupta (formerly of IIPA) for his enormous programming help, and K.S. Chalapati Rao (IIPA) and Gurdip Singh (United News of India) for carefully reading the drafts.

Finally, I must express my gratitude to my parents but for whose encouragement this work would not have been possible. By the time this study came to be revised for publication in this form, I had been joined by Rachana. I should record my sincere appreciation for her patient bearing with my long (agonizing!) absences and for the support provided.

Nagesh Kumar
New Delhi, February 1989

Abbreviations

DCA	Department of Company Affairs
EPZ	Export processing zone
ERP	Effective rates of protection
FB	Foreign branches
FCEs	Foreign controlled enterprises
FCRC	Foreign controlled rupee company
FDI	Foreign direct investment
FERA	Foreign Exchange Regulation Act
FIB	Foreign Investment Board
FS	Foreign shares
FSU	Foreign subsidiary
LCEs	Locally controlled enterprises
MES	Minimum economic scale
MNEs	Multinational enterprises
OGL	Open general license
OPIC	Overseas Private Investment Corporation (of the United States
RBI	Reserve Bank of India
SCP	Market structure-conduct-performance
TNC	Transnational corporation

Introduction

This study analyses the industrial distribution, characteristics, and performance of affiliates of multinational enterprises (MNEs) in India. Multinational enterprises (foreign controlled enterprises) play an important role in the economic activity of most developing countries. They account for 70 per cent of the manufacturing output in Zimbabwe, 63 per cent in Singapore, 44 per cent in Malaysia, 36 per cent in Venezuela, and 32 per cent in Brazil (UNCTC 1988). Even though India has received only a small proportion of the total foreign direct investment (FDI) stock in the world, MNE affiliates constitute an important and a more prosperous segment of the corporate sector. They hold a dominating position in certain branches of manufacturing, such as medicines and pharmaceuticals, dry batteries, toilet preparations, several types of machinery and equipment, automobile tyres and tubes, and plastic raw materials.

MNEs are characterized by gigantic scale of operations, large research budgets, geographical and product diversity. They own intangible assets such as established brand names, proprietary technology, a reservoir of skills, and an 'organization capable of mastering complex tasks', which gives them an edge over their rivals (Vernon 1977, chap. 2). MNEs are equipped with international information networks and respond to global opportunities with centralized decision-making. Their headquarters are usually located in the industrialized market economies.

These characteristics of MNEs have implications for the industrial distribution, conduct, and performance of their affiliates in their host countries. MNEs are likely to be concentrated in those industries in which their intangible assets provide them with an edge over their local counterparts (subject to the presence of locational and internalization incentives) (see Hymer 1960; Caves 1971, 1974a; Dunning 1979; Rugman 1981). Because of their intangible assets, their competitive rivalry and other aspects of conduct are often different from those of their local counterparts. The recent literature, therefore, has posited foreign ownership as an element of market structure influencing other aspects of structure, conduct, and performance (Caves *et al.* 1980; Newfarmer and Marsh 1981). Further, if the competitive rivalry and conduct of MNE affiliates

and local firms are dissimilar they may constitute different 'strategic groups' (Caves and Porter 1977) in an industry and enjoy differential protection from entry barriers. Hence, their performance could also differ.

It is in this broad framework that the present study analyses the industrial distribution, distinguishing characteristics, and relative performance of MNEs in the Indian manufacturing. More specifically, this study examines how far the postulates of the theory of international operations of the firm, particularly the recent advancements to it in the framework of the internalization paradigm and government policy factors, are able to explain the inter-industry pattern of MNE's presence as observed in Indian manufacturing industries. Using appropriate univariate and multivariate statistical techniques, this study examines the conduct of MNE affiliates or foreign enterprises relative to that of local firms in terms of scale of operation, advertising, in-house R&D, financing, retention, choice of technique, and employee compensation; and performance in terms of profitability, growth, export, and linkage creation. The determinants of profit margins of MNE affiliates and local firms are analysed, and explanations sought for the superior performance of the former. The study explores whether differential protection enjoyed by the two groups of firms from entry barriers explains the profitability differences. Finally, the study examines the export behaviour of the two groups of firms in order that an assessment can be made of their roles in promoting India's exports.

The analytical framework

The analyses of the factors that explain the inter-industry distribution of intensity of FDI (from the home country and in the host country) have drawn from the theory of international operations of firms. This theory makes international operations conditional to ownership of certain intangible assets which give the owning firm an advantage over local firms (Hymer 1960; Kindleberger 1969; Caves 1971, 1974a). The revenue productivity of these advantages is appropriated through exports in the initial stages of the product cycle and through foreign production when locational factors make it more profitable (Vernon 1966). The foreign production can be accomplished through renting out (licensing) the intangible asset to unassociated local firms or through FDI, i.e. setting up an affiliate (which may take the form of an overseas branch, subsidiary, or a joint venture) and thus internalizing the transfer of the intangible asset. The choice between the two alternative modes is mainly determined by the relative transaction cost involved in the market transfer (Buckley and Casson 1976; Dunning 1979; Williamson 1981; Rugman 1981). The

higher is the transaction cost, the greater is the incentive to internalize (or undertake FDI). Therefore, FDI is expected to be prominent in those branches of industries in which intangible assets with high internalization and locational incentives are important. The licensing mode of foreign operations is similarly expected to be preferred in branches where intangible assets with high locational incentives (but with low internalization incentives) are present. A rigorous test of these predictions, however, has not yet been possible mainly due to the difficulty in classification of the intangible assets between those with high and low internalization incentives.

The ownership of intangible assets thus enjoys a central place in explaining the process of internationalization of firms in the theory. The ownership advantages of MNEs not only explain their very existence in countries other than their homes, but may also have certain implications for the behaviour of their foreign affiliates compared to their local counterparts. For instance, the asset bundles of MNE affiliates differ from those of their local rivals because of their ownership of intangible assets such as access to goodwill of the brand names, technology, and the reservoir of organizational skills of the parent firm. In order to maximize the revenue productivity of their asset bundles, the MNE affiliates may adopt a non-price mode of rivalry based on product differentiation (Caves 1974b). Their pricing is thus likely to be monopolistic and could include a monopoly rent on account of ownership of intangible assets. Their profit margins, therefore, are expected to be higher. The access of MNEs to international capital markets may result in different leverage ratios of their affiliates, depending upon the relative cost of funds in the host country. Their access to information on world markets, and to international marketing networks, makes it possible for them to exploit the international division of labour better. Hence the degree of export orientation and raw material sourcing of their operations could be different. Their advanced organizational skills can lead to different inventory and liquidity ratios.

In addition to the ownership of intangible assets there are other reasons which lead one to expect differences in the behaviour of MNE affiliates and their local counterparts. For instance, depending upon the degree of centralization of MNE's organization, the parent firm may retain the power to take certain strategic decisions such as the choice of technology, investment priorities, R&D, raw material sourcing, exports, and profit repatriation (Newfarmer and Marsh 1981). These decisions are likely to be based on international financial and market considerations, relative tax rates, and the global strategy of the MNE which aims at maximizing global profits. Gorecki (1976, 1980) found that the decisions of MNE affiliates in Canada to enter and diversify could be explained less

satisfactorily in terms of local conditions than in the case of their local counterparts. Howe and McFetridge (1976) reported similar results pertaining to MNE decisions to undertake R&D in Canada. Furthermore, their grooming in an environment of capital abundance and labour scarcity may be reflected in their choice of technology and on the factor proportions employed by them. Levels of employee compensation may also be higher for the same reason.

Thus the behavioural characteristics of MNE affiliates are likely to be quite different from those of their local counterparts engaged in similar activities. Hence, the two could constitute different 'strategic groups' in an industry of the type proposed by Caves and Porter (1977), Newman (1978), and Porter (1979). Caves *et al.* (1980), and Newfarmer and Marsh (1981), therefore, have considered foreign ownership to be an element of market structure, like concentration, product differentiation and entry barriers affecting other aspects of market structures, conduct, and performance. However, a simultaneity problem may exist in the relationship between foreign ownership and other aspects of market structure, because the incidence of FDI itself is dependent upon structural factors. MNEs enjoy an edge over their local rivals in overcoming the entry barriers because of their possession of intangible assets. Therefore, they are concentrated in the industries with high entry barriers such as advertising, technology, skill, and capital intensity (Caves 1982). Caves *et al.* (1980), Saunders (1982), and Gupta (1983) have taken note of the possible simultaneity problem by specifying foreign ownership as an endogenous variable in larger industrial organization models of Canada.

In the present study a slightly different approach to overcome the simultaneity problem is followed. First, the determinants of inter-industry differences in foreign shares in terms of the intangible assets and locational advantages using the postulates of internalisation theory are analysed. Next, the differences between MNE affiliates and their local counterparts are examined in terms of a large number of structural and behavioural characteristics in the comparative static framework. The simultaneity problem can arise only in cases where behaviour of MNE affiliates is significantly different from their local counterparts. Therefore, only the variables and aspects that distinguish MNE affiliates and local firms are specified as endogenous and are subjected to further analysis.

Multinational enterprises: a definition

This study deals with those affiliates of MNEs in India in which they have a controlling interest, or in which their investment is classified as FDI (as opposed to portfolio or non-equity forms of foreign investment).

MNEs have two types of controlled affiliates abroad: first, by opening a foreign branch, i.e. without registering the undertaking under the local laws; and second, by registering an affiliate in the host country which may be wholly or partly owned by the MNE. In the latter case, however, the proportion of equity participation should be large enough to ensure control and qualify as FDI. Different countries have varying cut-off points regarding the minimum proportion of equity holding for distinguishing FDIs from portfolio investments. These range between 10 per cent to 50 per cent. These percentages are essentially rules of thumb because in real life the degree of control depends upon factors such as the pattern of distribution of local shares, the nature of agreements, and the degree of technological dependence. Hence, a minimum proportion of equity necessary for securing control may vary from case to case.

In India the country's central bank, namely the Reserve Bank of India (RBI), defines two types of foreign controlled enterprises (FCEs) or controlled affiliates of MNEs: (a) foreign branches (FBs) as companies which are incorporated outside the country but have a place of business in India; and (b) foreign controlled rupee companies as joint stock companies registered in India in which 25 per cent or more of equity capital is held abroad by a foreign company or its nominee or 40 per cent is held outside India. The former category of FCEs, i.e. FBs, has steadily lost its importance as a result of the enforcement of the Foreign Exchange Regulation Act, 1973, which required FBs to convert themselves into rupee companies. Now, FBs are permitted to operate only in service sectors such as banking, transport, communications, etc., and their role in the industrial sector is negligible. As the present work is confined to the industrial sector, foreign controlled enterprise (FCE) refers only to a company registered in India with at least 25 per cent equity held with the parent MNE. *The terms FCE and MNE affiliates will be used interchangeably.* The definition of FCE adopted here (i.e. a minimum 25 per cent held by parent MNE) is consistent with that used by numerous studies for different countries such as, Newfarmer and Mueller (1975), Connor (1977), Cohen (1975), Lall (1976), Lall and Streeten (1977), Newfarmer and Marsh (1981), Chen (1983), Stopford and Dunning (1983), and Fairchild and Sosin (1986).

The data base

A rigorous treatment of the objectives of the study and verification of the theoretical propositions outlined above require data on foreign shares and structural characteristics of industry as well as data on comparative performance of FCEs and local firms in terms of a large number of

parameters for a cross-section of manufacturing industries. The Indian official data base of FCEs, however, does not fulfil these data needs (see Appendix I). To overcome this problem two variable sets were created on the industry and group characteristics for 54 manufacturing industries on the basis of unpublished firm-level financial statistics of 1,334 medium and large non-government public limited companies (in the manufacturing sector) for the period 1975–6 to 1980–1 made available by the Reserve Bank of India. The coverage extended to all non-government, non-financial public limited companies with paid-up capital of Rs10 million or above, and a sample from the smaller companies. In all, the companies included in the survey accounted for 86 per cent of paid up capital of all public limited companies in the Indian private sector in 1979–80. Appendix I provides details of the industry classification, identification of FCEs, methodology of computation, and measurements of variables included in the two data sets.

An overview

The subject matter of the study has been organized in seven chapters as follows. The host country policy often plays an important role in shaping the magnitude, pattern, and even the impact of operations of foreign enterprises. Chapter 1 reviews the evolution of the Indian government's policy towards foreign collaborations in the post-Independence period. The chapter also examines the influence of the government policy on the trends and patterns of FDI in the economy.

Chapter 2 deals with the economic significance of FCEs in the Indian manufacturing sector. Existing estimates of the share of FCEs in Indian industry are reviewed and fresh estimates are provided of their shares in assets, sales, and profits for a more recent period. The shares of FCEs in sales of fifty-four (three-digit) manufacturing industries are also computed and presented.

Chapter 3 analyses the determinants of the inter-industry distribution of foreign shares. The theory of international operations of firms is outlined (particularly the recent internalization approach), and its relevance examined in the present context. Testable hypotheses are formulated in the light of the postulates of the theory. The new theory expects FDI to be concentrated in industries where firms' intangible assets provide competitive edge, and where internalization and locational incentives are present. In the absence of internalization incentives the foreign expansion is accomplished through licensing of intangible assets. Therefore, an attempt is made to classify the broad categories of intangible assets into those with high and low internalization incentives on the basis of possible

transaction costs involved. In order to have the fuller test of the predictions the study specifies licensing also as a dependent variable. Findings of the statistical analysis are presented for both the dependent variables: FDI and licensing.

Chapter 4 analyses the distinctive characteristics of FCEs. It discusses the reasons for expecting differences between FCEs and their local counterparts in terms of different aspects of conduct and performance. Hypotheses are formulated concerning the nature of the difference between FCEs and local firms in terms of fifteen parameters representing diverse characteristics such as scale of operation, advertising, R&D intensity, profit margins, growth rates, choice of technique, employee compensation, vertical local interfirm linkages and import dependence, export performance, leverage and retention ratios, tax planning, inventory, and liquidity management. The empirical analysis is conducted in two stages. In the first stage the significance of mean difference for each of the fifteen parameters is evaluated in a univariate context. However, findings of univariate tests may be misleading on account of interaction of some of these variables. The possible interaction among the variables is controlled in a multivariate framework in the second stage.

Chapter 5 analyses the determinants of profit margins of FCEs and local firms to seek explanations of the phenomenon of higher profit margins of the former. Profit margins of FCEs may be higher because of their superior ability due to their possession of rent-yielding assets. Another possibility is that FCEs and local firms pursue different competitive strategies and the entry barriers protect them differently. To examine which of these possibilities actually explains the systematic profitability differences, the profit margins of the two groups of firms are regressed on different sources of entry barriers identified in the literature. The statistical significance of the differences in the intercept and slope coefficients of profit functions of FCEs and local firms is examined through covariance analysis.

Chapter 6 analyses the determinants of export behaviour of FCEs and local firms to find out whether FCEs help the country to export products which would not have been exported in their absence. The hypotheses to explain inter-industry variation in export performance of FCEs and local firms are formulated in terms of the industry and firm characteristics in the framework of neo-classical and neo-technology theories of international trade.

Finally, chapter 7 summarizes the major findings of the study and their implications for further research, and indicates their policy applications. It also suggests some directions for further work on the subject.

Chapter one

Policy of government of India towards foreign investment

The host government's policy has an important role in influencing the magnitude, importance, pattern, form, and impact of foreign direct investment (FDI) in the economy. The government of India has pursued a selective policy towards foreign enterprise in accordance with her developmental objectives ever since Independence. This chapter provides a brief overview of the evolution of the government's policy with respect to FDI, and its impact on the trends and patterns of FDI. This discussion, it is hoped, will serve as a useful background for the later analysis.

Evolution of the government policy, 1948–88

The Indian government's attitude towards foreign investments has been changing over the post-Independence period. Three distinct phases in the evolution of the government's policy are discernible: the period from Independence up to the late 1960s, which was marked by a gradual liberalization of attitude; the period from the late 1960s through to the 1970s, which was characterized by a more selective stance; and the 1980s, which heralded once again a liberal policy.

The phase of liberalization, 1948–67

The Industrial Policy Resolution of April 1948 recognized the role of foreign capital in the rapid industrialization of the country. However, a need for regulation was felt and legislation was promised that would regulate foreign capital in the 'national interest'. The proposed legislation was to ensure that majority ownership and effective control remained, *as a rule,* in Indian hands. In the Foreign Investment Policy Statement that the Prime Minister made in April 1949, however, the government showed no intention of adopting legislation for the regulation of foreign capital. This, perhaps, was an outcome of the economic crisis resulting from the partition of the country and the shyness of local enterprise.[1] Instead, foreign

investment was considered *necessary* (earlier merelyimportant) in supplementing Indian capital and for securing 'scientific, technical and industrial knowledge and capital equipment'. Foreign investment was encouraged on mutually advantageous terms. Though the majority ownership in local hands was still preferred, it was no more to be a *rule*. Foreign investors were assured of no restrictions on the remittances of profits and dividends, fair compensation in case of acquisition, and were promised a 'national treatment'. The non-discriminatory treatment accorded to foreign capital was, however, strongly resented by the domestic capital. Domestic enterprises found it difficult to compete with the foreign competition in consumer goods industries such as soaps by Lever Brothers, and fountain pen inks by the Parker Pen Co., and wanted the entry of the foreign enterprises to be restricted to certain areas in which domestic enterprise did not have the capability.[2] A new Industrial Policy Resolution of April 1956 was made in agreement with the adoption of a 'socialistic pattern' of society as the country's goal by the Parliament in 1954. The resolution earmarked a number of important industries for future exploration by the public sector thus reducing the scope of operation of the private-local as well as foreign-sector. However, the resolution did not make any further distinction within the private sector, or between domestic and foreign enterprises.

The foreign exchange crisis of 1957–8 led to further liberalization in the government's attitude towards foreign capital. In a bid to attract foreign investment to finance foreign exchange component of projects, a host of incentives and concessions were extended. For instance, in 1957 the Indo-US Convertibility Agreement was signed. In the same year a number of tax concessions to foreign firms affecting salaries, wealth tax, and supertax were made. Reductions in corporate tax on income and royalties were extended in the 1959 and 1961 budgets. Double tax avoidance agreements to lower the tax burden of foreign investors were signed with most of the source countries, namely the United States, Sweden, Denmark, West Germany, and Japan. India received a number of Western industrial and trade missions and sent the Indian Industrial Mission abroad in order to attract foreign capital to the country. The Indian Investment Centre, with offices in major investor countries, was set up in 1961 to promote foreign investments in India.

Anticipating the foreign exchange bottleneck to continue and affect the Third Five Year Plan projects, the government issued a list of industries in 1961 taking into account the gaps in capacity in relation to plan targets where foreign investments were to be welcomed. These included some of the more profitable industries earlier reserved for the public sector, such as drugs, aluminium, heavy electrical equipment, fertilizers, synthetic rubber, etc. An Officer on Special Duty was deputed in the Ministry of Commerce and Industry to provide prompt and reliable guidance to foreign

investors on the investment opportunities. It was clearly stated that foreign investment to cover the foreign exchange cost of plant and machinery in the approved projects would be welcome. The proportion of foreign held equity was to depend upon the sophistication of technology and requirement of foreign exchange. The local majority ownership, though *welcome* was not to be insisted upon.[3] In fact, as documented in certain studies, proposals involving foreign financial collaborations enjoyed a premium in government approvals during those years (Kidron 1965:262; IIPA 1983, chap 4).

This period was a time when Western multinational enterprises started showing real interest in India. In the early 1950s their response was only lukewarm except in the case of one-shot investment in oil refineries (Kidron 1965:102, 157). In the period after 1957, however, substantial foreign investment started flowing even in non-essential items. In the 1957–63 period, 45 per cent of consents for new capital issues involved foreign investments, while the proportion for the period from 1951 to 1963 was 34 per cent (Kidron 1965:258). The Hathi Committee (1975) noted that it was in this period when most of the foreign drug firms set up their manufacturing subsidiaries in the country.

The restrictive phase, 1968–79

The liberalization of the policy towards foreign capital continued till the mid-1960s. As a result, the outflow on account of remittances of dividends, profits, royalties, and technical fees, etc., grew sharply and became a significant proportion of the foreign exchange account of the country. These remittances caught the government's attention in the background of another foreign exchange crisis in the late 1960s. This prompted the government to streamline the procedure for foreign collaboration approvals and adopt a more restrictive attitude. Following the recommendations of the Mudaliar Committee on Foreign Collaborations (1966), a new agency called the Foreign Investment Board (FIB) was created within the government in 1968 to deal with all cases involving foreign investment or collaboration except those in which total investment in share capital exceeded Rs20 million and where the proportion of foreign equity exceeded 40 per cent. The cases involving more than 40 per cent foreign equity and Rs20 million share capital were to be referred to the Cabinet Committee. A sub-committee of FIB was empowered to approve cases of foreign collaboration in which the proportion of foreign held equity did not exceed 25 per cent and where total equity investment was up to Rs10 million. The administrative ministries were authorized to approve cases involving purely technical collaboration. Foreign investments unaccompanied by technology were not to be favoured. Three illustrative lists of industries were issued which demarcated industries: (a) where no

foreign collaboration was considered necessary, (b) where only technical collaboration could be permitted, and (c) where foreign investment might be permitted.[4] In the latter two cases a permissible range of royalty payments was also specified for different items which generally did not exceed 5 per cent. The permitted duration of the collaborations was reduced from ten to five years. Restrictions were placed on renewals of agreements. Restrictive clauses concerning the sub-licensing of technology in the country and exports (except to those countries where the technology supplier already had affiliates) were not to be permitted (India, Ministry of Industry 1982). In 1976, a Technical Evaluation Committee was set up to assist the FIB in screening foreign collaboration proposals; the committee included representation from various scientific agencies such as the Council of Scientific and Industrial Research, and the Department of Science and Technology. Another guideline was that wherever Indian consultancy was available it was to be utilized exclusively. If foreign consultants were also required, the Indian consultants were to be given a primary role. A new Patent Act was enacted in 1970 which abolished 'product' patents in food, chemicals, and drugs, and reduced the life of process patents from 16 to 7 years, and to 14 years in other cases.[5] It contained provisions of a world-wide search of patent literature to establish the novelty of a product or process, and compulsory licensing after three years.

One implication of the delegation of power of approval of foreign collaborations involving up to 40 per cent foreign equity to the committee of officials, namely the FIB, was that proposals with more than 40 per cent foreign equity were considered to be special cases and hence were to be referred to the Cabinet Committee. This ruling encouraged the restriction of foreign participation to 40 per cent, and marked the beginning of the phase of restricting foreign equity level to 40 per cent. From February 1972 the government began approving the expansion plans of those companies with majority foreign equity, subject to their accepting a dilution of foreign equity by raising a certain proportion of the estimated cost of expansion through issues of additional equity to Indian nationals.[6] The government's decisions regarding industrial policy in 1970, which were made more concrete in 1973,[7] sought to restrict the further activities of foreign companies (along with those of local large industrial houses) to a select group of core (or Appendix I) industries. These industries were considered to be of 'basic, critical and strategic importance'. In the same year a new Foreign Exchange Regulation Act, 1973, (widely known as FERA) was enacted which has had far more bearing on the operations of foreign firms than any other single policy instrument. It has become the cornerstone of the regulatory framework for foreign investment in the coming years. In view of profound implications of FERA on the

organization of the foreign controlled sector it deserves to be discussed at a somewhat greater length.

The Foreign Exchange Regulation Act, 1973

The FERA is 'an Act to consolidate and amend the law regulating certain payments, dealings in foreign exchange and securities, transactions indirectly affecting foreign exchange and the import and export of currency and bullion, for the conservation of the foreign exchange resources of the country and the proper utilization thereof in the interest of the economic development of the country' (from the preamble). The coverage of section 29 of FERA extends to all existing non-banking foreign branches (FBs),[8] and companies incorporated under the Indian Companies Act with more than 40 per cent foreign equity participation. All such existing companies when the FERA came into force on 1 January 1974 were required to obtain the permission of Reserve Bank of India (RBI) to continue their business. The RBI's permission was granted subject to their accepting to Indianize or dilute their foreign equity as per the guidelines issued by the government for the implementation of the Act in 1973 and amended in 1976. These guidelines required all FBs to transfer to Indian companies all their businesses that had up to 40 per cent foreign equity. The rupee (Indian) companies were also directed to dilute their foreign equity to a maximum of 40 per cent. Companies operating in the core sector (or Appendix I industries), tea plantations, and those engaged in manufacturing activities based on sophisticated technology or predominantly producing for exports were, however, permitted to retain up to 51 or 74 per cent foreign equity. FERA, therefore, put a general ceiling of 40 per cent on the foreign equity participation in the country. Hence, implementation of the provisions of the Act would leave only a limited number of companies engaged in specified activities to be with more than 40 per cent foreign equity. Only these companies were to be given a discriminatory treatment under the industrial licensing policy.[9] All other companies incorporated in India with foreign equity up to 40 per cent would be free to expand, diversify, and operate in any field like any local company. An assurance to this effect was made in the Industrial Policy Statement of 1977.

The process of Indianization of foreign branches operating in the country and the dilution of foreign equity in other rupee companies which FERA sparked off, brought a drastic change to the organizational structure of the foreign controlled sector in India. One significant outcome was that all the companies operating in the country (except the foreign airline/shipping and banking companies) are now incorporated under the Indian Companies Act. This puts a stop to the alleged tax free outflow of profits in the form of 'head-office expenses' by the FBs. This provision vitally

affected the tea plantation industry which was dominated by 114 British tea companies (FBs). Since the reorganization, the business of these FBs has been taken over by forty-five companies incorporated in India with up to 74 per cent foreign equity.[10] A number of multinational enterprises that were maintaining branch offices in India—to monitor investment opportunities and oversee their investments in other companies but without any manufacturing activity—had to wind up. Therefore, the branch form of operation by foreign companies had become virtually extinct except in the service sectors.

Another aspect of the enforcement of FERA is that of the 881 companies which sought permission of RBI to continue their business only about 150 (including tea companies) were permitted to retain higher levels of foreign equity.[11] Only these companies remained within the ambit of FERA. Others had their foreign equity diluted to 40 per cent in agreement with the directives of the RBI. These companies were now able to operate, expand, and diversify in any industry open to other local private firms. Thus for most foreign companies FERA provided an opportunity to become 'Indian' and to expand. Hence most of them readily agreed to dilute the foreign equity to 40 per cent.[12] That does not mean, however, that those that diluted their foreign equity ceased to be foreign controlled. First, the criterion of 40 per cent shareholding is arbitrary. Effective control over a joint stock company can, sometimes, be exercised with as little as 10 per cent block shareholding. The MRTP Act and the RBI consider 25 per cent equity holding to be adequate for exercising effective control. Second, the FERA dilutions in most of the cases have been effected not by the sale of foreign held shares to Indian nationals but through the issue of fresh shares. The process of share allotment has ensured that the new shareholdings are as widely dispersed as possible. In addition, the clauses inserted in the 'Articles of Association' just before the dilution of shares gave special rights to the foreign shareholders. Therefore, the dilution of foreign shareholding did not necessarily imply a reduction in foreign management control.[13]

The opening up of the 1980s

Almost all through the 1970s the government's attention was focused on the enforcement of FERA directives. Towards the end of the 1970s, however, India's failure to step up significantly the volume and proportion of her manufactured exports in the background of the second Oil Price Shock began to worry the policymakers. It led to the realization that international competitiveness of Indian goods was poor because of growing technological obsolescence and inferior product quality, limited range, and high cost. These were in part due to the highly protected local market.[14] Another limiting factor for Indian manufactured exports lay in the fact

that marketing channels in the industrialized countries were substantially dominated by MNEs.[15] The government intended to deal with the situation by (i) putting emphasis on the modernization of plants and equipment through liberalized imports of capital goods and technology, (ii) exposing the Indian industry to competition by gradually reducing the import restrictions and tariffs, and (iii) assigning a greater role to MNEs in the promotion of manufactured exports by encouraging them to set up export-oriented units. This strategy was reflected in the policy pronouncements that were made in the 1980s.

The Industrial Policy Statements of 1980 and 1982, for instance, announced a liberalization of licensing rules, a host of incentives, and exemption from foreign equity restrictions under FERA to 100 per cent export-oriented units. A major amendment of the MRTP Act was effected in 1984 which severely curtailed its scope. Some twenty-five industries were de-licensed in 1985. It was decided to set up four more export processing zones (EPZ) in addition to the two existing ones, namely those at Kandla (set up in 1965) and at Santacruz (set up in 1972) to attract MNEs to set up export-oriented units. The import-export policies of these years greatly liberalized the imports of raw materials and capital goods by gradually expanding the list of items on the Open General License (OGL). Nearly 150 items in 1984 and 200 capital goods in 1985 were added to the OGL. The tariff rates on imports of different types of capital goods were also slashed in 1985.[16] Restrictions on imports of designs and drawings were removed.

Parallel to the liberalization of trade policies there has been an increasingly receptive attitude towards foreign investments and collaborations.[17] Policy guidelines were issued in November 1980, and subsequently, to streamline the foreign collaboration approvals. The power to approve foreign collaborations not involving an outflow of more than Rs5 million in foreign exchange and without any foreign equity participation was delegated to the administrative ministries.[18] In January 1987 this figure was further raised to Rs10 million. The rules concerning payments of royalty and lump-sum technical fees were also relaxed.[19] Tax rates on royalties were reduced from 40 per cent to 30 per cent in the 1986 budget. The indications are that a degree of flexibility has been introduced in the policy concerning foreign equity participation, and exceptions from the general ceiling of 40 per cent on foreign equity can be allowed on the merits of individual investment proposals.[20] To facilitate the flow of high technology to existing industry the Cabinet Committee on Economic Affairs decided in December 1986 to permit foreign equity participation even in existing Indian companies employing high technology. The equity participation under the new policy may, however, be subject to the imposition of conditions intended to make sure that the government's objective is fulfilled.[21] The employment of foreign nationals has been made much easier.[22]

In order to expedite the flow of Japanese private investments and technology, the government announced in May 1988 the setting-up of a 'fast channel' for their speedy clearance. The government also announced measures to streamline the remittance process and the exemption of export profits from income tax in order to attract Japanese corporations to produce in India for export, in the context of the strong yen.[23] The fast channel was subsequently also made applicable to the West German proposals.

As a result of these liberalizations the investment climate in the country has gradually improved. An OPIC (Overseas Private Investment Corporation of the United States) Mission visited India during February-March 1983 with representations from major US MNEs active in oil exploration, food processing, computers, solar and wind energy generation, pharmaceuticals, coal mining, gear manufacture, diamond cutting, machine tools, etc.[24] In April 1985 the European Management Foundation organized a Round Table on India in New Delhi which was attended by 140 top executives of MNEs. Subsequently, India has been visited by a number of international business delegations to explore investment opportunities. As a result of the streamlining of procedures and liberalization of attitude the rejection rate in foreign collaboration approvals has come down from 30 per cent to between 5 and 8 per cent.[25]

The government policy, and trends in foreign investments and collaborations

The above discussion suggests that the government of India has been pursuing a selective policy towards foreign collaborations and investments. The degree of selectivity has, however, been changing over the period. These variations in policy are reflected in the trends and patterns of FDI in India and on the approvals of foreign collaborations.

Foreign direct investments in India: magnitude and distribution

In the mid-1948, when the first survey of India's international assets and liabilities was undertaken by the Reserve Bank of India (RBI), the stock of foreign investment in the country stood at Rs2,560 million, and it was mostly of British origin. The bulk of the FDIs were concentrated in export-oriented raw materials, extractive, and service sectors. Tea plantations and jute accounted for a little over a quarter of total FDI which together contributed half of India's exports; about 32 per cent was in trading and other services, 9 per cent in petroleum, and only about 20 per cent in manufacturing other than jute (Kidron 1965:3). By 1980, the latest year for which comparable official estimates are available, the stock of FDI in India had gone up to Rs9,332 million (RBI 1985). Not only the magnitude but the sectoral composition, sources, and

Table 1.1 Sectoral distribution of the stock of foreign direct investment in India, 1964–80

(Rs. Crores = 10 million)

Industry group	*March 1964*		*March 1974*		*March 1977*		*March 1980*	
	Value	*%*	*Value*	*%*	*Value*	*%*	*Value*	*%*
I. Plantations	105.9	18.7	107.2	11.7	74.8	8.13	38.5	4.12
II. Mining	4.7	0.9	6.4	0.8	7.7	0.84	7.8	0.83
III. Petroleum	143.3	25.3	137.9	14.7	50.7	5.51	36.8	3.94
IV. Manufacturing	229.3	40.5	625.6	68.4	742.0	80.63	811.6	86.97
1. Food and beverages	30.2	13.2	52.1	8.3	45.5	6.13	39.1	4.82
2. Textile products	16.6	7.2	35.6	5.7	31.2	4.20	32.0	3.94
3. Machinery and machine tools	15.7	6.8	42.1	6.7	59.6	8.03	71.0	8.75
4. Transport equipment	15.0	6.5	32.1	5.1	41.8	5.63	51.5	6.34
5. Metal and metal products	33.1	14.4	86.7	13.9	101.0	13.61	118.7	14.62
6. Electrical goods	18.2	7.9	68.1	10.9	83.8	11.29	97.5	12.01
7. Chemicals and allied products	60.1	26.2	203.7	32.6	264.1	35.59	301.8	37.18
a. Chemicals	16.3	7.1	76.0	12.2	115.8	15.61	130.6	16.09
b. Medicines and pharmaceuticals	23.2	10.9	69.7	11.1	79.8	10.75	105.7	13.02
c. Others	20.6	8.9	58.1	9.3	68.5	9.23	65.5	8.07
8. Miscellaneous	40.4	17.6	105.0	16.7	115.0	15.50	100.0	12.32
V. Services	82.3	14.6	39.8	4.4	45.0	4.89	38.5	4.12
Total	565.5	100.0	916.9	100.0	920.2	100.00	933.2	100.00

Note: Percentages given in manufacturing sub-sectors 1–8 represent the break-up of FDIs in manufacturing.

Source: Compiled from Reserve Bank of India, 'India's international investment position, different years', *Reserve Bank of India Bulletins*, July 1975, March 1978, December 1984, and April 1985.

organizational forms of investment have undergone considerable changes over this period.

Table 1.1 summarizes the sectoral distribution of the stocks of FDI as at the end of the financial years 1964, 1974, 1977, and 1980. The most fundamental of the trends emerging from Table 1.1 is the increasing importance of the manufacturing sector. The manufacturing sector, which accounted for only about a quarter of FDI stocks at the time of the Independence and 40 per cent in 1964, now accounts for nearly 87 per cent of them. This jump in the share of manufacturing has been at the cost of plantations, mining, petroleum, and services. In all the non-manufacturing sectors the absolute volume of FDI as well as its share in total stock has declined over the period 1964–80. Almost all the inflows of FDI to the country after 1964 came to the manufacturing sector while disinvestment took place in other sectors. Though the total stock of FDI in the country stagnated during the late 1970s, in the manufacturing sector it steadily increased. This significant reorganization in the sectoral pattern of FDIs in the country had been stimulated by the government's selective policy. A few major nationalizations in the non-manufacturing sectors also contributed to it. Fourteen major banks, including one foreign owned bank, the Allahabad Bank (Standard Chartered Group), were nationalized in 1969, general insurance companies were nationalized in 1971, a number of which were British controlled. Petroleum investments were nationalized between 1974 and 1976. In plantations, most of the FCEs were foreign branches which were obliged to Indianize themselves under the FERA. The share of manufacturing in total stock of FDI in India is favourable even when compared to the sectoral distribution of total flows of FDI to developing countries. Thus, while manufacturing accounted for only 32, 64, and 42 per cent of all American (between 1979 and 1981), British (between 1971 and 1978) and Japanese (between 1951 and 1980) FDIs in developing countries respectively (UNCTC 1983), it accounted for 87 per cent of the FDI stock in India.

Within the manufacturing sector, the new investments were directed to technology-intensive sectors such as electrical goods, machinery and machine tools, and chemical and allied products (in particular, chemicals, and medicines and pharmaceuticals). These three broad sectors accounted for nearly 58 per cent of total FDI in manufacturing in 1980 in contrast to 41 per cent in 1964. The shares of metals and metal products, and transport equipment, showed a decline over the 1964–74 period, but have picked up during 1974–80. The rise in importance of technology-intensive products in the FDI stock has been at the expense of traditional consumer goods industries such as food and beverages, textile products, and other chemical products.

Similar reorganization had taken place in the organizational from of

Table 1.2 Organizational distribution of FDI in India, 1964–80

(Rs. crores = 10 million)

Year	*Foreign branches*		*Foreign Controlled Rupee Companies (FCRC)*		*Total*
	Value	*%*	*Majority owned*	*Minority owned*	
1964	259.7	45.92	239.9 (42.42)	65.9 (11.65)	565.5 (100.0)
1974	241.6	26.45	470.4 (51.50)	201.4 (22.05)	913.4 (100.0)
1980	60.4	6.47	454.6 (48.71)	418.2 (44.81)	933.2 (100.0)

Source: See Table 1.1.

Table 1.3 Home country-wise distribution of foreign direct investments, 1964–80

(Rs. crores = 10 million)

Home country	*1964*		*1980*	
	FDI	*%*	*FDI*	*%*
UK	433.0	76.57	503.3	53.93
USA	82.2	14.53	196.4	21.04
Switzerland	13.6	2.40	54.7	5.86
Canada	8.7	1.50	34.1	3.65
Sweden	7.8	1.38	20.1	2.15
FRG	6.4	1.13	65.0	6.96
Total	565.5	100.00	933.2	100.00

Source: See Table 1.1.

FDI. As seen from Table 1.2, in 1964, 45.92 per cent of India's FDI liability was in the form of foreign branches. In 1980, foreign branches accounted for a mere 6.47 per cent of FDI stocks. Among the companies registered in India (i.e. FCRCs), the trend was also one of increasing minority ownership. In 1964, only 11.65 per cent of FDIs were held in the minority foreign-owned rupee companies, their proportion increasing to 45 per cent by 1980. These trends in the organizational form of FDI—the decline of branches and the increasing acceptance of minority ownership by the foreign investors—have again been outcomes of government policy, in particular the FERA.

There has also been a geographical diversification of the sources of FDI to India over the last three decades. The home country distribution of FDI (Table 1.3) manifests considerable erosion of the dominance of the

United Kingdom as the source of FDI. In 1964 the share of the United Kingdom was nearly 77 per cent; by 1980 it had come down to 54 per cent. The United States has emerged as a major source of FDI, improving its share from 14.5 per cent in 1964 to 21 per cent in 1980. The other significant sources of FDI, the Federal Republic of Germany, Switzerland, Canada, and Sweden, have all improved their share over the period.

Foreign collaboration approvals

The changing attitude of the government towards foreign investment and technology is reflected in the number of foreign collaborations approved in different periods. Table 1.4 summarizes three indicators for different periods: (a) average number of foreign collaborations approved per year; (b) proportion of foreign collaborations with equity participation; and (c) the volume of foreign investment approved. The variations in these parameters across time periods reveal the nature of changes in the government's attitude. The gradual liberalization of policy in the early post-Independence period in the wake of the economic crisis of the late 1950s resulted in almost a five-fold increase in the number of collaborations approved per year—from 50 during 1948–58 to 297 during 1959–66. Since foreign exchange was the major constraint during the period, a high (over 36 per cent) proportion of the collaborations approved were with financial participation. The restrictive posture adopted by the government during the 1967–79 period brought down the average number of approvals to 242. The squeeze on foreign financial collaborations was far more drastic, bringing their proportion down from 36.36 per cent during 1959–66 to just 16.11 per cent during 1967–79. The liberalization of the policy in the 1980s has been quite considerable. The

Table 1.4 Summary of foreign collaboration approvals, 1948–88

Period	*Average no. of collaborations approved per year*	*Those with foreign equity*		*Average foreign investment involved per year (million Rs.)*
		Average no. per year	*Proportion in total*	
1948–58	50	NA	NA	NA
1959–66	297	108*	36.36	NA
1967–79	242	39	16.11	53.62
1980–8	744	170	22.80	930.84

* On the basis of 1961 to 1966.
Source: Table 1.5.

Table 1.5 Foreign collaboration approvals, 1948–88

Year	*Total number of cases approved*	*Cases involving foreign capital participation*	*Foreign investment involved (Rs millions)*
1948–55	284	–	–
1956	82	–	–
1957	81	–	–
1958	103	–	–
1959	150	–	–
1960	380	–	–
1961	403	165	–
1962	298	124	–
1963	298	115	–
1964	403	123	–
1965	241	71	–
1966	202	49	–
1967	182	62	–
1968	131	30	–
1969	134	29	–
1970	183	32	24.52
1971	245	46	58.38
1972	257	37	62.27
1973	265	34	28.17
1974	359	55	67.13
1975	271	40	32.05
1976	277	39	72.69
1977	267	27	40.03
1978	307	44	94.06
1979	267	32	56.87
1980	526	73	89.24
1981	389	57	108.71
1982	592	113	628.10
1983	673	129	618.70
1984	752	151	1,130.00
1985	1,024	239	1,258.70
1986	957	240	1,069.52
1987	853	242	1,077.05
1988	926	282	2,387.50

– indicates not available.
Source: Department of Scientific and Industrial Research, Government of India, and Indian Investment Centre.

average number of approvals went up from 242 per year over the 1967–79 period to 744 over 1980–8. The increase in the number of financial collaborations per year has been sharper, increasing their proportion in total approvals from 16.1 per cent to 22.8 per cent. The value of foreign investments approved on average per year increased by over sixteen times from Rs53.62 million to Rs930.84 million.

CONCLUSION

In sum, government policy towards foreign collaboration has been marked by a selective attitude all through the post-Independence period with significant variations in its intensity over different sub-periods. An elaborate system of entry regulations and guidelines for foreign collaborators has evolved. The selectivity of the policy has guided the bulk of the new FDI flows to technology-intensive areas of manufacturing, and has encouraged minority foreign ownership in Indian companies rather than majority-owned subsidiaries and foreign branches.

Chapter two

Place of multinational or foreign enterprises in Indian industry: overall and sectoral shares

Introduction

Even though it is generally admitted that multinational affiliates or foreign controlled enterprises (FCEs) hold an important place in the industrial economy of India, there has been a paucity of the precise estimates of their shares, particularly at the disaggregated level. This situation has hampered rigorous analyses of patterns of their operation and their impact on the economy. This chapter reviews the existing estimates of economic significance of FCEs in the country and provides fresh estimates of the shares of FCEs in the overall industrial sector. It also presents the shares of FCEs in fifty-four three-digit manufacturing industries.

Importance of foreign controlled enterprises: overall manufacturing

Existing estimates

The absolute volume of FDI by itself does not reveal the importance of FCEs in the economy. For this one needs to have an idea of their share in relevant macro aggregate, such as assets or sales. A few attempts have been made in the past to estimate importance of FCEs in the Indian economy. The authors of these estimates have argued that the importance of foreign capital should be judged with respect to the sectors where they operate and not in relation to the economy as a whole (Bettelheim 1968:58; Chandra 1977). Hence almost all of them have estimated the relative importance of FCEs in the organized private corporate sector. Table 2.1 provides a summary view of these estimates. The estimates vary within the range of 25 per cent to 50 per cent for different periods. It is difficult to deduce trends from these estimates, as they relate to different variables

(such as capital invested, paid-up capital, sales, and profits) and have also been made for different samples (such as private corporate sector, organized sector, and stock exchange quoted companies). Bettelheim (1968) and Kidron (1965) depended mainly on their judgements for arriving at their estimates of the share of FCEs in the absence of systematic data bases. Kurien (1966) attempted to provide a time series of the share of FCEs in private corporate sector for the period 1948–60 and found it to be increasing from 35.8 in 1948 to 40.4 per cent in 1960. He divided net worth of foreign companies by total paid-up capital of the corporate sector. This resulted in over-estimation. Chaudhuri (1978) divided paid-up capital of all FCEs by that of companies quoted at the stock exchanges instead of the entire private corporate sector, which probably explained the high percentage (42 per cent) he obtained. Chandra (1977) based his estimates on the RBI's company finances studies. His time series showed an increasing trend in the share of FCEs in sales in the private corporate sector from 26.1 per cent in 1957–8 to 29.8 per cent in 1972–3. The share of FCEs in profits of the private corporate sector computed by Chandra was much higher than their share in sales and exhibited an increasing trend. In 1972–3 FCEs enjoyed almost half of total profits of the private corporate sector in the RBI sample.

Table 2.1 **Summary of estimates of foreign share in Indian industries**

Estimates by	*Reference period*	*Estimated share of FCEs in %*	*Denominator*
Bettelheim (1968)	1953	50	Capital invested in big industries (organized)
Kurien (1966)	1948	35.8	Private corporate sector
	1960	40.4	
Kidron (1965)	1961	40	Organized or large scale private sector
	1961	25	In modern sector as a whole
Chaudhuri (1978)	1971	42.2	Capital of stock exchange quoted companies
Chandra (1977)	1957–8 to 1972–3	26.1 to 29.8	Sales of non-government large companies (RBI sample)

Fresh estimates of foreign shares

We have attempted to update the estimates of foreign shares available in the existing studies up to 1980–1. Four sets of estimates of foreign shares have been provided in Table 2.2 of which three are for two periods, i.e. 1972–3 and 1980–1. Though Chandra's estimates are available for 1972–3 we have recomputed them for the sample as in 1980–1 so as

Table 2.2 Estimates of share of FCEs at overall industrial level

Sample and variable	*Percentage share of FCEs*	
	1972–3	*1980–1*
1. FCRCs in medium & large non-government companies:		
a. in sales	27.17	24.08
b. in assets	27.13	22.97
c. in profits before tax	45.72	34.75
2. FCRCs and FBs in medium & large non-government companies and FBs		
a. in sales	33.84	24.38
b. in assets	30.85	23.14
c. in profit before tax	49.56	36.48
3. Corrected coverage of FCRCs and FBs in medium & large non-government companies and foreign branches		
b. assets	30.85	25.08*
4. FCRCs in sales of medium & large non-government public limited companies in manufacturing sector	NA	31.41

Note: *The numerator for this estimate consisted of assets in 1979–80 of non-banking FBs and Foreign Subsidiaries (taken from Department of Company Affairs) and assets of minority FCRCs projected for the stock of FDI in the year on the basis of FDI to FCRC assets ratio in 1972–3 (with adjustments for change in debt equity proportion over the period and assuming on average a 15 per cent reduction in foreign equity holdings as a result of FERA). The denominator is assets of medium and large non-government companies and non-banking foreign branches (DCA) in 1979–80.

to facilitate intertemporal comparisons. Though the basic source of data for these computations is the same as of Chandra, i.e. the RBI company finances studies, two differences in the coverage make these sets of estimates to be mutually incomparable. First, our sample excluded small public limited companies for which RBI had not published data for some years. Second, the coverage of RBI's survey on the finances of foreign branches (FBs) and Foreign Controlled Rupee Companies (FCRCs) for the period between 1975–6 and 1980–1 might not be comparable to that of 1972–3. The surveys for the period up to 1972–3 covered select FBs and FCRCs which accounted for nearly 90 per cent of the paid up capital of the respective populations. The recent surveys, however, do not indicate the extent of the coverage. The coverage in the case of FBs appears to be particularly deficient as it covered only eight branches in 1980–1. Hence for the first set of estimates presented in Table 2.2, we excluded FBs from the sample. This set thus shows the share only of FCRCs in sales or

assets of medium and large public and private limited companies in 1972–3 and 1980–1. The second set of estimates includes the FBs as covered by the RBI surveys. In the third set we have attempted to correct the coverage of FBs and FCRCs (for the year 1970–80) by using additional data from the Indian Government's Department of Company Affairs (DCA). The DCA publishes data on assets of FBs and (majority owned) foreign subsidiaries (FSUs). To the asset figures of non-banking FBs and FSUs as published by DCA we added the assets of minority owned FCRCs projected on the basis of FDI in 1979–80 using FDI to assets relationship in case of FCRCs for the year 1972–3 and making adjustments for changes in debt-equity ratio and the proportion of foreign equity held. Dividing the total foreign controlled assets thus obtained by the assets of medium and large, public and private limited companies and non-banking FBs in 1979–80 one gets the figure of 25.08 per cent. The fourth set gives the share of FCRCs in the sales of the medium and large public limited companies in manufacturing (Appendix I gives more details on data and methodology pertaining to the last set).

A look at these alternative estimates indicates that (a) the foreign share in sales or assets of larger private corporate sector ranged somewhere near 23 per cent in 1980–1 depending upon the coverage; (b) as also noted by Chandra (1977), their share in profits was much higher than in either sales or assets; (c) whichever sample and variable is used, the overtime trend suggests a decline in foreign shares over the period 1972–3 to 1980–1; and (d) foreign share in manufacturing is higher than in the overall industrial sector because of the concentration of FCEs in manufacturing.

The phenomenon of declining foreign share over the 1970s (see Table 2.2) is worth noting, especially in the light of the increasing trend observed by Chandra (1977) for the preceding period i.e. 1957–8 to 1972–3. Besides the restrictive government policy towards foreign collaboration during the 1970s, certain nationalizations such as those in oil and coal mining sectors, and a few disinvestments triggered by the FERA, might explain the declining foreign shares in the period. FCEs do, however, continue to be a significant and more profitable segment of the large private corporate sector in India, particularly in manufacturing.

Shares of FCEs in individual manufacturing industries

The analysis of the previous section showed that FCEs constitute a significant and prosperous segment of Indian industry. It should be emphasized, however, that MNEs mainly operate in those branches of industry where they enjoy a competitive edge over existing or potential local competitors. Therefore, the industrial distribution of shares of FCEs would be uneven. Hence, the estimates

of their share in the overall organized sector may not reveal their true importance. For this one has to analyse their importance in individual branches of industry.

There have not been many estimates of FCE's share at sectoral level in Indian industry. Kurien (1966) computed shares of FCRCs in exports and imports of individual sectors at a 2-digit level of disaggregation for the years 1956 and 1958, which revealed a near domination of exports of tea, tobacco, jute (yarns and manufacture); and imports of mineral oils, chemicals (including drugs), electrical goods, machinery, and transport equipment by FCEs. Kidron (1965) attempted to examine the importance of FCEs in different industries. However, his exercise could not yield precise estimates of FCE's shares because of lack of a systematic data base. On the basis of information collected from a variety of sources on capacities authorized or installed, he judged qualitatively whether the industry was or was not going to be dominated by FCEs. Kelkar (1977) presented shares of FCEs in total sales of public limited companies included in the RBI sample in seven industries where they were dominant in 1972–3. These sectors were: aluminium, chemicals, engineering, rubber products, mineral oil, and tea plantations. Lall and Mohammad (1983a) computed the proportion of dividends remitted abroad in total dividends paid by the firms on the basis of finances of medium and large public limited companies published by RBI, for broad industry groups. The proportion of dividends remitted, however, might not necessarily reflect the share of FCEs in industry because of (a) differing profitability of FCEs and local firms, (b) restriction on foreign equity holding to 40 per cent in India, and (c) dividend remittances on portfolio investments.

Foreign shares in individual industries

An attempt was made to compute shares of FCEs in sales in fifty-four branches of manufacturing industry (disaggregated at the three-digit level) for a six-year period from 1975–6 to 1980–1 on the basis of a sample of 1,334 medium and large public limited companies in the private sector (see Appendix I for details of methodology and sources). Table 2.3 presents the estimates of shares of FCEs in sales in fifty-four manufacturing industries for the years 1975–6 and 1980–1. Two limitations of these estimates have to be borne in mind while analysing them. First, these are based on a sample of 1,334 medium and large non-government public limited manufacturing companies. They may not reveal the true market position of FCEs in some industries where the public sector, private limited companies, or the non-corporate sector firms have considerable operations. Second, the sample size in RBI company finances studies which we have used for computations is decided at the

beginning of the quinquennial series and is kept the same for the entire series. Hence, the changes in the shares over the period 1975–6 to 1980–1 apparent in Table 2.3 are outcomes of the relative rates of growth of the selected firms, and do not reflect the effect of new entries or divestments.

The shares presented in Table 2.3 vary widely across the industries almost between zero and hundred range. For ease in analysis, foreign share will be considered to be low in the range of 0 to 33; medium, in the range of 34–66; and high if it is over 66 per cent. If this admittedly arbitrary classification is followed then eleven industries find a place in the high foreign share category in 1980–1; these include processed food products, cigarettes, leather and leather products, aluminium, automotive components, dry batteries, metal products (other than machinery and machine tools), plastic raw materials, medicines and pharmaceuticals, toilet preparations and other chemical products, and safety matches. However, foreign shares in the case of leather products and safety matches are misleading since these industries are now reserved for the small-scale sector. FCEs which had established themselves, namely Bata and WIMCO (Swedish Match) respectively before the reservation, compete mostly with the local small-scale firms. In the case of aluminium, plastic raw materials, as well as medicines and pharmaceuticals, the FCE's share is over-estimated because the public sector has significant presence in each of them.

The fifteen industries where foreign shares are in the medium range include non-ferrous basic metals other than aluminium, transport equipment other than vehicles, electric lamps, electrical machinery and appliances, machine tools, other non-electrical machinery, steel tubes and pipes, steel wire ropes, fertilizers, basic industrial chemicals, paints and varnishes, asbestos cement and asbestos cement products, sheet and speciality glass, automobile tyres and tubes, industrial and medical gases. Again, these shares may be over-estimates particularly in the case of non-ferrous basic metals (other than aluminium), machinery (electrical and non-electrical), machine tools, and fertilizers, due to the presence of public sector. Among the industries where foreign share is less than one third, FCEs have a significant presence (over 10 per cent share) in nine industries, namely, edible oils, automobiles, electric cables, dyes and dyestuff, man-made fibres, rubber products other than tyres, plastic products, and other textile products including ginning and pressing. FCEs hold marginal (less than 10 per cent) shares in twelve industries: cotton textiles, breweries and distilleries, textile machinery, steel forgings, foundries, cement, ceramics and structural clay products, paper, products of paper and board, wood products and glass containers. They have

Table 2.3 Share of foreign controlled enterprises in Indian manufacturing, 1975–6 and 1980–1 (medium and large non-government public limited companies)

Code	*Industry*	*No. of companies*		*FCE's share in sales (%)*	
		Total	*Foreign*	*1975–6*	*1980–1*
310	Grain and pulses mills	8	0	–	–
320	Edible oil mills	13	1	15.41	18.11
331	Sugar mills	57	0	–	–
332	Other processed foods	31	9	82.84	80.52
341	Cigarettes	6	2	85.14	78.23
342	Tobacco products, n.e.s.	2	0	–	–
351–4	Cotton textiles	238	3	6.78	5.73
355	Jute textiles	31	0	–	–
356–8	Silk and rayon textiles	13	0	–	–
359	Woollen textiles	9	0	–	–
360	Other textile products	14	1	13.68	19.23
370	Breweries and distilleries	19	1	3.96	3.04
380	Leather and products	3	1	98.21	97.94
390	Miscellaneous	25	1	0.39	0.33
410	Iron and steel mills	1	0	–	–
420	Aluminium manufacture	3	2	90.96	89.86
430	Other non-ferrous metals	8	4	45.46	36.13
441	Motor vehicles	13	3	16.96	19.45
442	Automotive components	32	12	65.99	66.07
443–4	Other transport equipment	14	2	43.95	52.21
445	Electric cables	15	3	36.45	32.01
446	Dry batteries	7	4	83.11	89.32
447	Electric lamps	7	3	62.05	63.57
448	Electrical machinery and equipment, n.e.s.	86	26	59.03	53.30
449	Machine tools	12	3	38.56	35.08
450	Textile machinery	13	2	9.52	7.26
451	Non-electrical machinery n.e.s.	126	52	44.80	45.31
452	Steel tubes and pipes	14	4	51.89	51.16
453	Steel wire ropes	13	2	37.67	36.83
454	Steel forgings	29	2	6.04	5.05
455	Foundries and engineering workshops	43	4	8.52	7.54
456–7	Metal products, n.e.s.	40	12	74.27	69.64
461	Chemical fertilizers	13	3	46.80	37.46
462	Dyes and dyestuffs	10	3	30.32	30.57
463	Man-made fibres	13	3	18.60	17.83
464	Plastic raw materials	12	5	71.50	71.78
465	Basic industrial chemicals	43	13	55.45	53.85
466	Medicines and pharmaceuticals	52	24	72.84	71.07
467	Paints and varnishes	15	5	55.01	52.13
468	Toiletries and other chemicals	47	20	70.73	72.11
470	Safety matches	1	1	100.00	100.00

Table 2.3 (continued)

Code	Industry	No. of companies		FCE's share in sales (%)	
		Total	Foreign	1975–6	1980–1
521	Cement	15	2	6.37	5.24
522	Asbestos and asbestos products	4	2	46.18	43.78
531–2	Ceramics and structural clay products	19	1	3.08	3.92
541	Tyres/tubes	6	3	69.40	60.13
542	Other rubber products	14	2	12.49	13.55
551	Paper	25	1	3.35	3.95
552	Products of paper and board	16	1	5.33	6.76
553	Wood products and furniture	15	1	3.15	3.14
561	Glass containers	6	1	19.18	8.08
562	Other glass products	6	3	52.34	50.78
580	Plastic products	15	2	24.31	18.01
630	Industrial and medical gases	11	1	66.92	63.13
590	Miscellaneous	32	8	26.99	32.30
	Manufacturing	1334	262	32.78	31.41

Note: n.e.s. indicates not elsewhere specified.

absolutely no representation in the rest of the seven industries: grains and pulses mills, sugar, tobacco other than cigarettes, textiles (jute, silk and rayon, wool), and iron and steel.

It may be pointed out that even the three-digit industry classification in some industrial classes is quite aggregative and does not represent the true market position. For instance, the electrical and non-electrical machinery industries comprise several highly specialized and heterogeneous sub-branches of equipment. An analysis based on a more detailed classification may thus reveal that FCEs are concentrated in some of them; for instance, in the non-electrical machinery sector they are concentrated in heavy diesel engines, pumps and compressors, cigarette-making machinery, rubber machinery, ball bearings, lifts, water treatment plants, industrial valves, abrasives, etc.

Foreign shares, as presented in Table 2.3 have a tendency to decline over the period between 1975–6 and 1980–1 in most cases. The most significant decline is evident in industries such as cigarettes, non-ferrous metal manufactures (other than aluminium), fertilizers, automobile tyres and tubes, glass containers, and in plastic products. The industries where foreign shares have increased are motor vehicles, automotive components, transport equipment other than vehicles, dry batteries, toiletries and other chemicals, electric lamps, rubber products (other than tyres and tubes),

and paper and paper products. These changes, however, do not reflect the influence of new investments, nor of divestments, as pointed out above.

The importance of FCEs has undergone considerable change in a number of industries since the early 1960s to which Kidron's (1965) analysis relates. Kidron had observed a tendency on the government's part to curb the market power of FCEs wherever they appeared to exercise 'unchallenged control' by pushing public or local private sector firms into competition. Thus, giant public sector firms have entered high technology fields such as non-ferrous basic metals, fertilizers, heavy organic chemicals, petrochemicals, basic drugs, heavy electrical and non-electrical machinery. Local private firms have made inroads into the market shares of FCEs in edible and hydrogenated oils, automobile tyres and tubes, industrial and medical gases, and various branches of industrial machinery and equipment. The trend of erosion of the importance of FCEs in traditional industries like jute, cotton textiles, paper, cement, and sugar, which had set in the 1950s and 1960s is now more or less complete. The FCEs, however, continue to hold high market shares in a number of industries producing consumer goods sold under brand names, such as processed foods, cigarettes, toiletries, and leather goods. This could be explained in terms of consumers' brand loyalty enjoyed by the FCEs' brands.

Conclusion

This chapter examined the place of FCEs in Indian industry in terms of their shares in industry sales, assets, and profits. Previous estimates of share of FCEs in sales and assets of organized private corporate sector have ranged between 25 and 50 per cent depending upon the sample used and the reference period. According to our calculations, their share in sales or assets of organized private corporate sector was nearly 23 per cent in 1980–1. Their share shows a declining tendency over the period between 1972–3 and 1980–1. The shares of FCEs in fifty-four individual industries were also calculated. They were found to vary widely across industries. An analysis of characteristics of industries with high foreign shares is reserved for a detailed treatment in Chapter 3.

Chapter three

Determinants of inter-industry distribution of foreign shares in Indian manufacturing: a test of the internalization theory

Introduction

Chapter 2 provided estimates of the shares of foreign controlled enterprises (FCEs) in industry sales (foreign shares or FS). The distribution of foreign shares is highly uneven across different branches of manufacturing. The intangible assets theory of foreign direct investments (FDI) (Hymer 1960; Kindleberger 1969; and Caves 1971, 1974a) and its various extensions (Dunning 1979; Rugman 1981) predict an uneven interindustry distribution dependent upon the existence of ownership and internalization advantages. It is not known, however, whether the pattern observed in India's case is explicable in terms of predictions emanating from these theories. A number of studies have examined the determinants of foreign shares in other countries, beginning with the pioneering study by Caves (1974a) in the case of Canada and the United Kingdom; Caves *et al.* (1980), Saunders (1982), Owen (1982), Gupta (1983) also in the case of Canada; and Lall and Siddharthan (1982) in the United States.[1] The only study of that kind in India's case is by Lall and Mohammad (1983a) who analysed variation in proportion of dividends remitted abroad in total dividends paid (and not foreign share in sales) across broad industry groups. Non-availability of estimates of foreign shares could be one of the reasons for the lack of studies for India.

Most of the existing studies explaining foreign shares cited above have been made in the framework of the intangible assets hypothesis. Dunning (1983) has argued that possession of intangible assets alone could not explain FDI in the period following the late 1960s as arm's length licensing[2] emerged as an important alternative. Thus, according to the more recent propositions, FDI would be a preferred mode of foreign production only if the external markets of intangible assets in question are subject to high transaction costs and hence internalization incentives are present (Buckley and Casson 1976; Dunning 1981, chap. 4; Rugman

1981). In other cases licensing may be the prime modality. FDI in host countries should, therefore, be found to be concentrated in those branches of industries where intangible assets characterized by high transaction costs provide a competitive edge to the owning firm. If assets with relatively low transaction costs are the source of competitive edge, licensing would be the preferred mode of foreign involvement in the industry. A rigorous test of these predictions has, perhaps, been constrained by the problems involved in classifying the intangible assets between those with high and low internalization incentives.[3]

This chapter analyses the determinants of foreign shares and licensing in Indian manufacturing industries in the framework of the recent propositions of the theory. It begins by adapting the contemporary theory of foreign operations of firms to a simpler, testable form. It then attempts to classify intangible assets on the basis of relative transaction costs, and formulates testable hypotheses. Finally, it empirically examines how far these hypotheses are able to explain inter-industry variation in the intensities of FDI (the foreign shares) and licensing in Indian manufacturing.

Theory and hypotheses

According to the intangible assets approach of horizontal foreign expansion of firms[4] originally put forward by Hymer (1960, published 1976), Kindleberger (1969) and Caves (1971, 1974a), a firm operating abroad must possess advantages adequate enough to more than offset the handicaps to be faced in an alien atmosphere and to cover the greater risks. These advantages are sometimes referred to as monopolistic advantages and emanate from the *ownership* of proprietary intangible assets possessed by firms, such as brand goodwill, technology (patented or otherwise), managerial and marketing skills, access to cheaper sources of capital, and raw materials. In the first phase of the 'product cycle' the advantages are exploited abroad through exports from the country of origin (Vernon 1966). In the second phase local production through FDI is undertaken because *locational* advantages, which make it more profitable than exports, begin to emerge.[5] These advantages arise from factors such as tariffs and quantitative restrictions imposed on imports by host countries, communication and transport costs, and inter-country differences in input/factor prices and productivity. FDI should, therefore, be found to be concentrated in those branches of manufacturing where intangible assets complemented by locational factors are important.

Because of imperfections in the markets for knowledge, the ownership and locational advantages usually provided sufficient condition for FDI flows during the early post-war period. In the period following the late 1960s the standardization of a wide variety of technologies, and hence

increasing competition coupled with improved bargaining position of host country governments, provided arm's length licensing of intangible assets as an alternative to FDI (Dunning 1983).[6] Mere ownership of intangible assets and the presence of locational advantages were no longer sufficient (though they were still necessary) conditions for FDI. These developments, therefore, led to a new stream of theorizing that made ownership, locational, and *internalization* advantages, necessary and sufficient conditions for FDI. After the initial proposition by McManus (1972), and Buckley and Casson (1976), the internalization approach[7] has been enriched by the contributions of Dunning (1979, 1981, chap. 4), Magee (1977), Rugman (1981), Teece (1981, 1983), Williamson (1981), Caves (1982), and Hennart (1982).

The internalization approach draws from the market failure and information asymmetry hypotheses of Coase (1937), Arrow (1962), and Williamson (1975). The (external) markets of intangible assets are often inefficient channels of their transfer because of a number of infirmities which emanate from the characteristics of the intangible assets. First, because of their 'public goods like' nature the marginal cost of their use elsewhere is close to zero. Hence they are inefficiently priced (Magee 1977; Caves 1982:5). Second, a severe information asymmetry exists which results from the inability of the seller to make a convincing *disclosure* about the intangible asset (Williamson 1981). This is particularly true in the case of unpatented process know-how. Third, the unaffiliated firms abroad may fail to recognize the productive potential of technological developments taking place in a country (Williamson 1981). Fourth, there may be *buyer's uncertainty* about the claims of the supplier regarding the potential value of the intangible asset (Caves 1982). Fifth, there may be problems with *codification* of knowledge. Certain kinds of knowledge may be embodied in the skills of personnel or may have a high 'tacit' component (Teece 1981, 1983). Finally, the arm's length market may fail to ensure uniform quality standards which are important, particularly in the case of the transfer of goodwill assets like brand names (Giddy and Rugman 1979).

These infirmities lead to a high cost of market transactions (transaction or governance costs) of the intangible assets. Firms tend to avoid these costs by internalizing the transactions of the intangible assets. Firms that internalize transactions across the national boundaries through FDI become multinational. Foreign investments under this theory, therefore, are a special case of horizontal expansion (Buckley and Casson 1976; Hennart 1982). Internalization eliminates transactions and hence transaction costs. However, there *are* certain costs associated with it. Co-ordination of manufacturing units located in geographical areas separated by national boundaries entails certain information costs. Further, the host country government may discriminate against enterprises under foreign control and hence there can be certain 'political' costs. In addition, there are administration costs of

internal markets depending upon the degree of professionalization of management (Buckley and Casson 1976). Therefore, the economies arising from the internalization of transactions have to outweigh the costs associated with it; otherwise the transaction will take place through the external market. The net economies arising out of the elimination of transactions represent internalization incentives or advantages.

It must be pointed out that external markets for all intangible assets are not subject to the same degree of market failure, and hence costs involved in arm's length transactions also vary. Some of them can profitably be licensed at arm's length. For instance, the new proprietary 'process' technology as opposed to 'product' technology is more easily transferred at arm's length (Caves *et al.* 1980). For the process technologies that are standardized and can be 'written down and transmitted objectively, licensing may be a prime vehicle' (Caves 1974b). On the other hand, those process technologies that cannot be codified easily or embodied in capital goods because of a high tacit component are difficult to license (Teece 1981). Therefore, the 'propensities to internalize vary between industries' depending upon the costs of market transaction of intangible assets involved (Dunning 1981:97).

In short, the recent propositions predict the incidence of FDI to be high in those branches of industry in which intangible assets characterized by locational and internalization incentives are important. These developments in theory may be more simply put as follows. The intangible assets approach (according to Hymer, Kindleberger, and Caves) predicts:

$$FS = FS\ (OWN,\ LOC) \qquad (3.1)$$
$$\qquad\qquad +\quad +$$

FS Share of foreign controlled enterprises in net industry sales – a proxy of incidence of FDI.

OWN A vector of proprietary intangible assets.

LOC A vector of locational advantages including the host government policy factors.

The signs (+, −) below the variables indicate the nature of relationships.

In the light of the transaction cost minimization theory the function 3.1 can be modified as:

$$FS = FS\ (OWN_i,\ LOC) \qquad (3.2)$$
$$\qquad\qquad +\quad +$$

OWN_i A vector of intangible assets where market transfer entails high transaction costs, hence internalization advantages are present. OWN_i is a subset of OWN.

That is, the transfer of only those intangible assets which are characterized by high internalization incentives will take place through FDI. In the rest of the cases, arm's length licensing may be resorted to. It naturally follows, therefore, that

$$LCG = LCG\ (OWN_n,\ LOC) \qquad (3.3)$$
$$\qquad\qquad\quad + \qquad +$$

LCG Incidence of arm's length licensing of intangible assets.
OWN_n A vector of intangible assets with relatively lower transaction costs and hence no internalization incentives. OWN_n is a subset of OWN.

An attempt towards verification of these postulates necessitates (a) the classification of the elements of vector OWN between OWN_i and OWN_n depending upon the transaction costs involved in their potential market transfer, and (b) the identification of variables that can proxy the significance of different elements of vectors OWN and LOC for the industry. While for the latter one can draw from the existing studies, the former is a more complex task as it is subject to qualitative judgements. In what follows, the nature of the market failures that may be involved in potential market transfer of different intangible assets is assessed in order to classify them in OWN_i and OWN_n. The variables proxying the significance of these intangible assets for the industry normally used in the literature will also be indicated.

Classification of intangible assets

Product differentiation and goodwill

The goodwill of the firm's brand names or trademarks in the form of consumer loyalty is considered to be one of the most important intangible assets. In the case of brand or trade names, strict quality control is of critical importance. If rights to use brand or trade names are transferred to unassociated parties abroad, the firm runs the risk of dissipation of goodwill if the licensees fail to maintain the quality of the original standards (Giddy and Rugman 1979). Hence, the transaction costs tend to be high because of the necessity of supervision of quality. Another characteristic feature concerns other market failures, such as buyers' uncertainty due to lack of knowledge of the brand name's potential revenue productivity with the prospective licensee (Caves 1982, chap. 1). The presence of these factors leads to a high cost of market transfer, making it a less efficient mode of transfer of goodwill assets for the owning firm.

Differentiation of a product through brand names usually involves

advertising to communicate its differential features to potential buyers. Hence inter-industry variation in the intensity of advertising expenditures has been used in the literature to proxy for the extent of product differentiation or the significance of the goodwill, for example, Caves (1974a). Here, also, advertising intensity (ADS) will be used to proxy for this intangible asset.

ADS **Advertising expenditure as a proportion of net sales, averaged over three years: 1978–9 to 1980–1 (for data sources and methodology, see Appendix I).**

Knowledge

Possession of knowledge, be it in the form of new technology or superior organizational or marketing skills, is again considered to be one of the most valued intangible assets. Market transactions of different kinds of knowledge are subject to market failures of different intensities, as observed above. Two types of knowledge will be distinguished here in view of the availability of proxies: knowledge embodied in employee skills, and knowledge embodied in capital goods.

Market transfer of idiosyncratic knowledge is subject to high transaction costs because it necessitates physical transfer of personnel. Therefore, internalization incentives may be high in activities that depend more on learned or tacit skills (Williamson 1981; Teece 1981, 1983). Measurement of the industry's requirement of idiosyncratic knowledge can be proxied by calculating the proportion of the total work force that are non-production workers $SKIL_1$). Non-production workers include supervisory staff, and managerial, marketing, quality control, and research personnel (including those responsible for trouble-shooting). Such measurement has also been used by, among others, Caves (1974a), and Lall and Siddharthan (1982), to capture industry's requirement of organizational and managerial skills. Here also $SKIL_1$ will be used to proxy for industry's requirement of tacit knowledge.

$SKIL_1$ **Non-production workers as a proportion of the total work force in 1978–9.**

Being based on numerical proportion of overhead personnel, $SKIL_1$ does not take note of qualitative differences or the level of sophistication of such personnel. Therefore, another variable which possibly takes note of both quantitative and qualitative aspects of skill requirements, the earnings of high salaried employees as a proportion of the total wage and salaries bill ($SKIL_2$), will be used as an alternative proxy of skill intensity. It has also been employed by Siddharthan and Dasgupta (1983), and Lall and Mohammad (1983a), for similar purposes.

$SKIL_2$ Earnings of high-salaried employees (those receiving Rs3,000 per month or more) as a proportion of the total wages and salaries bill, averaged over three years: 1978–9 to 1980–1.

Market transfer of knowledge embodied in the capital goods does not suffer from the market failures that the kind embodied in human skills does. The information asymmetry does not arise, because the knowledge is embodied in the basic design of the capital goods. The potential buyer's uncertainties about the performance are usually taken care of by the guarantees rendered by the suppliers.[8] Therefore, the transaction costs do not seem to be high, which results in a weak incentive to internalize in the case of knowledge embodied in capital goods.

The intensity of the production process in capital goods (plant and machinery) can proxy the extent of knowledge embodied in them. Hence, plant and machinery to sales ratio (PMS) will be employed to capture the intensity of industry in knowledge embodied in capital goods.

PMS Gross book value of plant and machinery to net sales ratio, in 1980–1.

Access to sources of capital

The access of MNE's to capital markets the world over is considered to be an important intangible asset. Therefore, they might enjoy an advantage in industries requiring heavy capital investments. Horst (1972b) and Bergsten *et al.* (1978) have found a positive relationship between the capital requirements for establishing a plant of minimum economic size and the extent of outward FDI from the United States. The access to sources of capital, however, does not seem to be an intangible asset with high transaction costs as markets for portfolio investments are well developed. Internalization incentives, therefore, appear to be weak in this case in countries where capital markets are well developed.

The larger is the volume of capital required for setting up a plant in an industry, the greater should be the attraction of the access to sources of capital. Hence, capital requirements for an average sized plant (in the absence of information on minumum economic scales) in the industry will be used to proxy this intangible asset (AKR).

AKR Total capital employed per firm in the industry, averaged over three years 1978–9 to 1980–1.

The four broad categories of intangible assets have, therefore, been

classified on the basis of expected transaction costs involved in potential market transfers in the sub-sets OWN_i and OWN_n of vector OWN as summarized in Table 3.1.

Locational advantages

In what follows, the factors that give rise to the locational advantages and the variables proxying them will be identified. These advantages determine whether intangible assets would be exploited in the home country or abroad; they do not determine the mode of foreign operations. Among these may be various components of the host government's policy, which make imports costly or difficult or subsidize local production, the communication/transport costs, and inter-country differences in factor prices and productivity. Since we deal here with the variation in the incidence of FDI and licensing across different industries within a country, the inter-country differences in factor prices and transport costs, etc., are not important. For our purpose, therefore, elements of the government of India's trade and industrial policies are the relevant locational factors.

Table 3.1 Classification of intangible assets according to transaction costs

	Intangible asset	*Measurement*	*Transaction cost*	*Sub-vector*
1.	Product differentiation (goodwill)	ADS	high	OWN_i
2.	Knowledge			
	(a) embodied in human skills	$SKIL_1$	high	OWN_i
		$SKIL_2$	high	OWN_i
	(b) embodied in capital goods	PMS	low	OWN_n
3.	Access to sources of capital	AKR	low	OWN_n

Foremost among the government policy factors relevant for local production in India are the import substitution programmes and protection accorded to local manufacturing. Ever since the Independence, the government of India has pursued a vigorous programme of industrialization based on import substitution in the framework of development planning. Heavy emphasis placed on import substitution pursuaded the erstwhile foreign suppliers to undertake local manufacture. Local manufacture was also subsidized by the government through a host of incentives, cheap credit, infrastructural facilities, and the like. Because of these factors, local production not only became more attractive than exports to India, but sometimes it even became a necessity for an MNE to keep its market in India intact. In a survey

of British firms operating in India, Davies (1977) found import restrictions to have brought about local production in an overwhelming number of cases.

Although import substitution and protection have enjoyed an outstanding place in the public policy framework in India, their direct measurement at industry level poses a problem. Since the coverage of the Indian import substitution programme extended to almost everything that was not produced in the country, imports as a proportion of total supplies in the early phase of industrialization could be a reasonable proxy for the coverage of import substitution (ISP).

ISP Imports to local production ratio in 1960–1.

The degree of protection accorded to an industry is usually measured in terms of the effective rates of protection (ERPs). ERPs, however, have been changing over the years depending upon the intensity of local requirements and production (Panchamukhi 1977). This fact should be borne in mind while interpreting the relationship between ERPs in any particular year and the intensity of *cumulative* FDI or licensing. We shall use the NCAER's (National Council of Applied Economic Research) series of estimates of ERP as a measurement of protection.

ERP Effective rates of protection, for the year 1979–80, Cordon method.

The government's policy ever since Independence has sought to restrict foreign collaboration in the areas where local skills were available. Such industries were mainly consumer goods industries incorporating relatively simple technology. Therefore, government policy is expected to have discouraged foreign collaboration in these industries. To capture the possible influence of this policy we shall distinguish consumer goods industries through a dummy variable DCON.

DCON A dummy variable taking a value of one if the industry is producing consumer goods and zero otherwise.

Another component of public policy relevant for the industrial distribution of FDI and licensing is the industrial policy of government of India. Through its industrial policy the government intends to direct the flow of investible resources (particularly since 1973) of foreign companies and large Indian firms (covered under the Monopolies and Restrictive Trade Practices Act 1969) to a set of priority or 'core' industries (India, Ministry of Industry 1982). In the case of foreign companies this policy, however, has two drawbacks. First, the foreign companies for the purposes of enforcement of this policy are those having over 40 per cent foreign

ownership. But as observed in Chapter 1, most of the FCEs have diluted their foreign equity to 40 per cent as per the FERA directives (barring some exceptions). Second, it is applicable only to the further expansion of the existing companies and to those entering after 1973. Thus the scope of this policy is limited. It may still be interesting to examine the influence of this component of the government's policy that could pull investible resources belonging to both FCEs and other large companies to the specified core industries. These industries will be identified with the help of the dummy variable DCORE.

DCORE A dummy variable taking a value of one if the industry was included in Appendix I of 'Industrial Policy—Government Decisions' 1973, and zero otherwise.

Having identified the elements of vectors OWN_i, OWN_n and LOC, we can now formulate the hypotheses. By substituting the specific elements of vector OWN_i and LOC in Equation 3.2 one would expect FS to be significantly and positively related to ADS, $SKIL_1/SKIL_2$, ISP, ERP, DCORE, and inversely to DCON. One would not expect the elements of vector OWN_n, i.e. PMS and AKR, to be important in determining FS if the postulates of the transaction cost minimization theory are correct. Similarly, elements of OWN_n and LOC, namely, PMS, AKR, ISP, ERP, DCON, and DCORE alone (and not of OWN_i, i.e. ADS, $SKIL_1/SKIL_2$) are expected to be important in explaining variation in LCG.

Most studies explaining inter-industry variation in foreign share in Canada have used R&D intensity of the industry in the United States to capture the innovativeness or technological intensity of the industry; usually they have found a positive relationship. Such a proxy cannot be tried in India's case because no distinct country has been the source of the bulk of FDI. We have data on R&D intensity of Indian industry. However, if the country depends for most of the innovations on foreign sources, as most developing countries including India do, the local R&D intensity may not reflect the innovativeness or technological intensity of the industry. On the other hand, the amount spent on R&D in the host country, which is usually of an adaptive nature, might reflect the level of domestic technological capabilities in adapting/absorbing technology if not really in generating it. If that, indeed, is the case then foreign collaborations, particularly FDIs, may be excluded from such industries because the selective policy of the government of India does not normally allow foreign collaboration in the industries where certain local technological capabilities have been built up. Therefore, the usual

prediction applicable to technological intensity will not be valid in the case of local R&D intensity. None the less, it would be interesting to examine the relationship between local R&D intensity (RDS) and foreign collaboration (FS and LCG).

RDS Reported in-house R&D expenditure as a proportion of sales, averaged over three years: 1978–9 to 1980–1.

Thus the final equations to be estimated are:

$$FS = FS\ (ADS, SKIL_1, SKIL_2, PMS, AKR, ISP, ERP, DCON, DCORE, RDS) \quad (3.4)$$

where coefficients of ADS, $SKIL_1$, $SKIL_2$, ISP, ERP, and DCORE are all expected to be positive and significantly different from zero; that of DCON is to be negative; and those of PMS and AKR are expected to be not significantly different from zero. No predictions are possible regarding the sign and significance of the coefficient of RDS. Similarly,

$$LCG = LCG\ (PMS, AKR, ADS, SKIL_1, SKIL_2, ISP, ERP, DCON, DCORE, RDS) \quad (3.5)$$

where coefficients of PMS, AKR, ISP, ERP, and DCORE are expected to be positive and significantly different from zero; that of DCON is to be negative and significant; those of ADS, $SKIL_1$, and $SKIL_2$ are not likely to be significantly different from zero; and the sign and significance of coefficient of RDS is uncertain.

The measurements of FS and LCG are as follows:

FS Share of foreign controlled companies (with 25 per centormoreforeign equity) in net sales of all companies included in the data source in an industry, averaged over three years: 1978–9 to 1980–1.

The extent of licensing is proxied through the relative significance of payments for import of technology and other intangible assets, such as brand names and patents, and is defined as:

LCG Total royalty, technical, or other professional fees paid abroad as a proportion of net industry sales, averaged over three years: 1978–9 to 1980–1.

Caution needs to be applied while interpreting the results as there may be some overlapping in FS and LCG. Sometimes companies with FDI also remit royalty or technical fees. Second, unlike FDI, the technical and licensing agreements are of a limited duration (5 to 7 years). Hence, while FS reflects cumulative position, LCG relates to current licensing contracts.

Empirical analysis

The hypotheses put forward above are tested by fitting equations (3.4) and (3.5) with data for forty-nine three-digit Indian manufacturing industries (variable set I, see Appendix I for details).[9] The dependent variables in both the equations, FS and LCG, are non-negative ratios. When fitted in their original form, their predicted values for some observations were found to be negative. Logarithmic transformation was used, therefore, to prevent the predicted values from becoming negative.[10] All the independent variables, except dummy variables, were also expressed in logarithms, which necessitated adding small positive values to the observations having zero values. The logarithmic transformation of all the variables also helps to reduce any possible heteroscedasticity.[11]

The correlation matrix is given in Table 3.2. The correlation between FS and LCG is insignificant ($r = 0.0797$), thus assuring the independence of FDI from licensing. Buckley and Davies (1981) have also reported similar independence between the relative significance of FDI and licensing in the foreign production by the British firms. The alternative measurements of idiosyncratic knowledge, $SKIL_1$ and $SKIL_2$, are highly correlated ($r = 0.698$), as expected. Several other independent variables are also found to be correlated. The proxies of knowledge embodied in capital goods (PMS) and capital requirements (AKR) are significantly correlated with each other. Relationships between the policy variables and structural variables may throw some light on the nature of public policies in India. For instance, ISP is significantly related with $SKIL_1$, $SKIL_2$, DCORE with a positive sign, and DCON with a negative sign. This implies that the potential of import substitution existed in skill intensive branches of manufacturing, and those producing capital or intermediate goods. Such branches of manufacturing have also enjoyed high priority under the industrial policy. DCORE is also significantly related to $SKIL_2$, PMS, and AKR—which implies that priority sector industries are intensive in capital requirements and in knowledge of both kinds: idiosyncratic knowledge and that embodied in capital goods. ERP is correlated with ADS, which implies that relatively higher tariffs have been imposed on finished goods that are usually sold under brand names coupled with advertising.

The regression results for the two dependent variables are presented in Table 3.3. Because of multicollinearity between alternative measurements of the same variable and between some other variables,

Table 3.2 Correlation matrix

(Log × Log)

FS	1,000											
LCG	.079	1,000										
ADS	.176	−.127	1,000									
$SKIL_2$	.520	.293	.104	1.000								
$SKIL_1$	.445	.244	.085	.697	1,000							
PMS	.108	.455	−.372	.078	−.017	1.000						
AKR	.207	.304	−.246	.286	.192	.447	1.000					
RDS	−.197	.526	.018	.146	.204	.178	.052	1.000				
ISP	.582	.290	.083	.467	.507	.150	.078	.015	1.000			
ERP	.138	−.080	.367	−.145	−.198	.087	.192	.041	−.132	1.000		
DCORE	.277	.679	−.272	.389	.284	.324	.327	.249	.388	−.233	1.000	
DCON	−.208	−.540	.419	−.092	−.164	−.347	−.205	−.256	−.353	.266	−.572	1.000
	FS	LCG	ADS	$SKIL_2$	$SKIL_1$	PMS	AKR	RDS	ISP	ERP	DCORE	DCON

a few alternative combinations were tried. The fitted regressions are significant at the one per cent level in terms of F-statistics, and the industry characteristics identified here are able to explain over half (nearly two-thirds if all the explanatory variables are included) of the variation in the intensities of FS and LCG. The performance of individual explanatory variables in these equations is discussed below.

Intangible assets

The product differentiation variable ADS has a positive sign and is statistically significant in all the equations that explain variation in FS, except in equation (iv) in Table 3.3. The inclusion of ERP in equation (iv) adversely affects the level of significance of ADS because of their mutual correlation; ADS is not significant in any equation that explains variation in LCG. These findings are in tune with the theoretical predictions and, therefore, uphold the hypothesis that market transfers of goodwill assets are subject to high transaction costs due to buyers' uncertainty, and quality supervision costs. Hence, markets for such intangible assets tend to be internalized through FDI.

The variables proxying idiosyncratic knowledge, $SKIL_1$ and $SKIL_2$ are both significant, with positive signs in the equations that explain FS. The inclusion of ISP, which is correlated with both $SKIL_1$ and $SKIL_2$, affects the level of their significance adversely (as in equation (iii)). On the other hand, none of the human skill variables is significant at all in explaining variation in LCG. This finding again supports our hypothesis. Licensing seems to be an inefficient channel of transfer of knowledge when it is embodied in the skills of personnel; hence FDI is resorted to.

The variable proxying knowledge embodied in the capital goods, PMS, has a negative sign and is not significantly different from zero in FS equations. In the equations explaining LCG, however, it turns out to be significant with a positive sign. This finding indicates, as per the hypothesis, that the cost of external market transactions is not too high (when knowledge is embodied in the capital goods) to make it an inefficient mode of transfer. Licensing and not FDI is, therefore, a preferred mode in such cases.

The variable capturing ownership advantage of access to sources of capital, AKR, is not significant in any equation explaining either FS or LCG. The unimportance of AKR in both the cases suggests that access to sources of capital is no longer a source of monopolistic advantage for MNEs in India. This may be due to the development of capital markets and the emergence of government-sponsored industrial development banks and financial institutions in the country.

The variable proxying R&D intensity, RDS, is significant in both

Table 3.3 Regression equations explaining variation in intensity of FDI and licensing in Indian manufacturing

Dependent variable	*FS*				*LCG*	
Explanatory variable	*(i)*	*(ii)*	*(iii)*	*(iv)*	*(i)*	*(ii)*
1. ADS	0.348[b]	0.278[c]	0.295[b]	0.271	0.170	0.262
	(2.426)	(1.917)	(2.006)	(1.667)	(0.934)	(1.276)
2. $SKIL_2$	2.267[a]	2.441[a]				0.102
	(4.062)	(4.618)				(0.125)
3. $SKIL_1$			1.517[c]	3.041[a]	−0.444	
			(1.743)	(3.665)	(−0.412)	
4. PMS		−0.466				1.199[b]
		(−1.069)				(2.031)
5. AKR	0.202		0.352	0.183	0.409	0.109
	(0.739)		(1.298)	(0.611)	(1.218)	(0.285)
6. RDS	−0.313[a]	−0.299[a]	−0.273[b]	−0.325[a]	0.438[a]	0.385[a]
	(−3.210)	(−3.064)	(−2.694)	(−3.207)	(3.485)	(3.148)
7. ISP			0.310[b]		0.055	−0.016
			(2.367)		(0.341)	(0.102)
8. ERP				0.799		0.004
				(1.517)		(0.007)
9. DCORE			0.355		2.699[a]	2.633[a]
			(0.590)		(3.679)	(3.523)
10. DCON	−1.575[a]	−1.703[a]	−0.678	−1.575[a]	−1.189	−1.122
	(−2.886)	(−3.105)	(−1.047)	(−2.747)	(−1.484)	(−1.395)
Constant	−7.980[a]	−7.368[a]	−10.645[a]	−16.586[a]	−4.947	−2.834
	(−3.835)	(−5.325)	(−3.476)	(−4.332)	(−1.304)	(−0.738)
R^{-2}	0.475	0.482	0.504	0.451	0.634	0.669
F	7.78[a]	8.01[a]	5.96[a]	5.75[a]	10.17[a]	8.79[a]
d.f.	43	43	41	42	41	39

Note: Figures in parentheses are t-values. Superscripts indicate levels of significance (two-tailed tests) as follows: a = 99%, b = 95%, and c = 90%.

sets of equations, but with different signs. In the case of FS it has a negative sign whereas it turns out with a positive sign in LCG equations. This finding can be explained in terms of the available evidence on the nature of in-house R&D in India. Desai (1980) has found that the R&D activity of Indian firms normally consists of minor adaptations to the imported technology made to suit local tastes, market size, and raw materials. Further, Katrak (1985) concludes from his study of R&D in India that the propensity to adapt the imported technologies decreases with its complexity. Hence the proportion of local R&D spending may be inversely related to the complexity of technology. More complex technologies may be difficult to transfer through external markets because of limitations of absorptive capacity of developing country firms, apart from other market failures. Hence, they may be transferred through the package of FDI. That is how there might exist an inverse relationship between FS and RDS, and a positive association between LCG and RDS. However, more detailed work on the nature and characteristics of in-house R&D activity in India and its relationship with technology transfers is needed before a more definitive statement on this relationship can be made.

Locational advantages

The coefficient of ISP is positive and significant in explaining variation in FS. The effective protection variable (ERP) has a positive sign and is significant only at the 15 per cent level in the FS equation. However, neither of these variables is significant in explaining variation in LCG. While performance of ISP in the FS equation is as per the hypothesis, its insignificance in LCG's case may be attributable to differences in measurements of FS and LCG. As pointed out above, unlike FS, LCG relates to a more recent period. The import substitution potential which existed in the late 1950s can not be expected to be related to foreign technical collaborations approved during the last 5–7 years. Apart from the limitations of measurement in adequately reflecting the changing levels of protection over the years, ERPs have been found to be insignificant in most of the studies explaining FS in Canada (Caves 1974a; Caves et al. 1980; Owen 1982; Gupta 1983).

Of the other policy variables, the consumer goods dummy variable DCON is with a negative sign throughout in both FS and LCG equations, and is significant in the absence of ISP with which it is collinear. The performance of DCON is, therefore, as per the expectation. The selective policy towards foreign collaborations (both FDI and licensing) which the government of India has followed throughout the post-Independence

period seems to have discouraged FCEs in the consumer goods sectors where local skills have been available. The other policy variable which captures the effect of industrial policies, DCORE, is with a positive sign in both sets of equations but is significant only in explaining LCG. One reason for its failure in case of FS may be that this policy is applicable only to the further expansion of FCEs with more than 40 per cent foreign equity. Such companies constitute only a part of those defined to be FCEs here. Furthermore, the policy evolved only during the 1970s and hence could not be expected to have influenced in a significant manner the industrial pattern of cumulative FDI, which FS reflects.

The above findings show that the theoretical predictions emanating from the recent propositions to the theory of international operations of the firm are able to explain inter-industry differences in intensities of FDI and licensing in Indian manufacturing fairly well. FDI has been found to be a dominant mode of operation in the industries characterized by a high level of product differentiation and with high skill requirements. In contrast, industries which are intensive in the use of capital goods for production, and with less complex technologies, are dominated by licensing. The access to sources of capital no longer seems to provide an edge to the MNE in the Indian market.

Conclusions

This chapter has analysed the determinants of variations in the share of FCEs in sales across forty-nine Indian manufacturing industries. At the outset an attempt was made to formulate hypotheses on the basis of recent theories of the internationalization of firms, particularly the transaction cost minimization paradigm. The theory suggests that FDI will take place only when market transfer of intangible assets involves high transaction costs. In the rest of the cases the transfer will take place through arm's length licensing. To have a fuller verification of the predictions of the theory, parallel analyses of the determinants of intensity of FDI and licensing were made for the same set of industries.

The empirical results obtained for the Indian industries suggest, in line with the hypotheses, that FDI has concentrated in those branches of manufacturing which are characterized by a high degree of product differentiation and in branches that are intensive in the use of idiosyncratic knowledge. Licensing seems to be a dominant mode in industries which are intensive in the use of knowledge embodied in capital goods. The access to sources of capital is not important for both FDI and licensing, and seems to have lost its importance as an intangible asset capable of

giving an edge to MNEs in the Indian market. This may be due to the development of capital markets and the emergence of a number of government-sponsored financial institutions in India.

The R&D intensity of local industry is found to be inversely related to the intensity of FDI but positively related to that of licensing. This finding has been interpreted in the light of the earlier evidence that local in-house R&D in India is usually of an adaptive nature and that the tendency to adapt decreases with the complexity of technology. As more complex technologies may be difficult to transfer through licensing, FDI could be the preferred mode of transfer.

FDI is also found to have concentrated in import-competing sectors. Hence the import substitution programme of the government of India seems to have encouraged the erstwhile exporters to the country to set up local production facilities. The selective policy which the government has followed appears to have discouraged foreign collaborations of either kind in consumer goods industries where local skills are available in some measure. The government's industrial policy, which attaches priority to certain industries with high linkages, seems to have attracted considerable investment and technology to those sectors.

The choice between FDI and licensing can sometimes be influenced by the intervention of the host government at the time of entry. The Indian government has periodically issued lists of items for which foreign technical collaborations (licensing) and foreign financial collaborations (FDI) may be permitted. Certain firm and technology-specific factors also play their role in influencing the choice of the mode, such as age, size, past experience in technology transfer, extent of product and geographical diversification of the firm, the degree of sophistication of the technological advance, etc. (Telesio 1979; Davidson and McFetridge 1984). These factors, however, could not be captured in the present exercise, given the level of industrial aggregation.

Chapter four

Foreign and local enterprises in Indian manufacturing: an analysis of discriminating characteristics

Introduction

Studies evaluating the impact of foreign direct investment (FDI) on host developing countries have usually addressed themselves to quantifying gross or net generation of incomes, savings, foreign exchange, and employment by individual or total FDI projects.[1] This evaluation approach ignores the domestic alternative that may be possible in most cases (with or without foreign technology and loans). The direct balance of payment (BOP) effect in the case of an import substitution project is very likely to be negative and could be so even in the case of a local firm. From the point of view of evaluating the impact of FCEs on various parameters of development, therefore, examination of aspects that distinguish them from their local counterparts is more important. Furthermore, it has been argued, for instance by Cohen (1975), and Newfarmer and Marsh (1981), that the impact of FDI on development would be 'minimal' if the foreign controlled and local firms behaved in a similar way.

The current state of knowledge on conduct and performance differences between foreign and local firms in developing countries is deficient in many respects. Besides having a limited choice of parameters compared and sample size, the existing studies have seldom controlled for extraneous influences and interaction among the variables, since most of them have been conducted in univariate context (see Lall 1981, chap. 2; Caves 1982, chap. 9, for surveys).

This chapter compares some important aspects of conduct and performance of foreign controlled and local firms (FCEs and LCEs respectively) in forty-nine Indian manufacturing industries[2] in a more comprehensive framework. The analysis covers different elements of market structure and performance,

choice of technology, employee compensation behaviour, linkages with the domestic economy, export performance, and financial policy and management. The significance of the differences between the two groups of firms across forty-nine industries is first evaluated in terms of a univariate statistical criterion (Wilcoxon's Signed Ranks Test). The variables identified by the univariate test as important in differentiating the two groups are then simultaneously included in a multivariate test to control for possible mutual interaction. The final discriminating variables are, thus, selected through step-wise discriminant analysis from among those identified by the univariate analysis.

This chapter begins by examining the characteristics of MNEs which may lead to differences in the behaviour of FCEs and LCEs. In the light of these characteristics and the existing empirical evidence, it then formulates a set of hypotheses on the expected nature of differences pertaining to different parameters. The findings of the empirical analysis in the univariate and multivariate frameworks, respectively, are presented, and the chapter concludes with a summary of the major findings and the limitations of the analysis.

Differences between FCEs and LCEs-hypotheses

FCEs share the ownership of certain unique intangible assets with parent MNEs such as brand goodwill, knowledge, organizational skills, access to marketing and information networks, etc. Because of the ownership advantages, the asset bundles of FCEs are different from those of their local counterparts. This fact may lead to differences in the mode of rivalry of the two groups of firms. The FCEs' rivalry may be dominated by non-rice competition based on product differentiation to maximize the revenue productivity of advantages such as the brand goodwill that they hold (Caves 1974b). The mode of rivalry might reflect on their scale of operations, advertising behaviour, and profit margins. The access to information on world markets and opportunities coupled with the MNEs' objective of global profit maximization may result in rationalization of production on the basis of international division of labour, which may lead to the higher dependence of FCEs on international trade. FCEs' perception of risks may also be different because of their access to better information. The centralization of strategic decision-making responding to global opportunities in MNEs may lead to a different investment and financing behaviour, propensity to undertake R&D, raw material sourcing, export behaviour, profit repatriation behaviour, etc., of FCEs (Newfarmer and Marsh 1981). The decisions to enter, diversify, and undertake R&D of MNE affiliates in Canada have been found to be less determined by the local conditions than in case of their local counterparts (Gorecki 1976, 1980; Howe and McFetridge 1976). The factor proportions and the employee compensation behaviour may show differences because of

grooming of MNEs in an environment of capital abundance or labour scarcity. The experienced and more professional organizational skills of MNEs may lead to more optimal financial and inventory management.

Taking leads from these general characteristics of MNEs, and drawing upon the existing empirical knowledge, we can now proceed to formulate the hypotheses concerning the nature of differences between FCEs and their counterparts in terms of different parameters of behaviour. These parameters have been classified into seven broad headings: market structure, conduct, and performance; choice of technique; employee compensation behaviour; vertical inter-firm linkage generation in the local economy; export performance; financial policy and tax planning; and financial management. The variables proxying each of these parameters and their definitions are also indicated.

Market structure, conduct, and performance

The impact of penetration of MNEs on host country market structures directly and indirectly (through their competitive behaviour) has received considerable attention in the recent literature. Market structure and performance can be influenced by FCEs through the relative scale of their operation, and other aspects of competitive behaviour. In some countries, particularly in Latin America, there is evidence that MNEs have influenced the local market structures through their acquisition and merger behaviour (Evans 1979). These, however, are not important in the Indian case because of government regulations.

Scale of operations

The scale of operation of firms is an important determinant of the market structure of the industry. There are no clear-cut *a priori* reasons for expecting differences in the relative scales of operations of FCEs and their local counterparts. However, as has been observed earlier, FCEs are expected to prefer non-price competition and sell more differentiated products. Such form of rivalry is often accompanied by extensive advertising and marketing campaigns to disseminate the differentiating features of the product among potential customers. The advertising activity is known to enjoy significant economies of scale and is most cost effective if carried out at the national scale rather than at regional or local levels (Comanor and Wilson 1974). It can therefore be expected that FCEs will prefer to set up operations that intend to serve national markets. Hence the relative scale of their operations is likely to be larger than that of a firm not following a similar strategy. This expectation perhaps explains the conclusion of Lall (1981, chap. 2), which was reached on the basis of a survey that the 'larger and more industrially advanced a host economy, the more will TNC affiliates tend to exceed their local competitors in size' (p. 43).

Available empirical evidence also indicates that FCEs are on average larger than their local counterparts, and is provided, for example, by Kidron (1965:224) in the case of India; Newfarmer and Mueller (1975) in Mexico and Brazil; and Lall and Streeten (1977, chap. 6) in India, Colombia and Malaysia. A number of studies have observed a significant correlation between the degree of presence of MNEs and seller concentration. Examples are: Rosenbluth (1970) in the case of Canada; Radhu (1973) in Pakistan; Willmore (1976) in Guatemala; Newfarmer and Mueller (1975) and Connor (1977) in Mexico and Brazil; and Parry (1980) in Australia. These correlations, however, can be misleading, as the sources of entry barriers that give rise to concentration and the sources of FDI overlap substantially (Caves 1982). Evans (1977) for Brazil, Lall (1979) for Malaysia, and Blomstrom (1986) for Mexico find the positive influence of foreign ownership on industry concentration even after controlling for the entry barriers.

In view of the above theoretical reasons, and in the light of the empirical evidence, the scale of operations of FCEs will be hypothesized to be larger than that of their local counterparts in Indian manufacturing. The scale of operation will be proxied through the average volume of net sales per firm ($SIZE_i$).

$SIZE_i$ Average net sales per firm in the ith group (i = FCE, LCE throughout).

Conduct

Firms manipulate the external constraints placed on their expansion through their advertising, R&D, product diversification, collusion, merger and takeover behaviour (Hay and Morris 1979:30). In view of the limitations of data on products diversification and collusion behaviour, and the government regulations on merger and takeovers, we shall consider here only the advertising and R&D.

Advertising

Advertising activity is the source of brand goodwill and an important aspect of non-price rivalry. However, there is a general lack of evidence on the comparative advertising behaviour of FCEs and local firms. Caves (1974b:22) has argued that the skills of MNEs in differentiating their products prompt them to prefer non-price competitive rivalry, such as through advertising campaigns. The presence of MNEs may dispose an industry towards non-price competition and hence may increase the general level of advertising expenditure of the industry (Dunning 1981, chap. 7). Caves et al. (1980), and Gupta (1983), found the foreign share in industry sales to have a significant positive influence in explaining the proportion of

advertising expenditure in Canadian manufacturing industries. This could be due to two reasons: one, the foreign subsidiaries spend relatively higher proportion to their income on advertising so that the industry average of advertising expenditure rises in proportion to their presence; and two, the foreign subsidiaries induce the industry to pursue non-price rivalry, and both foreign and local firms spend a higher proportion of income on advertising. Which of the two effects is dominant, however, is not clear from the two studies. Willmore (1986) found FCEs to spend a higher proportion of sales revenue on advertising than their local counterparts in Brazil even after controlling for firm size and industry. We shall, therefore, examine the hypothesis that FCEs spend a higher proportion of their income on advertising (ADS_i) than their local counterparts.

ADS_i Advertising expenditures of ith group of firms as a proportion of net industry sales in 1980–1.

Research and development

R&D activity is the main source of the technological edge that MNEs enjoy. It is logical, therefore, to expect MNEs to concentrate their R&D activity near their headquarters (Vernon 1974). The US Tariff Commission (1973) confirmed that US MNEs do concentrate most of their R&D in the United States. Creamer (1976), on the basis of a survey of over 900 US MNEs having overseas R&D, found that the bulk of their R&D activity was undertaken in the United States only. Similar figures were reported by Mansfield et al. (1979) in a more recent survey. Furthermore, the overseas R&D was carried out primarily in the industrialized countries (two-thirds of the total overseas R&D activity done by US MNEs being in three countries, namely Canada, the United Kingdom, West Germany). Only a 'negligible share' of the overseas R&D found its way to the developing countries. The implications of this finding are that affiliates of MNEs, particularly in the developing countries, are likely to undertake little R&D.

On the other hand, there may be several compelling reasons for a local firm to undertake R&D. For instance, local firms do not enjoy the continuous access to laboratories of the parent firm abroad as FCEs do. The local firms that obtain technology from abroad on a licensing basis may be forced to undertake R&D to absorb, adapt, and modernize the technology. The fixed life span (usually 5–7 years) of foreign technical collaborations and restrictions placed by the Indian government on their renewals may make the licencees anxious to absorb the technology during the life of the collaboration agreement (Kumar 1987b).

Most of the studies that analysed R&D intensity found the locally controlled firms to be more R&D intensive than their foreign controlled counterparts. Examples are: Subrahmanian (1972) for the Indian chemical industry; UNCTAD (1983) for the Indian capital goods industry; Evans (1979), and Gordon and Fowler (1983) for the pharmaceutical industries in Brazil and Canada, respectively; and Ragachand (1981) in the case of Canada. On the basis of a detailed examination of different aspects of innovative activity of foreign and local firms in Latin American countries, controlling for age and scale of operation, Fairchild and Sosin (1986) reached the conclusion that domestic firms had a higher level of internal innovative activity, whereas foreign firms relied more heavily on sources external to the subsidiary. Lall (1985, chap. 7) found a positive relationship between foreign ownership and R&D in the Indian engineering industry but a negative one in the chemical industry thus affording no generalization. We shall verify the hypothesis that in India, FCEs spend a lower proportion of their income on R&D (RDS_i) than their local counterparts.

RDS_i Reported in-house R&D expenditure of ith group of firms as a proportion of total sales in 1980–1.

Performance

The performance of FCEs and LCEs has been compared in terms of profitability and factor productivities. A number of studies have found higher labour productivity in the case of FCEs, for example, Fairchild and Sosin (1986) in various Latin American countries and Willmore (1986) in Brazil. But a large part of the difference could be on account of their observed higher capital intensity. Tyler (1978) in Brazil, Vendrell-Alda (1978) in Argentina, and Agarwal (1979) in India, have attempted to compare total factor productivities of FCEs and LCEs. The differences appeared to be significant in the case of India. The lack of data on physical labour inputs, inflation adjusted book value of capital stock, physical quantity of output, and rates of capital utilization[3] in our data base does not permit us to make any meaningful comparison of performance in terms of factor productivities.[4] We shall, therefore, confine ourselves to comparisons of profitability and growth rate.

Profitability

FCEs can be expected to enjoy higher profitability than their local counterparts because of their monopolistic ownership of intangible assets. It has been observed earlier that this fact may induce them to pursue a

non-price mode of rivalry. A part of prices charged by them may be monopoly rents for goodwill and other intangible assets held. Evidence from the literature gives the impression that FCEs fare better than local firms in terms of profitability. However, when extraneous factors were controlled for, the observed differences did not remain statistically significant. Examples are from Lall (1976) in the case of Colombia and India; Gershenberg and Ryan (1978) in Uganda; Fairchild and Sosin (1986) in Latin American countries. Subrahmanian (1972), Fairchild (1977), and Newfarmer and Marsh (1981) also did not find any significant differences between profitability of FCEs and their local counterparts in Indian, Mexican, and Brazilian case studies, respectively.

The reported profits, however, need not necessarily reflect the true profits, since they are subject to possible manipulations such as transfer prices (Newfarmer and Marsh 1981; Lall 1981). We shall, none the less, examine whether FCEs have higher profitability. Following current practice (Collins and Preston 1970; Hay and Morris 1979:206), profit margins on sales (PCM_i) (Lerner's index) rather than the rate of return will be used to represent profitability.

PCM_i Profit before tax of ith group of firms as proportion of their net sales in 1980–1.

Growth

Growth is also an important aspect of performance of firms. The managerial theories of the firm (Marris 1964) have considered maximization of growth to be the basic objective of the managerial firm (subject to a certain minimum profit constraint). The sources of growth may include expansion of the existing product line, vertical integration, conglomerate diversification, and acquisition. FCEs may be considered to be better equipped to undertake expansion, integration, or diversification for the reasons that facilitate their initial entry, namely ownership advantages. However, the decision pertaining to the expansion of FCEs may not only be taken in view of the local opportunities but may also be influenced by the parent enterprise's global strategy. Furthermore, in India firms need to procure an industrial licence from the government (and an additional clearance under the FERA or MRTP Acts for firms coming under their purview) before effecting any plans of substantial expansion of existing product line, integration, diversification, or acquisition. Though the industrial policy statements of the government have repeatedly assured a non-discriminatory treatment in industrial licensing to all FCEs with foreign equity up to 40 per cent, it is possible that the purely local firms could be enjoying a preference over FCEs in actual implementation of the policy.

Thus, while FCEs may enjoy an edge over their local counterparts in terms of resources for growth, they may be constrained by the global strategy of the parent enterprise and Indian government policy. In the absence of information on possible weights of these contradictory factors we are unable to reach a definite prediction on relative rates of growth of FCEs and their counterparts. Empirical studies (for example, Siddharthan and Lall 1982; M.S.Kumar 1984) have usually confined themselves to comparisons of growth rates between developed country firms that stayed at home and those which undertook foreign investments and became multinational. Therefore, growth rates ($GROW_i$) of FCEs and local firms will be compared without *a priori* prediction.

$GROW_i$ Proportionate change in net sales of ith group of firms in industry over 1978–9 to 1980–1.

Choice of technology

Choice of technology by the foreign firms has perhaps been the most controversial issue till date. The *a priori* reasoning has been that technologies of FCEs are appropriate to the factor endowments of their home countries, which are typically capital abundant. Reuber *et al.* (1973, chap. 6) found that in over 70 per cent of the cases MNEs transferred the process technology to developing countries without any adaptations. Courtney and Leipziger (1975), and Leipziger (1976), however, found that MNE subsidiaries in developing countries employed different techniques, in most cases more labour-intensive than their counterparts in industrialized countries. Among the several factors that might discourage adaptations of the imported technology to make it more appropriate to the factor proportions of the developing countries is the possibility of technological rigidity. Marsh *et al.* (1983) find a close association between capital intensity and technological rigidity. They find that MNEs usually concentrate in capital intensive sectors which often suffer from a technological rigidity that limits the scope for influencing the technological choice. Morley and Smith (1977) reached similar conclusions.

Most of the studies that compared factor proportions have noted a higher capital intensity of operations of foreign firms compared to that of local firms. Examples are: Forsyth and Solomon (1977) in the case of Ghana; Gershenberg and Ryan (1978) in Uganda; Newfarmer and Marsh (1981) in the Brazilian electrical equipment industry; Biersteker (1978) in Nigeria; Radhu (1973) in Pakistan; Wells (1973) in Indonesia; Agarwal (1976) in India; Jo (1980) in South Korea; Chen (1983) in Indonesia and Thailand; Balasubramanyam (1984) in Indonesia; Meller and Mizala (1982) in six Latin American countries; and Willmore (1986) in Brazil. On the other hand, Cohen (1975) in the case of Taiwan, South Korea and Singapore; Reidel (1975) also in Taiwan, and Jo (1980) in South Korea found that the

export-oriented foreign subsidiaries did not employ a significantly different technology from that of the local export-oriented firms. Chung and Lee (1980) in the case of Korea; Mason (1973) in the case of Mexico and Philippines; and Chen (1983) in the case of Hong Kong, Malaysia, and Taiwan also could not find any significant difference in capital intensities, possibly due to the export-oriented nature of these economies. Kirim (1986) also did not find any significant difference in capital intensity on the basis of nationality in the Turkish pharmaceutical industry (controlling for size and degree of vertical integration factors). ILO (1984), on the basis of studies in a number of developing countries noted that MNE affiliates tended to be more capital intensive but that their capital intensity was explained in terms of other characteristics such as size rather than by multinationality.

The evidence, therefore, generally confirms the view that MNEs employ technology that is relatively more capital intensive compared to that used by local firms when producing mainly for local markets. In the case of manufacture for exports, however, FCEs employ technology not significantly different from that employed by their local counterparts. Since the firms studied here are predominantly local market oriented we shall verify the higher capital intensity or, alternatively, lower labour intensity—of FCEs as compared with their local counterparts. There are problems in measuring capital intensity due to the unavailability of data on the physical quantity of employed labour in the company annual reports, our ultimate source of data. Measurement of capital also suffers from problems relating to different vintages of capital and rates of capital exhaustion (utilization), differing accounting rules, and price changes over time (Mason 1973). In the absence of any better index, we are led to use a wages:fixed assets ratio as an admittedly crude indicator of labour:capital ratio (LKR_i).

LKR_i Total wages and salaries bill of ith group of firms as a proportion of total fixed assets, in the year 1980–1.

Employee compensation behaviour/qualitative differences in employee skills

Because of their grooming in an environment of labour scarcity and high wages, MNE affiliates are expected to pay higher wages and salaries than their local counterparts in developing countries (Singer 1970). A number of studies seem to support this expectation, for instance, Markensten (1972) for Swedish MNEs in India; Gershenberg and Ryan (1978) in Uganda; Mason (1973) in the Philippines and Mexico; Possas (1979) in Brazil; and ILO (1976). Chee (1980) reported that, while there was a significant difference between wage payments by foreign and local firms to managerial and skilled workers, no significant difference was observed in the case of unskilled workers (cited in Chen 1983:147). Cohen (1975) did not find any clear pattern on the relative employee compensation behaviour of foreign

firms in the case of export-oriented firms in South Korea, Singapore, and Taiwan. Lim (1977), while examining the determinants of average hourly wages in West Malaysian manufacturing industries, inferred that higher wages paid by foreign firms were largely due to greater capital intensity and productivity of their production processes. Similar conclusions were reached by Dunning and Morgan (1980) in a six-country study where they observed that, normalizing for industry and country differences, MNEs do in general pay higher wages than indigenous firms but that the margin of difference is not as great as is sometimes alleged. Thus the existing evidence 'does not affirm any pervasive differences due strictly to their transnational status' (Caves 1982). Furthermore, a part of the higher wages paid by FCEs may be on account of possible differences in skills not controlled for in any of these studies. Balasubramanyam (1984) in the case of Indonesia, and Willmore (1986) in the case of Brazil find average wages paid by FCEs to be significantly higher than their local counterparts, but they attribute them to the quality of human capital differences. We shall, none the less, attempt to compare an index of employee compensation behaviour between foreign and local firms; we can expect it to be higher for the former.

Measurement of relative rates of wages and salaries, however, is not without problems. Companies in India, in general, do not report total number of their employees in their annual statements of accounts. Therefore, even though the total wage bill is presented, it is not possible to compute average levels of wages. However, the number and the gross emoluments of all employees in receipt of Rs3,000 per month or more are given. Siddharthan and Dasgupta (1983), and Lall and Mohammad (1983a) have used, as we did in the previous chapter, the proportion of earnings of high income employees in the total wage bill as a proxy of managerial and/or skill intensity ($SKIL_2$). The proportion of high income employees may differ between industries due to their differing requirements of skills. However, one often finds wide variation in the proportion of such employees across different firms in the same industry. There could be two possible explanations for such intra-industry variation: (a) inter-firm variations in employee compensation behaviour or pay policies, or (b) inter-firm qualitative differences in skills (such as higher qualifications and experience or motivation). Hence, differences in the proportion of high income employees (HIE) between FCEs and LCEs may be due to variations in either pay policies or the quality of the personnel employed, or both. In both cases, FCEs are likely to have a higher HIE.

HIE_i Earnings of high-income employees (those receiving Rs3,000 per month or more) as a proportion of total salaries and wages bill of ith group of firms in 1980–1.

Vertical inter-firm linkages with domestic economy

The vertical inter-firm linkages created by an enterprise have valuable implications for the development of the host economy. The volume of vertical backward linkages generated is determined by two decisions concerning the sourcing of raw materials and intermediate products of the firm: 'import or procure locally' and 'make or buy'. Performance of FCEs and LCEs will be compared in terms of both these aspects.

Importation vs. domestic procurement

A number of studies have compared the dependence of foreign and local firms on imported raw materials in order to get an idea of the extent of linkages generated in the domestic economy. FCEs can be expected to import a higher proportion of their raw materials and other inputs than local firms, because of their familiarity with foreign suppliers and the alleged inadequacies of local producers (McAleese and McDonald 1978), and sometimes to provide a market for products of their associates elsewhere. Cohen (1975) in the case of South Korea, Taiwan, and Singapore, and Reidel (1975) also in Taiwan, have found that the export-oriented foreign firms import a greater proportion of their inputs than their local counterparts. Even foreign firms producing predominantly for domestic markets have been found to depend more on imports than their local counterparts, in studies by Kelkar (1977) and Subrahmanian and Pillai (1979) in India; McAleese and McDonald (1978) in Ireland; Jo (1980) in South Korea; and Newfarmer and Marsh (1981) in the Brazilian electrical industry. Lall and Streeten (1977), in a study of six countries including India, however, did not find any significant difference between the import dependence of foreign and local firms.

Here we shall verify the hypothesized higher dependence of FCEs on imported raw materials (IMP_i) for our sample of Indian manufacturing industries.

IMP_i Imported raw materials as a proportion of raw material consumption of ith group of firms in 1980–1.

To make vs. to buy

The 'make or buy' decision essentially relates to the degree of vertical integration. The latter is inversely related to subcontracting parts of the production run to unassociated vendors. In countries like India, which have evolved a strict trade and exchange control regime that restricts the freedom of firms to import, subcontracting may be a more important aspect of a firm's decision-making concerning the sourcing of intermediates and raw materials.

A number of market failures may tempt the firm to internalize the manufacture of intermediate inputs such as the certainty of delivery schedules and quality standards (Williamson 1975; Jansson 1982). Certain monopoly rent may also be associated with vertical integration. On the other hand, the firms can internalize part of scale economies in the manufacture of intermediates and can escape problems of industrial relations by sub-contracting their production to other firms. In India's case, promotion of subcontracting is also one of the objectives of the government's industrial policy (the promotion of ancillary industries). The degree of vertical integration will, therefore, be determined by the relative weights of these factors which may vary from industry to industry and from firm to firm. There are no clues as to whether FCEs may tend to subcontract a greater or lower proportion of their requirements of intermediates.

Among the empirical studies, Cohen (1975) in the case of export-oriented firms in Taiwan, South Korea and Singapore found local firms to be having a greater degree of vertical integration. Newfarmer and Marsh (1981), and Willmore (1986), found a reverse pattern in the case of Brazil. UNCTC (1981) could not find any significant difference between the extent of sub-contracting of a foreign subsidiary and a local company in India which both produced trucks. Therefore, no definite pattern emerges from the existing work.

We shall compare the degree of vertical integration (VAS_i) of foreign and local firms in our sample of Indian manufacturing without making a prediction.

VAS_i Value added as a proportion of total net sales of ith group of firms in 1980–1.

Export performance

As part of the multinational enterprises, FCEs enjoy several advantages over their local counterparts in export markets: captive access to market information networks, marketing outlets, brand loyalty, etc. Hence, other things being the same, FCEs are better equipped to tap export markets than their local counterparts (de la Torre, Jr. 1974; Helleiner 1976). MNEs have evidently played an important role in the rapid expansion of manufactured exports of some South-east Asian countries during the 1970s (Nayyar 1978; Lall 1980b). The decision to export from the host country, however, is an important aspect of the global strategy of the enterprise. Hence, the relative export performance of FCEs may be determined more by their global corporate strategy than by export advantages.

In India's case there are additional reasons for expecting better export performance of FCEs than that of their local counterparts. In addition to general export incentives, FCEs are encouraged by the government to export through both direct and indirect means. Under the provisions of

FERA, 1973, foreign firms are permitted to retain a higher level (51 or 74 per cent) of foreign equity than the general ceiling of 40 per cent if they manufacture predominantly for the export market. Expansion into industrial activities, otherwise not open to FCE with over 40 per cent foreign equity (such as non-core sectors or those reserved for the small-scale sector), is permitted if production is meant for export. Further, the government of India sometimes imposes export obligations on foreign collaboration approvals or on industrial licences to foreign controlled firms for expansion/diversification. It is evident that roughly 20 per cent of foreign collaborations approved between 1974 and 1978 had certain export obligations (Gulati and Bansal 1980).

The findings of empirical studies comparing export performance of FCEs and local firms in different countries have been mixed. Based on a study of the export-oriented firms in South Korea, Taiwan, and Singapore, Cohen (1975) concluded that local firms were somewhat more likely to export than foreign firms, while Reidel (1975) found no significant difference in the export performance of the two groups of firms in Taiwan (except in the case of electronics). Some studies compared the proportion of exports in sales of firms predominantly producing for domestic markets, and found that foreign controlled firms performed relatively poorly. Examples are: Lall and Streeten (1977), and Subrahmanian and Pillai (1979), for India; Jenkins (1979) for Mexico; Kirim (1986) for the Turkish pharmaceutical industry; and Solomon and Ingham (1977) for the British mechanical industry. Studies by Morgenstern and Muller (1976) for ten Latin American countries; Newfarmer and Marsh (1981) for the Brazilian electric equipment industry; and Fairchild and Sosin (1986) also for Latin American countries, could not find any significant difference. Lall and Mohammad (1983b) found a positive, though weak, influence of degree of foreign ownership on industry's export performance in India. But that does not necessarily imply a superior export performance of FCEs compared to their local counterparts. Furthermore, in their study the influence of foreign ownership appeared to be significant only in the absence of another independent variable with which it was collinear.

Here we shall examine whether FCEs export a significantly higher proportion of their turnover (EXP_i) than their local counterparts in Indian manufacturing industries.

EXP_i Exports as a proportion of net sales of ith group of firms in 1980–1.

Financial policy and tax planning

The proportion of retained earnings in disposable profit (retention ratio),

and ratio of borrowings to shareholders funds (leverage ratio), are considered to be the two central financial policy decisions of firms (Hay and Morris 1979, chap. 10). These two together determine the valuation ratio and cost of obtaining funds for the firm. The (corporate income) tax planning is also an important aspect of financial strategy because it influences the volume of cash flow and the effective cost of investments. The behaviour of FCEs and LCEs will be compared in terms of each of the three components of the financial strategy.

Retention behaviour

Apart from influencing the market valuation of a firm's stock, the retention vs. pay out behaviour of the corporate sector is an important parameter of the saving/investment situation in the country. Since the retention ratio determines the valuation of a firm's capital, it is subject to a stock market constraint (Marris 1964). A high retention ratio and consequently low pay out ratio may lead to a decline in the market valuation of the firm. A too low stock price may not only affect the flow of external funds to it but may also activate bulls to mount a take-over raid. FCEs may be less susceptible to this constraint as big chunks of share capital held by the foreign share holders are not traded locally. Given the stock market constraint, the retention vs. pay out decision of FCEs may be influenced by among other things, the relative attractiveness of investment in the host country, the investment opportunities, proportion and pattern of distribution of local share holdings, and the parent's perception of the role of affiliates in their global strategy. These factors vary from firm to firm. No *a priori* reasoning for expecting a difference in the retention ratios of FCEs and local firms in any particular manner is possible. Jo (1980) found FCEs to retain a significantly lower proportion of profits than their local counterparts. In this exercise, however, the extraneous factors had not been controlled for. The retention behaviour (REP_i) of two groups of firms will be compared here without making any prediction.

REP_i Retained earnings of ith group of firms as a proportion of total profit after tax in the year 1980–1.

Financing pattern

The proportion of borrowed funds in the financing of capital requirements determines the cost of funds for the firm. FCEs have an additional incentive to depend more on the locally raised loans because they reduce their exposure to exchange risk. Their better credit-worthiness and strong financial position ensure a flow of the desired volume of funds to them. On the other hand, higher cash

flow on account of their hypothesized higher profitability may reduce their borrowing requirements. The findings of empirical studies are mixed. Subrahmanian (1972) found FCEs to depend less on borrowed funds than their local counterparts in nine of the twelve pairs of firms studied in India. While Lall (1976) in the case of India, and Gershenberg and Ryan (1978) in the case of Uganda, could not find any significant difference in the borrowing requirements of FCEs. Here again, the leverage ratio (LEV_i) of FCEs and their local counterparts will be compared without any firm prediction.

LEV_i Total long-term borrowings of ith group of firms as a proportion of net worth in 1980–1.

Tax planning

Rates of corporate income tax in India in general are high. However, to encourage investments a number of concessions are permitted, such as tax holiday for new investment, accelerated depreciation, and allowances like investment allowance and weighted deductions. Therefore, the effective rate of tax applicable to a company becomes a function of tax planning which can even reduce the tax liability of an otherwise profitable company to an insignificant sum. Another factor which might influence the effective rates of tax is profitability. Though the prescribed rates of tax are flat (a slightly higher rate for closely-held companies and a lower rate for widely-held companies), an element of progression has been brought in by imposing a surtax for companies earning supernormal profits. One might expect that FCEs may be at a disadvantage compared to the local firms in their ability to reduce tax liability, their being alien to the land. Second, supposedly high profitability of their operations might attract surtax. Both factors will lead the effective tax rate for FCEs to be higher. Therefore, the effective rate of tax (ERT) for FCEs can be expected to be higher than their local counterparts.

ERT_i Provision for tax made by ith group of companies as a proportion of profit before tax, in 1980–1.

Financial management

Two aspects of financial management—inventory and cash management—are considered here for the purposes of comparison.

Inventory management

A certain amount of inventory is necessary for running production processes in manufacturing activity. However, large accumulation of inventory adds to the cost of capital. Inventory management, therefore, is an important indicator

of the efficiency of marketing and procurement networks. Since possession of efficient management and organizational skills is considered to be one of the intangible assets held by MNEs, one can expect FCEs to be able to manage with a smaller volume of inventory per unit of sales compared to their local counterparts. Performance of FCEs has not yet been compared with that of their local counterparts in terms of this aspect of managerial efficiency. In the absence of any empirical evidence we shall prefer to go by the expectation that FCEs' inventory requirements per unit of sales (INS_i) are lower.

INS_i Ratio of inventory to net sales of ith group of firms in the year 1980–1.

Liquidity

In addition to holding the necessary volume of inventory a manufacturing firm needs liquidity to cover the lag between input procurement and recovery of sales proceeds. This requirement of liquid assets is referred to as working capital. Having a bearing on the total capital employed, and hence cost, working capital management is an important aspect of financial management. Furthermore, a firm with a comfortable liquidity position may obtain a competitive advantage over its rivals by offering liberal suppliers' credits. Liquidity requirements of a firm may also depend upon the efficiency of procurement and distribution channels. Reasons for the difference between the liquidity positions of FCEs and local firms are not quite clear, nor are there any empirical studies on this aspect. Therefore, the relative liquidity position of FCEs and local firms will be compared without any *a priori* prediction. Liquidity is defined as the difference between current assets and current liabilities. Hence, it is measured by the current ratio (CUR).

CUR_i Ratio of current assets to current liabilities of ith group of firms in the year 1980–1.

Empirical analysis

The empirical analysis includes comparisons of FCEs and LCEs in terms of the fifteen parameters identified above. Table 4.1 summarizes the predictions formulated above in respect of each of the fifteen parameters (indicated by a mark of interrogation (?) where no clear prediction was possible). Table 4.1 also presents means and standard deviations of the variables for FCEs and LCEs for forty-nine Indian manufacturing industries (Forty-three industries for FCEs as they had no representation

Table 4.1: Parameters for discriminating foreign and local firms in Indian manufacturing

Parameter	*Prediction*			*Mean (S.D.)*	
				FCEs	*LCEs*
Market structure, behaviour and performance					
1. Scale of operations	$SIZE_F$	>	$SIZE_L$	2887.19 (2985.5)	1460.05 (1832.24)
2. Advertising intensity	ADS_F	>	ADS_L	.46 (.55)	.33 (.45)
3. R&D intensity	RDS_F	<	RDS_L	.07 (.19)	.106 (.15)
4. Profit margins	PCM_F	>	PCM_L	.096 (.053)	.050 (.045)
5. Growth rate ($GROW_i$)		?		1.837 (0.428)	1.929 (0.415)
Choice of technique					
6. Wages:capital ratio	LKR_F	<	LKR_L	0.399 (0.499)	0.299 (0.204)
Employee compensation/ qualitative differences in employee skills					
7. Proportion of high-income employees in total wage bill	HIE_F	>	HIE_L	0.112 (0.064)	0.067 (0.023)
Vertical inter-firm linkage generation					
8. Degree of import dependence	IMP_F	>	IMP_L	0.135 (0.155)	0.101 (0.085)
9. Degree of vertical integration (VAS_i)		?		0.382 (0.091)	0.319 (0.104)
Export performance					
10. Proportion of exports in sales	EXP_F	>	EXP_L	0.042 (0.042)	0.052 (0.062)
Financial policy and tax planning					
11. Retention ratio (REP_i)		?		0.515 (0.619)	0.941 (1.094)
12. Leverage ratio (LEV_i)		?		0.955 (1.027)	2.561 (7.46)
13. Effective tax rate	ERT_F	>	ERT_L	0.537 (0.356)	0.266 (0.805)
Financial management					
14. Inventory management	INS_F	<	INS_L	0.308 (0.121)	0.289 (0.099)
15. Liquidity (CUR_i)		?		2.365 (0.663)	2.142 (0.636)

Note: The means and standard deviations are based on forty-three observations in the case of FCEs and forty-nine observations in the case of LCEs.

in six of them). A look at the means reveals that for variables, SIZE, ADS, RDS, PCM, HIE, IMP, and ERT the mean differences are in accordance with the predictions. In the case of three variables, LKR, EXP, and INS, the differences are contrary to the expectations, in particular a higher LKR for FCEs. But the difference may not be statistically significant because the standard deviation of LKR is high for FCEs. On average, FCEs export a lower proportion of their sales and have a higher inventory per unit of sales, compared to the local firms. Among the variables for which we did not have a definite prediction, the mean for FCEs is higher in the case of VAS and CUR indicating their greater degree of vertical integration and richer liquidity position on average. FCEs have a lower mean in the case of GROW, LEV, and REP.

Examination of the statistical significance of these mean differences is conducted in two stages. In the first stage the univariate tests of significance of the differences are performed. The findings of the univariate tests may sometimes be misleading because they do not take into account the interaction among the discriminating variables. In the second stage, therefore, the variables found to be important discriminators in the univariate test are considered simultaneously in a multivariate framework.

Stage I: Univariate analysis

The univariate test applied here is non-parametric. Non-parametric tests have the advantage of not assuming any specific distribution of the population under analysis. Hence they are uniquely suited to behavioural science data. Among the various non-parametric tests, the Wilcoxon Matched-Pairs Signed-Ranks Test is one of the more powerful ones, as it utilizes information on both the direction and the magnitude of the differences within pairs. It gives more weight to a pair that shows a large difference than to a pair that shows a smaller difference. It has been used for similar purposes by Mason (1973), Willmore (1976), Agarwal (1979), and Chung and Lee (1980). For more than twenty-five observations, T (the test statistics) is normally distributed with

$$\text{mean} = \frac{n'(n'+1)}{4} \qquad \text{variance} = \frac{n'(n'+1)\,(2n'+1)}{24}$$

where n′ is number of non-zero differences (see Siegel 1956, for more details). Hence standard normal variate Z can be calculated by dividing the difference between T and its mean by its standard deviation.

Since six of the forty-nine industries in our data base have no representation of FCEs, we shall confine our analysis to forty-three matched pairs of industries. The test can be, as usual, either one- or two-

tailed. Since in a few cases we have no definite prediction about the sign of T, we shall use the latter. The findings of Wilcoxon's test are presented in Table 4.2. It is apparent that of the fifteen variables employed, differences between FCEs and LCEs are statistically significant only in the case of ten variables at 5 per cent or higher level (two-tailed).

Table 4.2 Analysis of discriminating characteristics: findings of Wilcoxon's Signed Rank Test

Parameter	*Z Statistics*	*Level of statistical significance (two-tailed test)*	*Inference*
1. SIZE	3.223	1%	$SIZE_F > SIZE_L$
2. ADS	0.78	–	
	1.37*		
3. RDS	2.35	5%	$RDS_F < RDS_L$
4. PCM	4.334	1%	$PCM_F > PCM_L$
5. GROW	2.34	5%	$GROW_F < GROW_L$
6. LKR	1.468	–	
7. HIE	4.429	1%	$HIE_F > HIE_L$
8. IMP	0.58	–	
	0.343*		
9. VAS	4.13	1%	$VAS_F > VAS_L$
10. EXP	0.78	–	
	0.587*		
11. REP	4.167	1%	$REP_F < REP_L$
12. LEV	3.128	1%	$LEV_F < LEV_L$
13. ERT	2.196	5%	$ERT_F > ERT_L$
14. INS	0.657	–	
15. CUR	2.149	5%	$CUR_F > CUR_L$

Notes: (a) Number of observations are forty-three matched pairs of industries in all the cases; (b) an asterisk indicates results obtained for weighted averages of the respective variable; (c) inferences are subject to verification in the multivariate tests.

Of the five variables representing different aspects of market structure and performance, four (SIZE, RDS, PCM, and GROW) were significant. The direction of differences suggests that FCEs have significantly larger scales of operation and enjoy higher profit margins than their local counterparts. This result is in line with the general impression and the hypotheses formulated above. These findings also indicate that FCEs spend a relatively smaller proportion of their income on R&D and seem to be growing at a slower rate than their local counterparts. However, one needs to control for the possible interaction among the variables before reaching a final conclusion.

The analysis, however, fails to bring out any significant differences in the intensity of advertisement expenditures of the FCEs and LCEs. It is possible that FCEs spend significantly more on advertising in advertising

intensive industries. Thus giving equal weight to all industries may not be appropriate. To correct for this the advertising intensity of FCEs and LCEs was weighted for the industry's share in total advertising expenditure by the sample firms. Though the weighting improved the Z statistics from 0.84 to 1.37, it continued to remain insignificant. In view of MNE's predisposition towards product differentiation, advertising intensity of FCEs was expected to be more than that of LCEs. This result, however, does not rule out any impact of FCEs on this aspect of market structure. As indicated above, it is possible that penetration of MNEs in an industry induces the firms to adopt a non-price mode of rivalry, which increases the general level of advertising activity in the industry. The only way of checking this is to examine the dynamic pattern of advertising behaviour of industry firms *vis-à-vis* the entry of FCEs. Moreover, FCEs enjoy a dowry of intangible assets and hence are able to internalize the benefits of a part of the advertising done by their parent and associate firms in the rest of the world (Connor and Mueller 1982). Hence the current advertising expenditure of FCEs may yield proportionately higher returns than that of LCEs. Another reason why FCEs may be getting more mileage out of the same proportion of income spent on advertising could be due to economies of scale. FCEs have been found to have significantly larger scales of operation. Hence, the scale of their advertising is larger than that of LCEs.

The factor proportions of FCEs are also not significantly different than those of LCEs. However, caution needs to be applied while interpreting results pertaining to this variable because of the limitations of measurement. The difference in terms of proportion of high income employees (HIE) is significant at the one per cent level. This finding, however, is subject to confirmation in multivariate tests.

Of the two sources of vertical local inter-firm linkages compared, FCEs' behaviour is not significantly different in terms of import dependence. The difference continues to remain insignificant even if the import dependence of FCEs and LCEs is weighted for the industry's share in total imports by the sample firms. Most of the studies done for other countries found FCEs to have a tendency to import a higher proportion of raw materials and intermediate goods than the local firms. In India's case this result may be an outcome of the strict exchange and import regulations, and the high priority attached to import substitution. In addition to quantitative restrictions on imports and high tariffs, the government's tendency to canalize most of the bulk imports may have contributed to this result. Behaviour of FCEs regarding the 'make or buy' decision is significantly different, as revealed by the higher degree of vertical integration (VAS).

The export orientation of FCEs does not seem to be significantly different from their local counterparts. Again, weighting of export performance by

industry's share in total exports of the sample firms makes no difference to the result. It indicates that FCEs in India are largely local market oriented. In view of its importance, the relative export behaviour of FCEs in Indian manufacturing will be analysed in greater length in Chapter 6.

The aspects of an enterprise's financial policy considered here, namely retention and leverage ratios, are significant in discriminating between FCEs and LCEs. This suggests a lower propensity on the part of FCEs to retain profits and to depend on external sources of financing. The tax planning variable is also significant and has the hypothesized sign.

Of the two aspects of financial management, liquidity and inventory management, only the former is significant in differentiating the two groups of firms. FCEs appear to have greater liquidity than their local counterparts. FCEs do not reveal any significantly different inventory behaviour compared to their local counterparts. Inventory requirements are also dependent upon the degree of vertical integration (Hay and Morris 1979, chap. 15). The fact that FCEs do not require a significantly larger volume of inventory than the LCEs, in spite of the greater degree of vertical integration of their operations, might indicate their efficiency of inventory management.

Stage II: Multivariate analysis

The univariate analysis of statistical significance of differences has identified ten of the fifteen variables used as possible discriminants. These are: SIZE, PCM, RDS, GROW, HIE, VAS, REP, LEV, ERT, and CUR. In order to take care of the possible interaction among them the significance of mean differences will now be examined in the multivariate framework with the help of the step-wise discriminant analysis. The discriminant analysis involves the fitting of linear discriminant score functions on the basis of observed data on a number of discriminating variables of individuals whose group membership is known. These functions (sometimes known as classification functions) can classify further cases into the groups on the basis of values of discriminating variables (see Tatsuoka 1971; Klecka 1980; and Jackson 1983). In our case discriminant analysis can be used to examine whether FCEs differ from their local counterparts, and if so, in terms of which characteristics. Riedel (1975), Solomon and Forsyth (1977), and Solomon and Ingham (1977), have made use of discriminant analysis for similar purposes.

The discriminant score functions estimated are of the form:

$$Y_i = \beta_{i0} + \beta_{i1} X_{i1} + \ldots + \beta_{in} X_{in} \qquad (4.1)$$

where Y_i is the discriminant score for i = FCEs, LCEs; X_{ij} is the jth discriminating variable (for j = 1 to n); and β_{ij} is a coefficient.

An individual observation is classified into the group for which the discriminant score on the basis of its observed values is higher. The goodness of fit is judged in terms of significance of mean difference between groups which can be expressed as F-ratio, and the ability of the fitted discriminant functions in correctly classifying the individual cases.

The discriminant analysis has three assumptions. First, no variable may be a linear combination of other discriminating variable. Second, the population co-variance matrices are similar for each group. Third, each group is drawn from a population which has a multivariate normal distribution. It has been shown, however, that discriminant analysis is a rather robust technique and can tolerate some deviation from these assumptions (Klecka 1980; Jackson 1983). In our case, since data are drawn from the same set of industries (forty-three for FCEs and forty-nine for LCEs) for both groups the covariance matrices are expected to be identical.

Since all the ten variables may not prove to be good discriminators, a step-wise procedure was used to select the significant ones. The procedure begins by selecting the individual variable which provides the greatest univariate discrimination (in terms of groups mean difference or partial F-ratio or F to enter). It then pairs the first variable with each of the remaining variables to locate the combination which produces the greatest discrimination. The variable which contributed to the best pair is selected. In the third step, the procedure goes on to combine the first two with each of the remaining variables to form triplets. The best triplet determines the third variable to be entered, and so on. The step-wise procedure produces an optimal—not necessarily the best-set of discriminating variables (Klecka 1980).[5]

Table 4.3 presents a 'within groups correlation matrix' on all the ten potential discriminating variables included in our analysis. Each correlation coefficient in this matrix is an estimate of the degree of relationship between the corresponding pair of variables *within the groups,* usually different from the total correlation, which is influenced by the differences. No two variables are found to be highly correlated in Table 4.3 so as to violate the assumption of the analysis.

Table 4.4 provides the summary of the step-wise procedure and variables selected with their relative contribution to the discrimination in terms of their partial F-ratio (F to enter or remove), and total F-ratio. The procedure selects only five of the ten variables to be significant (at 5 per cent or higher level in terms of partial F-ratio) discriminants, namely SIZE, PCM, HIE, VAS, and CUR. The other five RDS, GROW, LEV, REP, and ERT, are not significant in the multivariate context. These variables might be good discriminators on their own, but they do not add to the discriminating information contributed by the significant

Table 4.3 Within groups correlation matrix

SIZE	1.0000									
PCM	−.2412	1,0000								
ERT	0.1537	0.0937	1,0000							
REP	−.0343	−.0983	0.1313	1.0000						
LEV	−.0361	−.3743	0.0021	0.0109	1,0000					
CUR	−.2524	−.0153	0.0106	−.0416	−.0121	1.0000				
VAS	−.2478	0.3195	0.0886	0.0336	0.0203	−.1461	1.0000			
RDS	−.0428	0.0926	−.0619	0.2057	−.0227	−.1234	0.1512	1.0000		
HIE	0.0490	0.1928	−.0900	0.0509	−.1092	0.0012	−0.0243	0.0597	1.0000	
GROW	−.0716	0.2853	−.0404	−.0141	−.1975	−.1635	−.0649	.0560	−.0853	1.0000
	SIZE	PCM	ERT	REP	LEV	CUR	VAS	RDS	HIE	GROW

Table 4.4 Summary of step-wise procedure of discriminant analysis

Step	*Discriminating variable entered*	*F to enter or remove (degree of freedom)*	*No. of variables included*	*Cumulative F-ratio (degrees of freedom)*
1.	HIE	21.3797* (1,90)	1	21.3796* (1,90)
2.	PCM	10.6548* (1,89)	2	17.1639* (2,89)
3.	SIZE	9.3042* (1,88)	3	15.6116* (3,88)
4.	VAS	4.8323* (1,87)	4	13.426* (4,87)
5.	CUR	6.8900* (1,86)	5	12.8466* (5,86)
6.	REP	1.8914 (1,85)	6	11.1319* (6,85)
7.	ERT	0.7149 (1,84)	7	9.6115* (7,84)
8.	RDS	0.4763 (1,83)	8	8.4172* (8,83)
9.	LEV	0.1493 (1,82)	9	7.4219* (9,82)
10.	GROW	0.1143 (1,81)	10	6.6189* (10,81)

* Indicates significant at 5 per cent or above level.

variables. Hence their unique contributions to the analysis are inadequate. They were, therefore, excluded from the subsequent analysis. The total F-value at the fifth step indicates that the two groups indeed differ significantly (at the one per cent level). The estimated discriminant score functions with five selected discriminating variables are as follows:

For the FCEs,

$$Y_F = -26.4268 + .00165\ SIZE + 17.51979\ PCM + 8.42489\ CUR + 55.5710\ VAS + 46.8183\ HIE \quad (4.2)$$

and for the LCEs,

$$Y_L = -17.27061 + .00118\ SIZE + .73003\ PCM + 7.25883\ CUR + 47.57733\ VAS + 30.24234\ HIE. \quad (4.3)$$

It can be seen from Table 4.5 that the discriminant functions are able to classify nearly 85 per cent of observations correctly. Hence, they appear to be good fits.

The findings of the discriminant analysis suggest that of the five parameters of market structure, conduct and performance, only SIZE and PCM are able to distinguish FCEs and LCEs significantly. Both of these findings are in tune with our hypotheses and corroborate with the findings of a number of previous empirical studies. FCEs enjoy higher profit margins independently of their larger scales of operation (SIZE). The theoretical and empirical explanation of this difference in profitability performance needs to be examined in a greater detail (see Chapter 5).

Table 4.5 Classification matrix

Actual group	*Classification*		*Total*	*Percentage of cases correctly classified*
	Foreign	*Local*		
Foreign	35	8	43	81.39
Local	6	43	49	87.75
Correctly classified	35	43	92	84.78

The R&D intensity and growth rates which were found to be significantly different in the case of the univariate test are no longer able to distinguish the FCEs from their local counterparts in the multivariate case. The growth rates were perhaps influenced by scale of operation and not by the foreign ownership. Therefore, when scale of operation was controlled for, the significance of growth rate variation vanished. R&D intensity's interaction is, however, not so clear.

The proportion of high income employees (HIE) continues to be a significant discriminant. In fact, this variable explains the maximum variation between the two groups. HIE could be higher in the case of FCEs due either to their tendency to employ more talented personnel or to their general tendency to pay their employees better. Which of the two tendencies is dominant, however, is not clear. To examine it we analysed the inter-industry determinants of HIE as follows:

In the single equation framework,

$$\underset{}{\text{HIE}} = \underset{}{.0548} + \underset{(0.09)}{.049\ \text{FS}} + \underset{(1.83)}{.159\ \text{CR4}} + \underset{(1.35)}{.095\ \text{PMS}} + \underset{(1.12)}{.015\ \text{ADS}} + \underset{(0.58)}{.021\ \text{RDS}} + \underset{(0.99)}{.718\ \text{SKIL}_1} + \underset{(4.37)}{.033\ \text{PCM}} \quad (4.4)$$
$$\underset{(1.30)}{}$$

$$R^2 = 0.59 \qquad F = 8.60 \qquad N = 49$$

In the simultaneous equation framework,

$$\underset{}{HIE} = \underset{(.38)}{-.270} + \underset{(0.43)}{.019\ FS^*} + \underset{(1.45)}{.175\ CR4} + \underset{(1.14)}{.098\ PMS} + \underset{(0.75)}{.021\ ADS}$$
$$+ \underset{(0.65)}{.014\ RDS} + \underset{(4.19)}{.798\ SKIL_1} + \underset{(1.50)}{.041\ PCM} \qquad (4.5)$$
$$R^2 = 0.57 \quad F = 7.91 \quad N = 49$$

w here FS is share of FCEs in industry sales; CR4 is four-firm concentration ratio; PMS is plant and machinery to sales ratio; ADS is advertisement to sales ratio; RDS is R&D to sales ratio; $SKIL_1$ is proportion of overhead employees in total work force; and PCM is price cost margin. Figures in parentheses are t-values. An asterisk indicates an endogenous variable.

Of the seven possible explanatory variables included in the equation (see Kumar 1986 for reasoning), only skill intensity and foreign share turn out to be significant determinants of HIE with positive signs in the single equation framework. But the relationship between HIE and FS is subject to simultaneity bias as the former has been found to be a significant determinant of the latter ($SKIL_2$ in Chapter 3). When this simultaneity of their relationship was sought to be controlled for (by integrating Equation 4.4 with that of equation (i) of Table 3.3) through two-stage least squares, the significance of even FS vanished and only $SKIL_1$ remained a significant explanatory variable. The high proportion of high income employees in the case of FCEs thus appears to be on account of their tendency to employ qualitatively superior personnel than their local counterparts, as observed by Balasubramanyam (1984) in the case of Indonesia, and Willmore (1986) in Brazil. However, more detailed micro-level research is needed on this aspect before a definitive statement can be made. FCE's tendency to employ qualitatively superior personnel may be an aspect of the non-price rivalry and may lend them a formidable competitive advantage in skill intensive industries, and can be a source of contrived entry barrier.

The degree of vertical integration (VAS) of FCEs is significantly greater than that of their local counterparts. This suggests that operations of FCEs generate fewer vertical inter-firm domestic linkages than those of LCEs. The government of India's policy of encouraging subcontracting to generate inter-firm linkages, therefore, seems to have found lesser favour with FCEs. The generation of linkages constitutes a boost to the development of the local industries. The performance of FCEs in this respect, therefore, appears to be inferior to that of LCEs.

Aspects of a firm's financial strategy, namely retention and leverage behaviour (REP and LEV), and the tax planning behaviour (ERT), were

also not significant discriminators in the multivariate context. It appears that these variables are influenced more by the scale of operation and profit margin than by the nationality of ownership of the firm.

CUR is significant even in the multivariate context, which suggests that FCEs enjoy richer long-term sources of financing their current assets. The comfortable liquidity position which FCEs enjoy is independent of their larger scales of operations and their higher profit margins. They might be using their strong working capital position as a source of competitive advantage.

Industrial variation in group characteristics

The above analysis suggests that, compared to local firms, FCEs in Indian manufacturing have significantly larger scales of operations, enjoy higher profit margins, and are more vertically integrated and cash rich firms with better paid personnel. This, however, is a general picture. Some industry variation in the relative characteristics of foreign and local firms does exist as indicated by misclassification of some cases by the discriminant functions. Table 4.5 indicates that fourteen of the ninety-two observations were misclassified. FCEs in eight industries and LCEs in six industries do not wear the respective group's characteristics as specified

Table 4.6 Misclassified observations by the discriminant functions

Actual Group		*Industry*	*Posterior probability of misclassification*	*Share of FCEs in sales (FS)*
FCEs				
1.	370	Breweries and distilleries	.906	3.04
2.	454	Steel forgings	.511	5.05
3.	455	Foundries and engineering workshops	.505	7.54
4.	456–7	Metal products (n.e.s.)	.665	69.64
5.	467	Paints and varnishes	.629	52.13
6.	521	Cement	.967	5.24
7.	552	Products of paper and board	.840	6.76
8.	630	Industrial and medical gases	1.000	63.13
LCEs				
1.	441	Motor vehicles	.885	19.45
2.	449	Machine tools	.688	35.08
3.	463	Man-made fibres	.832	17.83
4.	522	Asbestos and A. cement	.545	43.78
5.	541	Auto. tyres and tubes	.564	60.13
6.	630	Industrial and medical gases	.538	63.13

Note: n.e.s. = not elsewhere specified.

by the discriminant functions on the basis of the whole sample. Table 4.6 lists names of the industries along with the foreign shares and the posterior probabilities of classification in particular groups where misclassifications have occurred. Five of the eight cases where FCEs have been misclassified are those where FCEs are of only a marginal significance with their combined shares in industry sales under 10 per cent, namely breweries and distilleries, steel forgings, foundries and engineering workshops, cement, and paper and board products. In these industries, a few FCEs that continue to exist are there for historical reasons. They seem to enjoy no competitive edge and hence their characteristics do not reflect the distance that FCEs maintain from their local counterparts in other industries. In fact, market power in these sectors is enjoyed by certain local companies affiliated with local large industrial conglomerates such as United Breweries, and Mohan Meakins in breweries and distilleries; Bihar Alloy Steel (Birla) in forgings: Mukand Iron, FACOR, Tata Yodogawa in foundries; ACC in cement; Central Pulp Mills in paper and board products. In the other three industries, metal products, paints and varnishes, and industrial and medical gases, although FCEs still enjoy substantial market shares their behaviour does not appear to be very different from their local counterparts.

All the six cases where LCEs have been misclassified, perhaps with the exception of industrial and medical gases, have one thing in common: LCEs in these industries are relatively larger firms affiliated with local large industrial conglomerates and with technology imported under licensing. With the goodwill backup of the parent (local) business house and technology from western MNEs they have almost matched the asset bundle of FCEs and hence have closely resembled them in terms of the discriminating characteristics. The instances are Tata Engineering and Locomotive, Hindustan Motors, Bajaj Auto in motor vehicles; Mysore Kirloskar in machine tools; J.K. Synthetics, Baroda Rayon, Indian Organic Chemicals, Nirlon Synthetic Fibres in man-made fibres; Hydrabad Asbestos in asbestos and asbestos cement; and Modi Continental Tyres in automotive tyres and tubes.

Conclusions

This chapter has examined the firm characteristics that distinguish FCEs from their local counterparts. The analysis of discriminating characteristics is important for evaluating the indirect effects of operation of FCEs which may sometimes be considerable in the host developing countries. The current state of knowledge on this aspect was found to be deficient in many respects.

The distinguishing characteristics considered here included fifteen diverse aspects of firms' conduct and performance. The statistical

significance of the variables in actually discriminating the two groups of firms was examined for the sample of forty-nine three-digit Indian manufacturing industries in both univariate and multivariate frameworks. The findings of multivariate analysis indicate that a number of characteristics are able to discriminate FCEs and LCEs only on account of extraneous factors. Hence, findings of studies made in a univariate context need a fresh look.

Among the different aspects of market structure, behaviour, and performance only larger scale of operations and higher profit margins (on sales) distinguished FCEs from their local counterparts. Their advertising intensity was found to be not significantly different from that of local firms. They might, however, still enjoy an edge over their counterparts in this respect, on account of internalization of a part of the goodwill generated by advertising done by their associate companies and of economies of scale in advertising. The R&D intensity and growth rate of FCEs were both found to be lower only in the univariate test. The factor proportions also did not appear to be any different.

A significantly higher proportion of employees of FCEs are in a high income category. This appears to be on account of the tendency of FCEs to employ qualitatively superior personnel than their local counterparts. This tendency could be an aspect of non-price rivalry, particularly in skill-intensive industries, and a source of contrived entry barrier.

Among the two sources of vertical local inter-firm linkages, FCEs' behaviour with regard to 'import or procure-locally' does not significantly differ from that of their local counterparts. This finding could possibly be an outcome of the strict foreign trade and exchange regulations exercised by the government. In terms of the other important source of linkages, 'make or buy', however, FCEs differ significantly from their local counterparts. FCEs have a higher degree of vertical integration and hence their operations generate fewer inter-firm linkages. Despite their advantage in export markets, and various fiscal incentives and government policy regulations to induce them to export, the proportion of their output that the FCEs export is not significantly different from that of their local counterparts. A more detailed analysis of their relative export behaviour is made in Chapter 6.

Behaviour of FCEs in terms of retention ratio, dependence on external funds (leverage), or tax planning appeared to be different only on account of extraneous factors rather than because of foreign ownership. FCEs enjoy a more comfortable liquidity position due to their better long-term sources of funding working capital. This position can be used to secure a competitive advantage through their ability to extend liberal (suppliers)

credits. In terms of inventory management, however, their performance was not very different.

The above analysis, therefore, brings out five major differences between foreign and local counterparts: the scale of operation, the profit margins, the proportion of employees in high income categories, the degree of vertical integration, and liquidity ratio. In a few industries, however, local firms affiliated with large local conglomerates with technology obtained on licensing from abroad closely resembled their foreign counterparts in all the dimensions covered here.

Further, as this exercise was conducted in a comparative static framework it does not bring out the dynamic influences of the entry of FCEs into an industry on different aspects of the conduct of local firms. Since firms in an industry mutually interact, the behaviour of local firms could be altered, through competitive and demonstration effects, by the very presence of foreign rivals (Willmore, 1986). For instance, the presence of FCEs could have raised the general standards of advertising and other modes of non-price rivalry in an industry. This aspect of the effects of FCEs can be captured through dynamic analysis.

Chapter five

Determinants of profitability of foreign and local firms in Indian manufacturing

Introduction

The findings of Chapter 4 suggested that FCEs enjoyed higher profit margins compared to their local counterparts. The differences in their financial performance persisted even after controlling for the influence of other factors such as size. The conventional market structure-conduct-performance (SCP) paradigm (see Bain 1956) relates profitability to the degree of seller concentration and the height of entry barriers (Caves 1964; Scherer 1970). The entry barriers are industry specific and are expected to protect all firms in the industry in proportion to their sales. Therefore, the original SCP framework does not help in explaining systematic intra-industry differences in profitability except on the basis of size. An extension of the SCP paradigm takes note of variations in intra-industry structure (Caves and Porter 1977; Porter 1979). In this context, the present chapter analyses the determinants of profit margins of FCEs and local firms to seek explanations of their differential profit performance.

This chapter first formulates testable hypotheses by examining the relevance of different theoretical paradigms for explaining intra-industry profitability differences in the present context. The empirical results are then presented and the findings summarized.

Intra-industry profitability differences: hypotheses

The theory

As observed above, the original SCP paradigm provides no explanation of intra-industry profitability differences except on the basis of firm size. Subsequent empirical studies also attempted to explain inter-firm

differences in profitability in terms of their market share and/or size (Shepherd 1972; Gale 1972). Mancke (1974) questioned the convention of drawing inferences from possible correlations between profitability, market share, firm size, and growth because all these parameters are influenced by the magnitude of success of past investments. Mancke's stochastic model of inter-firm profitability differences, however, does not appear to be relevant in explaining systematic differences in profitability observed here in terms of nationality of ownership. Demsetz (1973), among others, attributes the inter-firm differences in profitability to possible inter-firm ability differences which may be due to firms' possession of rent-yielding intangible assets. This explanation may fit in the present context as ownership of intangible assets is indeed a characteristic that explains the very existence of FCEs. Hence, it may be worth examining whether there are significant inter-group efficiency differences leading to superior profitability of FCEs.

A recent extension of the SCP paradigm provides an explanation for sustained inter-group differences in profitability in terms of the heterogeneity of firms in different groups (Caves and Porter 1977; Newman 1978; Porter 1979). According to this hypothesis an industry may be composed of one or more strategic groups of firms. The firms in a given strategic group recognize the mutual interdependence more closely than all the other firms in the industry. The entry barriers do not protect all firms equally. Sustained differences in profitability, therefore, are possible if one group of firms consistently enjoys greater protection from certain entry barriers than the others. It is possible that FCEs and LCEs in Indian industries constitute different strategic groups. In what follows we briefly discuss the concept of strategic groups.

FCEs and LCEs as two strategic groups

The concept of strategic groups is based on the commonplace observation that there are alternative ways of doing business in an industry and that the strategy of firms in any particular industry differs in respect of variables—besides scale of operation—such as mode of competitive rivalry, degree of vertical integration, geographical extent of markets served, nature of distribution channels employed, breadth of product line, etc. (Porter 1979; Oster 1982). An industry, therefore, is composed of groups of firms, and firms in a group are similar to each other in terms of competitive strategy. Hence, they recognize mutual dependence more closely. One implication of the segmentation of industry into strategic groups is that entry barriers are partly specific to the strategic groups and

partly to the industry (Porter 1979). The entry barriers not only impede fresh entry to the industry, but also restrict inter-strategic group mobility of the existing firms and hence are more generally referred to as 'mobility barriers'. Thus, firms in a particular strategic group may not only enjoy protection from new entrants to the industry but also from existing firms belonging to other strategic groups in the same industry. The mobility barriers could be the source of persistent advantage and hence might explain the higher profit margins enjoyed by some firms in an industry.

We shall now examine how far FCEs and local firms in Indian industries can be considered to belong to different strategic groups. The strategic differences between firms are, among other factors, reflections of their tangible and intangible assets (Porter 1979). In these respects, FCEs clearly stand out from their local rivals. As observed earlier, FCEs enjoy a 'dowry' of intangible assets which lends them special advantages over purely national firms, such as brand goodwill, proprietary technology, captive access to the parent's research laboratories, reservoirs of organizational and managerial skills, and information networks. In addition, their affiliation with international chains of firms with centralized decision-making aiming at global optimization of resources/opportunities may also lead to strategic differences. These differences are reflected in terms of their significantly larger scales of operation, tendency to employ qualitatively superior manpower, higher degree of vertical integration, and high level of liquidity compared to their local counterparts (see Chapter 4). Caves *et al.* (1980) have found support for the hypothesis of strategic differences between FCEs and local firms in Canadian manufacturing industries. Thus there appears to be a reasonable case for treating FCEs as belonging to a strategic group different from that of their local counterparts in respective industries.

Hypotheses

The proposition that differential protection enjoyed from entry or mobility barriers is the source of higher profitability of FCEs can be verified by analysing the determinants of profitability of two groups of firms. If entry barriers protect FCEs and local firms differently, the relationships between profitability and market structural variables will be different for the two groups. In what follows we specify the profit functions of FCEs and LCEs, which will then be estimated. In addition to the differential protection from entry barriers, a part of the higher profit margins of FCEs may be due to their superior operational ability (Demsetz 1973). The inter-group ability differences, if any, should be reflected in different intercept terms

of the profit functions. Hence, they can be detected by examining the intercept terms of the respective profit functions.

Empirical analyses of industry profitability in the SCP framework have estimated functional relationships between industry profitability and elements of market structure: the degree of seller concentration, height of entry barriers, and growth of industry demand. Typical relationships estimated in these studies are of the form

$$PCM_T = f\underset{+}{(BARR}, \underset{+}{CR}, \underset{+}{GR}) \qquad (5.1)$$

where PCM_T is industry price cost margin, and BARR is a vector of different entry barriers, CR is degree of seller concentration, and GR is growth rate of industry demand. Signs indicate the nature of the relationships.

If PCM_F and PCM_L represent, respectively, average profit margins for FCEs and LCEs, we could write their profit functions as

$$PCM_F = f_1 (BARR, CR, GR) \qquad (5.2)$$
$$PCM_L = f_2 (BARR, CR, GR) \qquad (5.3)$$

The central prediction of the strategic group paradigm is that these functions will be different with respect to elements of BARR. The nature of the difference will be determined by the competitive strategies followed by the two groups of firms. In what follows we evaluate the possible nature of relationships between profit margins of two groups of firms and the explanatory variables.

Entry or mobility barriers

Product differentiation and goodwill

In view of their possession of intangible assets such as brand names enjoying consumer loyalty, FCEs can be expected to pursue competitive strategies based on non-price competition through product differentiation. A new entrant or even an existing local firm will need to undertake substantial advertising to match the brand goodwill enjoyed by FCEs cultivated through past and current advertising campaigns by them and their associates in India and elsewhere. FCEs, therefore, are expected to enjoy protection from a product differentiation entry barrier. Hence a positive and significant relationship between PCM_F and ADS is predicted. The relationship between PCM_L and ADS, however, is not so clear. This is because among local firms there may be firms, particularly those affiliated to large industrial houses, also pursuing strategies dominated by product differentiation, while there may be others that concentrate on price-competition. The product

differentiation mobility barrier may create an umbrella for local firms, and may also push up their profits to some extent (Porter 1979). The net effect of ADS on PCM_L may, therefore, depend upon inter-strategic group structure and on the viability of non-advertising intensive strategies (Caves and Pugel 1980). Hence, no precise prediction regarding the relationship between advertising intensity and PCM_L can be made. But the level of its significance should be lower than that in the case of PCM_F. The product differentiation entry barrier is captured through the advertising intensity (ADS) of industry.

ADS Advertising expenditure as a proportion of sales, averaged over three years: 1978–9 to 1980–1.

Product differentiation through advertising is effective mainly in the case of consumer goods industries. Our sample of industries comprises both consumer as well as non-consumer goods industries. This heterogeneity needs to be controlled for. Following common practice (Caves *et al.* 1980) we shall use a multiplicative slope dummy ADCON.

$$ADCON = ADS * DCON$$

Where DCON is a consumer goods dummy, taking the value one for consumer goods industries and zero otherwise.

Knowledge intensity

Two forms of knowledge intensity are considered here: the intensity of industry in technological (process or product technology) inputs, and in skills (organizational, managerial, and technical). The technology intensity barrier requires any entrant either to undertake R&D to generate technology, or to procure it from abroad. In view of economies of scale in R&D activity and imperfections in the technology markets, technology intensity may become quite a formidable barrier. Intensity of the industry in managerial/technical skills, particularly in a developing economy like India with inelastic skill supplies, may again prove to be a similarly strong barrier. Siddharthan and Dasgupta (1983) have noted its role in the Indian context. Bain (1956) covers these two sources of entry barriers under absolute cost advantage. These entry barriers could also be equally strong mobility barriers. FCEs, because of their captive access to laboratories of the parent enterprise and to the reservoir of skills cultivated through their experience of operating similar plants in several countries, may enjoy better protection from both technology and skill entry barriers. Local firms with no such captive sources will either have to set up in-house R&D facilities to provide technological inputs or depend continuously on foreign sources. Otherwise even the existing local firms run

the risk of facing technological obsolescence. Similarly, in skill-intensive industries, the local firms must be prepared to pay high salaries to attract and retain specialized personnel. Therefore, a positive and significant relationship between PCM_F and technology and skill intensities is predicted. Such a relationship is doubtful in the case of PCM_L.

In measuring the technology intensity (TECH) of an industry it is proposed to take into account both local and imported technology inputs.

TECH In-house R&D expenditure and remittances on account of royalty and technical fees as a proportion of net sales, averaged over three years: 1978–9 to 1980–1.

Skill intensity will be proxied through two alternative variables, namely $SKIL_1$ and $SKIL_2$, for the justification given in Chapter 3.

$SKIL^1$ Non-production workers as a proportion of the total work force in 1978–9.

$SKIL_2$ Earnings of high-salaried employees (those receiving Rs. 3,000 per month or more) as a proportion of the total wages and salaries bill, averaged over three years 1978–9 to 1980–1.

Absolute capital requirements

High initial capital requirements for setting up an economic-size plant has been a standard barrier to new entry (Bain 1956). Its role as a mobility barrier, however, is not clear. Nevertheless, it will be interesting to examine how this entr y barrier affects PCM_F and PCM_L. In the absence of information on economic size of plants in different industries, we shall use average capital requirements (per firm) as a proxy for the absolute capital requirements (AKR).

AKR Total capital employed per firm, averaged over three years: 1978–9 to 1980–1.

Length of production process or the degree of vertical integration

The length of production process or the degree of vertical integration necessary for running a business in an industry is an aspect which gives absolute cost advantage to the existing firms. There are no reasons to expect that the vertical integration entry barrier would affect FCEs and LCEs differently. It may, in fact, be an industry specific entry barrier protecting both groups of firms. Hence a positive relationship is predicted between the degree of vertical integration, and both PCM_F and PCM_L. The degree of vertical integration is proxied by VAS.

VAS Value added as a proportion of net sales, 1980–1.

Seller concentration

High seller concentration makes collusion among the leading firms more effective (Strickland and Weiss 1976). From the evidence of their significantly larger size found in Chapter 4, FCEs appear to be leading firms in their respective branches of industry. In such cases PCM_F may be positively related with the degree of seller concentration. The relation between seller concentration and PCM_L is, however, ambiguous.

The degree of seller concentration is conventionally proxied through a four-firm concentration ratio (CR4). However, limitations of this measurement (as also of its alternative, the Herfindahl index) have been pointed out in the literature, for example Philips (1976). In view of the lack of a superior alternative, given the data base, we shall use CR4.

CR4 Share of top four firms in net industry (sample) sales, averaged over three years: 1978–9 to 1980–1.

Growth of demand

The rate of growth of industry demand has been posited to influence profit margins of industry firms favourably. The rate of growth is an industry specific factor; it does not discriminate between FCEs and LCEs. Hence a positive influence is predicted on both PCM_F and PCM_L. Here again measurement of demand growth rate poses a problem. In the absence of a ready-made indicator, most studies have used the growth rate of industry output (GROW) as a proxy of industry demand. Though GROW has obvious limitations in representing the rate of growth of demand (Philips 1976), in the absence of any better index we shall use it.

GROW Proportionate change in net industry sales over three years: 1978–9 to 1980–1.

Firm size

Intra-industry differences in profitability can emerge due to differences in firm size. In order to control for the possible effect of differential firm size, average firm size of FCEs and LCEs ($SIZE_l$) will be included in the respective profit functions. Firm size and profitability relationship is determined by two counteracting influences. Large firms may be able to reap economies of scale in production, advertising, marketing, and R&D. On the other hand, too large an organization may also suffer from

diseconomies of scale and X-inefficiency. The relationship between PCM and firm size will depend upon the net outcome of these two influences.

SIZE Average net sales per firm in group i in 1980–1; (i = FCE,LCE).

Capital intensity

Since our dependent variable is price-cost margin and not the rate of return, the industry's capital intensity needs to be controlled for as per the standard practice. The capital intensity will be proxied through COR.

COR Total capital employed to net sales ratio, averaged over three years: 1978–9 to 1980–1.

International trade

Several studies have treated international trade as an aspect of market structure and have included the extent of import competition and export-orientation while explaining variation in profitability. Examples are: Esposito and Esposito (1971); Khalilzadeh-Shirazi (1974); Pagoulatos and Sorensen (1976); Caves *et al.* (1980); Pugel (1980); and Melo and Urata (1986). In India's case, where exports constitute only a marginal fraction of the sample firm's output and import competition is restricted by the tariffs and quota restrictions, it may not be of much consequence for profitability. Nevertheless, Katrak (1980), and Siddharthan and Dasgupta (1983), have considered them. The protection enjoyed by the local industry from import competition may have a positive effect on PCM. On the other hand, the lack of competition may be associated with operational inefficiency, nullifying the favourable impact on profits. Nevertheless, effective rates of protection (ERP) would be employed to examine the influence of protection on PCM following Hitris (1978) and Katrak (1980).

ERP Effective rates protection as estimated by the NCAER, 1979–80.

The hypotheses formulated above can be summed up as follows.

$$PCM_F = f_1 \underset{+}{(ADS}, \underset{+}{ADCON}, \underset{+}{TECH}, \underset{+}{SKIL_1}, \underset{+}{SKIL_2}, \underset{+}{AKR}, \underset{+}{VAS}, \underset{+}{CR4}, \underset{?}{SIZE_F}, \underset{+}{GROW}, \underset{+}{COR}, \underset{+}{ERP}) \quad (5.4)$$

$$PCM_L = f_2 \underset{*}{(ADS}, \underset{*}{ADCON}, \underset{*}{TECH}, \underset{*}{SKIL_1}, \underset{*}{SKIL_2}, \underset{+}{AKR}, \underset{+}{VAS}, \underset{*}{CR4}, \underset{?}{SIZE_L}, \underset{+}{GROW}, \underset{+}{COR}, \underset{+}{ERP}) \quad (5.5)$$

The signs below each variable indicate the predicted sign of the coefficient. When the *a priori* reasoning is not clear about the relationship it has been indicated by (?). An asterisk below a variable in the PCM_L equation indicates that its sign/level of statistical significance is predicted to be different from that obtained from the corresponding variable in the PCM_F equation.

Following Collins and Preston (1970), and Khalilzadeh Shirazi (1974), PCM is defined as follows.

PCM_i Profit before tax of ith group of firms as a proportion of their net worth in 1980–1.

Empirical analysis

To verify the hypotheses formulated above, Equations 5.4 and 5.5 were fitted for a sample of forty-three Indian manufacturing industries. The regressions were fitted in the original form as well as on the logarithmic transformation of data. For 'goodness of fit' reasons, only those results pertaining to the logarithmic transformation are presented.[1]

Some indication of the differential effects of entry barriers on profitability of FCEs and LCEs is provided by the correlation matrix presented in Table 5.1. The correlation between PCM_F and PCM_L, though significant ($r = 0.405$), is not very high. The correlations of ADS, ADCON, TECH, $SKIL_1$, $SKIL_2$ are quite significant with PCM_F, but are rather poor with PCM_L. Other variables, too, have quite different correlations with PCM_F and PCM_L.

The estimated regression equations explaining industry variation in PCM_F and PCM_L are presented in Table 5.2. Since variables CR4, GROW, COR, and ERP were never significant, they were excluded from the equations presented. The unimportance of CR4 and GROW may be because of the problems of measurement discussed above. They were also insignificant in a number of previous studies, such as Comanor and Wilson (1974), Esposito and Esposito (1971), Khalilzadeh-Shirazi (1974), and Siddharthan and Dasgupta (1983). Another explanation for insignificance of CR4 and ERP could be that the positive effect which these variables might be having on profits is cancelled by the operational inefficiency resulting from the lack of competition. These two variables were significant, with a positive sign, in Katrak's (1980) study of Indian manufacturing. But that exercise related to the early 1960s and did not specify other elements of market structure such as entry barriers.

An examination of the residuals revealed three 'outliers' for local firms and one for FCEs. Exclusion of these three outlying observations improved the goodness of fit of PCM_L equation as indicated by equation (3a) in Table 5.2. Exclusion of one outlier, however, made no

Table 5.1 Correlation matrix

(Log x Log)

	PCM_F	PCM_L	ADS	ADCON	TECH	$SKIL_1$	$SKIL_2$	AKR	VAS	COR	GROW	$SIZE_F$	$SIZE_L$	ERP	CR_4
PCM_F	1.00														
PCM_L	.405	1.00													
ADS	−.001	−.093	1.00												
ADCON	.513	.286	−.042	1.00											
TECH	.530	.211	−.128	.38	1.00										
$SKIL_1$	.391	.210	.016	.558	.558	1.00									
$SKIL_2$	.470	.047	.033	.52	.386	.665	1.00								
AKR	.006	.125	−.372	.163	.169	.190	.322	1.00							
VAS	.293	.162	.139	.204	.001	−.106	−.109	−.261	1.00						
COR	.326	.095	−.514	.15	.28	.031	.196	.300	.233	1.00					
GROW	.153	.067	−.089	.28	.25	.181	−.021	−.233	−.09	−.07	1.00				
$SIZE_F$	−.315	−.068	−.133	−.119	−.107	.173	.279	.711	−.318	−.183	−.271	1.00			
$SIZE_L$	.180	.415	−.258	.114	.319	.194	.152	.756	−.377	.158	−.019	.372	1.00		
ERP	−.135	−.236	.381	−.156	−.256	−.170	−.037	.051	.115	−.204	−.152	.201	−.073	1.00	
CR_4	.025	−.137	−.097	.29	−.291	.013	.037	.155	−.009	.062	−.193	−.005	−.016	.144	1.00

Table 5.2 Regression equations explaining profit margins of foreign controlled and local firms

Independent variables	*Dependent variable*				
	PCM_F		PCM_L		
	1	*2*	*3*	*3a*	*4*
1. ADS	.0016	.015	−.189	−.169	−.181
	(.041)	(.376)	(.882)	(.797)	(.875)
2. ADCON	.070	.139	1.467	1.865	1.250
	(.307)	(.545)	(1.226)	(1.579)	(1.004)
3. TECH	.030[c]	.038[b]	−.070	−.108	−.062
	(1.967)	(2.432)	(.790)	(1.160)	(.750)
4. $SKIL_1$		.577[c]			1.092
		(1.879)			(.719)
5. $SKIL_2$	.648[a]		.574	.052	
	(2.933)		(.464)	(.040)	
6. AKR	.146	.170	−1.848[a]	−1.959[a]	−1.734[a]
	(1.228)	(1.323)	(2.648)	(2.748)	(2.762)
7. VAS	.628[c]	.623[c]	4.587[b]	5.344[a]	4.648[b]
	(1.962)	(1.806)	(2.413)	(2.812)	(2.497)
8. $SIZE_i$	−.268[a]	−.234[a]	2.945[a]	3.728[a]	2.838[a]
	(2.672)	(2.202)	(4.284)	(4.845)	(4.428)
9 Intercept	2.680	1.812	−2.335	−4.907	−4.664
$\bar{R}^2$	.588	.534	.437	.506	.442
F	7.138[a]	5.727[a]	3.88[a]	4.682[a]	3.957[a]
Sum of squared residuals	5.789	6.552	177.609	154.030	176.098
N	43	43	43	40	43

Note: Variables GROW, CR4, ERP and COR remained insignificant throughout, hence were dropped from equations reported here. Figures in parentheses are t-values. Superscripts indicate levels of significance as follows: (a) 1 per cent; (b) 5 per cent; and (c) 10 per cent (two-tailed test). While estimating equation 3a, three outliers were excluded from the sample.

improvement to the PCM_F equation.

The equations presented in Table 5.2 reveal important differences both in overall terms as well as concerning the performance of individual explanatory variables. At the overall level two important differences are noticed. First, while the seven variables included in these equations are able to explain nearly 60 per cent of variation in PCM_F, they explain only about 50 per cent of variation in PCM_L. The overall level of significance of the PCM_F equations in terms of F-tests is also higher than in the case of PCM_L. These differences imply that profit margins of local firms are much less determined by market structural factors than those of FCEs. Second, the intercept term, which is positive in PCM_F equations, has a negative sign in the case of PCM_L. This difference, if significant, may imply that the profit margins of FCEs are higher than those of their local counterparts, even after taking into account the influence of market structural factors. The individual explanatory variables included in these equations also affect PCM_F and PCM_L differently. In what follows we discuss the performance of these explanatory variables in explaining variation in the dependent variables.

The coefficients of advertising intensity variables ADS and ADCON were not significant. ADCON is highly collinear with $SKIL_1$ and $SKIL_2$. To check whether its poor performance was due to multicollinearity, $SKIL_1$ and $SKIL_2$ were dropped from one set of equations. In the absence of skill variables ADCON was significant (5 per cent level) in the case of PCM_F, and at the 15 per cent level in the case of PCM_L. However, the exclusion of SKIL drastically affects the R^{-2} as well as the performance of other variables in the PCM_F equation. On the other hand, exclusion of ADS and ADCON has only a marginal (0.1 per cent) effect on the proportion of variation explained by the PCM_F equation. This suggests that in the absence of SKIL, ADCON picks up its influence. Its own contribution to the variation appears to be insignificant. One possible explanation for this finding can be that in a country like India—where government policy has restricted both internal as well as external competition and where firms, particularly up to 1980 (which in fact is our reference period), enjoyed a seller's market—advertising might not have the role in influencing profit margins that it has in more competitive settings in industrialized countries. It might also indicate the viability of non-advertising-intensive strategies that has been found in Canada's case by Caves and Pugel (1980). Also, the measurement of advertising intensity may have limitations in reflecting the economies of scale in advertising as noted by Comanor and Wilson (1974), and the capitalized value of past advertisement expenditures.

TECH, a proxy of intensity of industry in technological inputs, as well as $SKIL_1$ and $SKIL_2$, the alternative proxies of industry's intensity in human skills, are consistently significant with a positive sign in explaining

variation in PCM_F. In PCM_L equations, however, they have a negative sign and are not significant. This finding suggests that skill and technology intensity entry barriers protect FCEs from competition from both new entrants and existing local firms. The knowledge-intensive industries are usually producer goods industries. Market transactions of products of these industries are influenced not only by the technical specification of the individual product concerned, but also by other factors such as width of the product range offered by the particular supplier, his reputation and over-all technological strength. FCEs represent their respective global enterprises and their technological competence and experience all over the world. Most MNE affiliates in India, particularly in the early post-Independence period, were set up in response to the import-substitution drive (Davies 1977). They might have served the Indian market through exports before starting local production. Hence, many of the FCEs may have inherited a built-up clientele and goodwill. In comparison, local firms in the business, offering equally good products based on technology obtained on licensing or on their own R&D, suffer from several disadvantages. They do not enjoy a ready market acceptance and must develop markets from scratch. Being new to the business the range of the products and associated services offered by them is unlikely to be as wide as that of FCEs. It appears, therefore, that FCEs and LCEs serve different segments of markets. FCEs serve the top-end of respective markets, which consists of discriminating buyers who accept higher prices, whereas LCEs concentrate on the lower end of the market. The above advantage enjoyed by FCEs over LCEs varies with the knowledge intensity of the industry.

The absolute capital requirement entry barrier (AKR) is insignificant, with a positive sign in the case of PCM_F. It is not significant even in the absence of $SIZE_F$ with which it is highly collinear. This entry barrier, therefore, does not particularly protect FCEs. AKR is, however, consistently significant, with a negative sign, in explaining PCM_L. It suggests that local firms suffer from disadvantage in high capital-requiring industries. Usually capital-intensive industries are expected to be more profitable. This finding, therefore, is startling. The availability of capital may not be such a big barrier in the Indian case because of well-developed capital markets and public financial institutions. But the industrial licensing policy of the government regulates entry to large capital-requiring industries. The inverse relationship between AKR and PCM_L could possibly be due to the rampant underutilization of capacities which characterizes the Indian industries.[2] The loss of surplus on account of underutilization of capital would be higher in large capital-requiring industries because of greater fixed costs (capital equipment). But if this explanation of the inverse relationship between PCM_L and AKR is valid, then the insignificance of such relationship in the case of PCM_F may

imply that FCEs tend to have better capacity utilization than their local counterparts. However, more work on the nature of this relationship is needed before a definite conclusion can be reached.

The length of production process or vertical integration proxy, VAS, has a positive and significant coefficient in explaining variation in both PCM_F and PCM_L. It suggests that the length of production process is a source of an industry-specific entry barrier. The length of the production process gives an edge to the existing firms over their potential rivals, and hence deters entry. Thus it has a favourable effect on profit margins of all existing firms—foreign controlled or local.

The firm size variable is significant in both cases, PCM_F as well as PCM_L, but with different signs. For profit margins of FCEs it has a negative sign, and a positive sign in the case of PCM_L. This result has to be interpreted in the light of the finding of Chapter 4 regarding firm size. FCEs have been found to be of considerably larger size on average than their local counterparts. The relationship between firm size and profitability has been hypothesized to be inverted U-shaped, that is profitability rises with size to a certain extent and declines afterwards when X-inefficiencies start operating. It appears that FCEs are in the latter half of the inverted U because of their larger size, while the local firms are still in the first half.[3] Previous studies, like those of Singh and Whittington (1968), and Shepherd (1972), have reported a negative size - profitability relationship for larger firms. Connor and Mueller (1982) have also found a negative relationship in the case of affiliates of US MNEs in Mexico and Brazil. Here again, more detailed work at the firm level is needed before a more definitive statement on the nature of the relationship between firm size and profitability can be made.

Tests of significance of heterogeneity of profit functions

To examine the statistical significance of dissimilarities of intercepts and slopes of profit functions of FCEs and LCEs, we made use of the covariance analysis. This procedure involves contrasting (in terms of F-test) the residual sums of squares in a restricted model in which hypothetical equality is imposed, to those of the unrestricted models where intercepts and slopes are allowed to vary across FCEs and LCEs (see Johnston 1972, chap. 6 for details). In addition to unrestricted profit functions of FCEs and LCEs, as presented in Table 5.2, we needed to fit restricted profit functions. The following two profit functions (corresponding to equations (1) and (3) in Table 5.2) were fitted on 86 observations pooled across FCEs and LCEs. Equation 6.6. below assumes the restriction of complete similarity of the profit functions of FCEs and LCEs.

$$PCM_i = \alpha_0 + \beta_1 ADS + \beta_2 ADCON + \beta_3 TECH + \beta_4 SKIL_2 + \beta_5 AKR + \beta_6 VAS + \beta_7 SIZE_i \qquad (5.7)$$

Equation (5.7) allows intercepts of the two groups to vary by introducing an intercept dummy variable (DFOR) taking value one for FCEs and zero otherwise:

$$PCM_i = \alpha_0 + \beta_0 DFOR + \beta_1 ADS + \beta_2 ADCON + \beta_3 TECH + \beta_4 SKIL_2 + \beta_5 AKR + \beta_6 VAS + \beta_7 SIZE_i \quad (5.7)$$

The estimated versions of these equations are as follows:

Restricted profit functions:

$$PCM_i = 2.489 \underset{(-.727)}{-.0902\ ADS} + \underset{(2.177)}{1.523\ ADCON} + \underset{(1.280)}{.060\ TECH} - \underset{(.685)}{.463\ SKIL_2} - \underset{(2.357)}{.824\ AKR} + \underset{(1.848)}{1.937\ VAS} + \underset{(4.357)}{1.220\ SIZE_i} \quad (5.6)$$

$$\bar{R}^2 = .276 \qquad F = 4.257$$

$$\text{sum of squared residuals} = 269.78 \qquad N = 86$$

$$PCM_i = 2.177 + \underset{(1.762)}{.784\ DFOR} - \underset{(.680)}{.076\ ADS} + \underset{(2.094)}{1.448\ ADCON} + \underset{(1.313)}{.061\ TECH} - \underset{(.680)}{.454\ SKIL_2} - \underset{(1.705)}{.620\ AKR} + \underset{(1.711)}{1.775\ VAS} + \underset{(3.121)}{.970\ SIZE_i} \quad (5.7)$$

$$\bar{R}^2 = .304 \qquad F = 4.213$$

$$\text{sum of squared residuals} = 259.330 \qquad N = 86$$

(Figures in parenthesis are t-values).

The FCE dummy DFOR has positive coefficient which is statistically significant at the 10 per cent level in terms of the t-test. Table 5.4 summarizes the co-variance analysis based on equations (1) and (3) of Table 5.2 and equations (5.6) and (5.7). The F-tests conducted on residuals in restricted and unrestricted models suggest that differences in the intercepts of profit functions of FCEs and LCEs are not statistically significant (F_1). Differences in the slope vectors as well as the overall profit functions, however, are significant at the 1 per cent level of confidence (F_2 and F_3). This finding, therefore, tends to rule out the possibility of inter-group ability differences as the source of superior profit margins of FCEs. The differential slope vectors uphold the proposition that FCEs and LCEs in Indian manufacturing constitute different strategic groups and enjoy differential protection from mobility barriers.[4]

Table 5.4 Test of heterogeneity of profit functions

Model	*Sum of squared residuals*	*Degrees of freedom (d.f.)*	*Mean squares*	*F-test (d.f.)*
Restricted (equation 5.6)	$S_0 = 269.78$	78	3.46	
Partially restricted (equation 5.7)	$S_1 = 259.33$	77	3.37	Test of differential intercepts: $F_1 = 3.10$ (1,77)
	Incremental (differential intercepts) $S_2 = S_0 - S_1$ $= 10.45$	1	10.45	
Unrestricted (equations (1) and (3) in Table 5.2)	$S_3 = 5.79 + 177.61$ $= 183.40$	70	2.62	Test of differential slope vectors: $F_2 = 4.14$* (7,70)
	Incremental (differential slope vectors) $S_4 = S_1 - S_3$ $= 75.93$	7	10.85	
	Total incremental $S_5 = S_2 + S_4$ $= 85.38$	7	12.10	Test of overall heterogeneity: $F_3 = 4.71$* (7,70)

* Indicates significant at one per cent level.

Conclusions

This chapter examined the determinants of profit margins of FCEs and LCEs in forty-three Indian manufacturing industries to seek explanations of the superior performance of the former. At the outset a set of hypotheses pertaining to the likely determinants were formulated. Two theoretical possibilities were considered for explaining superior profit margins of FCEs. Profit margins of FCEs might be higher because of their superior ability. Another paradigm was that FCEs and LCEs perhaps constitute different strategic groups and the entry barriers protected them differently.

The empirical analysis finds support for the proposition that FCEs and LCEs belong to different strategic groups in an industry and that the former are protected by entry barriers more than their local counterparts. In the knowledge-intensive industries (that is, intensive in both technology and human skill), FCEs appear to enjoy special advantages over their local counterparts. This is because in these industries the overall technological strength and reputation of an enterprise, and width of product range and associated services, play a crucial role in market transactions. Being part

of global enterprises, FCEs enjoy a formidable edge over LCEs in all these respects. The two groups of firms, therefore, appear to be serving different market segments: FCEs capturing the upper end of the market (which accepts high prices) and LCEs concentrating on the lower end. A part of the higher profit margins of FCEs might be on account of their greater degree of vertical integration (observed in Chapter 4), and possibly their better utilization of capital. The inter-group ability differences, if they exist at all, do not appear to be significant in explaining the profitability differences.

The degree of seller concentration and protection from imports accorded to the local industry are not found to be related to profitability in India's case. Perhaps the operational inefficiency resulting from the lack of competition nullifies the favourable effect which these two factors might have had on profitability. In Indian manufacturing industries, advertising intensity does not appear to play the role that it does in more competitive settings. It could also be due to measurement problems and the viability of non-advertisement intensive strategies.

Chapter six

Export behaviour of foreign and local firms in Indian manufacturing

Introduction

Foreign controlled enterprises (FCEs) are generally considered to be better placed to tap international markets than their local counterparts in view of their captive access to the information and marketing networks of their parent enterprises (de la Torre 1974). The Indian government has given due recognition to this contention and extended additional incentives to induce FCEs to export a greater proportion of their output from India. In a significant proportion of cases, export obligations were also imposed at the time of entry or expansion. Because of these factors one could expect the export performance of FCEs to be better than that of their local counterparts. But the empirical analysis in Chapter 4 did not reveal any statistically significant difference between (average or weighted) export performance of FCEs and LCEs in forty-three Indian manufacturing industries.

The analysis of Chapter 4, however, focused on the overall statistical significance of the difference in export performance. Because of their different advantages the industry composition of exports of FCEs and LCEs may be different. It is possible that FCEs export those products which would not have been exported in their absence. An examination of determinants of exports of FCEs and LCEs may, therefore, facilitate an understanding of their relative roles in promoting India's manufactured exports.

This chapter examines the determinants of export performance of FCEs and LCEs in forty-three Indian industries. It formulates hypotheses concerning the determinants of export performance, presents the empirical results, and comments on the main findings.

Determinants of export performance: hypotheses

The inter-industry variation in export performance of FCEs and LCEs (respectively EXP_F and EXP_L) can be analysed in terms of industry and firm characteristics in the framework of neo-factor endowments and neo-technology theories of international trade which have been shown to be

complementary (Hughes 1986). In what follows we posit some of these possible determinants of export performance.

Industry characteristics

Capital intensity

According to the Heckscher-Ohlin theorem, the labour surplus developing countries like India are not likely to enjoy any advantage in exporting capital-intensive goods. This general disadvantage in exports of capital-intensive goods may be equally applicable to both FCEs and LCEs. Even theories of the new international division of labour predict MNEs exporting labour-intensive, and not capital-intensive, products from developing countries (Kojima 1978). Hence we shall expect the export performance of both groups of firms to be inversely related to the capital intensity of the industry. In view of the lack of data on physical labour employed, the capital intensity will be proxied by capital output ratio (COR).

COR Total capital employed as a proportion of net industry sales, averaged over three years: 1978–9 to 1980–1.

Skill intensity

India possesses one of the largest pools of scientific and technical manpower in the world. Neo-factor endowment theories of trade (Johnson 1970) might, therefore, expect India to enjoy a comparative advantage in export of skill-intensive goods. This, however, does not appear to be the case. The skill-intensive industries in India in general are not mature enough to be internationally competitive. In an analysis of characteristics of skill-intensive industries, Hirsch (1970) has brought out the sources of disadvantages which a developing country would suffer in exporting these products. Because of their relatively inelastic demand, price competitiveness is not the major factor in the case of exports of high skill intensive products. Instead, the marketing organization, and 'proprietary associations abroad' are of critical significance for exports of these products. In the present context FCEs enjoy benefits of proprietary associations abroad as their parent and associate companies are located in different parts of the world. Hence FCEs should find it easier to export skill-intensive products than their local counterparts. Therefore, the export performance of FCEs can be expected to be positively related to skill intensity. The export performance of local firms may be inversely related to the index of skill intensity, which reflects the disadvantage they face in these industries. The skill intensity of an industry will be captured through two alternative proxies, namely $SKIL_1$ and $SKIL_2$, as in the previous chapters.

$SKIL_1$ Non-production workers as a proportion of the total work-force in 1978–9.

$SKIL_2$ Earnings of high-salaried employees (those receiving Rs. 3,000 per month or more) as a proportion of total salaries and wage bill, averaged over three years: 1978–9 to 1980–1.

Technology intensity

Neo-technology theories of international trade emphasize the role of the technology gap in determining a country's international trade pattern (Posner 1961; Vernon 1966; Hufbauer 1966). Gruber, Mehta, and Vernon (1967), and Gruber and Vernon (1970), have found the 'technology factor' to be important in international trade and have observed that industries associated with a relatively high 'research effort' also tend to export a relatively high proportion of their output. The United States is a prime example. Hughes (1986) noted the role of the neo-technology theories in explaining exports of the United Kingdom and other developed countries (Cheng (1984) provides a review of additional evidence). Developing countries like India are, however, borrowers of technology unlike the United States. The bulk of whatever little in-house R&D is undertaken in India is spent on adaptive activities on the imported technology rather than on new developments (Desai 1980). Hence, they are likely to be in an apparently disadvantageous position in the export of technology-intensive goods. Hence, an industry's intensity in the use of technological inputs can be expected to be inversely related to its export performance. Dasgupta and Siddharthan (1985) have found Indian exports to consist largely of standardized goods with a low skill and technological content. The general disadvantage of the developing country firms in technology-intensive industries, however, may not apply to FCEs which are supposed to have continuous access to R&D laboratories of their parent and associate companies. Therefore, while expecting a negative relationship between technology intensity and export performance of local firms, a possibility of positive relationship exists between the technology intensity and export performance of FCEs.

The measurement of technology intensity (TECH) of an industry will take into account both imported and local sources of technology, as in Chapter 5.

TECH In-house R&D expenditure and remittances on account of royalty and technical fees as a proportion of net sales, averaged over three years 1978–9 to 1980–1.

Product differentiation

India, like other developing countries, is at a disadvantage in the export of goods characterized by product differentiation through brand or trade names, and where advertising and sales promotion plays an important role. FCEs with their access to brand names and marketing channels of their parent MNE can overcome the handicaps faced by developing country firms. We shall, therefore, expect an inverse relationship between EXP_L and advertising intensity (ADS), and a positive relationship between EXP_F and ADS.

ADS Advertising expenditure as a proportion of net industry sales, averaged over three years: 1978–9 to 1980–1.

Degree of local and foreign competition

In an activity like exporting, price competitiveness is of crucial importance. Therefore, efficiency should be positively related to export performance. Panchamukhi (1978, chap. 8), in an empirical study of Indian firms, found the efficiency parameter to be important for firms to distinguish themselves as exporters. Operational efficiency is related to the degree of competition. We consider two aspects of competition: degree of seller competition and the extent of protection from external competition; the former is proxied by four firm concentration ratio (CR4), and the latter by effective rates of protection (ERPs). Both these proxies are inversely related to the degree of competition, and hence are expected to be negatively related to export performance.

CR4 Share of top four firms in net industry sales, averaged over three years: 1978–9 to 1980–1.

ERP Effective rates of protection, for 1979–80, Cordon method; as estimated by NCAER.

Firm characteristics

Successful export effort involves considerable investment in market development, building-up of image abroad, etc. These activities may have certain minimum threshold levels for being effective. There might be a minimum sales volume, which must be reached before exporting becomes possible (Hirsch and Bijaoui 1985). Exporting involves significant economies of scale in setting up a marketing network abroad, in gathering market information, etc. (Caves *et al.* 1980). Further, exporting is ridden with high degree of uncertainty and risk. Therefore, large and profitable firms can be expected to be better equipped to venture into international markets. Hence, we expect firm size ($SIZE_i$) and profitability (PCM_i to be positively related with export performance. Some

studies have postulated an influence of export-orientation on profitability. Such a relationship in the present case, however, is unlikely because exports account for only about 5 per cent of the sample firm's output.

$SIZE_i$ Average net sales per firm in group i in 1980–1 (i = FCE, LCE).

PCM_i Profits before taxes of ith group of firms as a proportion of their net worth in 1980–1 (i = FCE, LCE).

To sum up, export performance of FCEs and LCEs is postulated to be influenced by different industry and firm characteristics as follows:

$$EXP_F = f_1\,(\underset{-}{COR},\ \underset{+}{SKIL},\ \underset{+}{TECH},\ \underset{+}{ADS},\ \underset{-}{CR4},\ \underset{-}{ERP},\ \underset{+}{PCM_F},\ \underset{+}{SIZE_F} \qquad (6.1)$$

$$EXP_L = f_2\,(\underset{-}{COR},\ \underset{-}{SKIL},\ \underset{-}{TECH},\ \underset{-}{ADS},\ \underset{-}{CR4},\ \underset{-}{ERP},\ \underset{+}{PCM_L},\ \underset{+}{SIZE_L} \qquad (6.2)$$

Signs indicate the nature of relationship. The measurement of the dependent variable is as follows:

EXP_i Exports as a proportion of net sales for ith group of firms in 1980–1 (i = FCEs, LCEs).

Empirical analysis

Equations 6.1 and 6.2 were fitted for the data for 43 Indian manufacturing industries. All the variables were transformed into logarithms to reduce possible heteroskedasticity. Table 6.1 presents select regression equations. CR4 and ERP were not significant in any equation, hence they were dropped from the equations presented here. These variables were also not significant in explaining export performance of Canadian industries (Caves *et al.* 1980).

The variables included in the equations presented explain a rather small proportion of variation in the dependent variable as reflected by poor values of R^{-2} (though significant in the F-test). This, however, is not a case peculiar to the Indian data. Similar export functions estimated for the United Kingdom also had poor R^{-2} (Hughes 1986).

Among the industry characteristics, the capital intensity variable COR has the expected negative sign throughout. In the case of FCEs it is significant at the 10 per cent level and is not significant for the LCEs. This finding confirms the hypothesis that India does not have an advantage in capital-intensive industries. The alternative proxies of skill intensity are with a negative sign throughout and, except for $SKIL_1$ in the case

Table 6.1 Regression equations explaining export performance of foreign controlled and local firms in Indian manufacturing

Independent variables	*Dependent variable*			
	EXP_F		EXP_L	
	1	*2*	*3*	*4*
1. COR	−2.333[c]	−2.118	−.621	−.314
	(1.733)	(1.468)	(.592)	(.293)
2. $SKIL_1$	−2.521[c]		−1.487	
	(1.901)		(1.470)	
3. $SKIL_2$		−.189		−1.088
		(.155)		(1.399)
4. TECH	.112	.094	−.070	−.064
	(1.368)	(1.091)	(1.083)	(.974)
5. ADS	−.107	−.113	.305[c]	.334[c]
	(.484)	(.475)	(1.699)	(1.833)
6. $SIZE_i$	1.068[a]	.884[b]	−.340	−.327
	(2.995)	(2.09)	(.969)	(.950)
7. PCM_i	1.642[b]	1.143	.349[a]	.319[a]
	(2.100)	(1.333)	(3.140)	(2.879)
3. Intercept	−8.45	−13.719	2.554	.279
R^{-2}	.323	.256	.354	.351
F	2.868	2.064	3.294	3.245
N	43	43	43	43

Note: Figures in parentheses are t-values. Superscript letters indicates levels of significance as follows: (a) 1%; (b) 5%; (c); 10% (2-tailed test).

of FCEs (which is significant at 10 per cent level), they are not significant. Thus Indian firms appear to be at a disadvantage in skill-intensive industries. Lall and Mohammad (1983b) also found a similar performance of this variable in explaining Indian exports. The coefficient of TECH is with a positive sign in the case of FCEs and a negative sign in the case of LCEs, but is not significant. Thus the 'technology factor' is not important for Indian manufactured exports.

The product differentiation variable, ADS, is insignificant in the case of FCEs with a negative sign but is significant (though only at 10 per cent) with a positive sign in explaining the export performance of local firms. FCEs, therefore, do not export differentiated goods from India. The positive and significant coefficient in the case of local firms seems to be on account of exports of a wide range of consumer goods to the East European countries under the rupee trade agreement. In these markets, lack of established brand/trade names does not imply a big handicap.

Among the firm characteristics, average firm size has a positive and significant relationship with the export performance of FCEs. But it is insignificant, with a negative sign, in the case of local firms. A similar negative and insignificant relationship between size and export rate has been observed by M.S.Kumar (1984, chap. 8) in the case of the United Kingdom. It implies that smaller local firms appear to be at least as dynamic in exports as larger ones. Here again, easy access of small local manufacturers of consumer goods to East European markets might explain the insignificance of the size factor in the case of local firms. In the case of FCEs, however, size significantly determines their export performance. It can therefore, be inferred that the rupee trade agreement between India and East European countries has helped the former export products that are very unlikely to have been exported in its absence, namely those of brand sensitive consumer goods and from smaller local firms. Profitabiltiy is with expected positive sign throughout and is significant (except in equation (2), perhaps because of its collinearity with $SKIL_2$). It upholds the expectation that profitable firms (both foreign and local) are more likely to venture into international markets.

The above findings, therefore, do not reveal any major differences in the role of industry characteristics in explaining the export performance of FCEs and LCEs. Except in the case of ADS, which is significant in explaining export performance of local firms, they are all insignificant for both FCEs and LCEs. This suggests that FCEs and LCEs do not export products with different industry characteristics. Alternatively, the industry composition of exports of the two groups of firms is not very different.

FCEs and Exports: a comment

The empirical analysis of Chapter 4, and the present chapter, does not bring out any statistically significant differences in either export performance or industry characteristics of exports of FCEs and their local counterparts in Indian manufacturing. These findings are in line with those of earlier studies for India and other developing countries. For Latin American countries, Morgenstern and Mueller (1976), Newfarmer and Marsh (1981), and Fairchild and Sosin (1986) also did not find any significant differences between export performance of FCEs and LCEs. Subrahmanian and Pillai (1979) for India, Jenkins for Mexico, and Kirim (1986) for the Turkish pharmaceutical industry found export performance of FCEs to be inferior to that of their local counterparts.

It appears, therefore, that affiliates of MNEs set up in response to the import substitution drive are confined largely to the domestic market. The attempts of the host government to induce them to export a higher proportion of output have had only a limited success. The industrialization and trade policies that were pursued in the broad framework of import substitution led, in general, to sheltered markets and high costs. Such an environment in an economy with a large and expanding home market made inward-oriented market strategy to be a far more attractive option for firms than venturing abroad. This has applied to both FCEs and LCEs similarly. In recent years the Indian government has taken steps to liberalize the economy and expose the local industry to competition in order to promote international competitiveness. An examination of the response of FCEs and LCEs to these policies, however, has to await more up-to-date data.

Chapter seven

Summary and conclusions

The present study examined the industrial distribution, characteristics, and performance of foreign controlled enterprises (FCEs) in the Indian manufacturing sector. The specific objectives of the study were: (1) to compute shares of FCEs in overall and individual manufacturing industries; (2) to analyse the determinants of the inter-industry variation in foreign shares; (3) to examine the discriminating characteristics of FCEs and locally controlled enterprises (LCEs); (4) to analyse the determinants of profit margins of FCEs and LCEs; and (5) to analyse the relative export behaviour of FCEs. This chapter summarizes the major findings of the study, their implications, and limitations.

FCEs, as defined in the study, are Indian affiliates of Western multinational enterprises (MNEs). They share the ownership of intangible assets with the parent MNEs such as brand names and goodwill, proprietary technology, organizational and technical skills, captive access to information, and marketing networks. The ownership of these intangible assets provided a conceptual connecting link to the seemingly diverse aspects of FCEs considered in the study. The ownership advantages enjoy a central place in the theory of international operations of firms (see the works of Hymer, Kindleberger, Caves, Dunning, Buckley and Casson, Rugman, and Teece) that has been used to explain inter-industry differences in foreign shares. These ownership advantages may also explain the differences in conduct and performance of FCEs and their local counterparts. The asset bundles of FCEs and LCEs are different because of the ownership advantages of the former. Besides, being part of an MNE, certain decisions of FCEs are subject to centralized decision-making which responds to global opportunities. These factors might lead to strategic differences between the two groups of firms, which are reflected in turn on a number of parameters of conduct and

performance. If there are strategic differences between FCEs and LCEs, the entry barriers may not protect them equally and hence their profit margins may differ. Ownership advantages also give FCEs an edge over their local counterparts in export markets, particularly in differentiated, and skill and technology intensive products. This may lead to possible differences in their export behaviour.

The study had to overcome severe data gaps on the operations of the FCEs. To circumvent these difficulties two exclusive variable sets for fifty-four manufacturing industries were created with the help of unpublished financial statistics of 1,334 medium and large, non-government public limited manufacturing companies collected by the RBI. These variable sets put together a large number of structural and behavioural variables, hitherto not available at a such a level of disaggregation.

The policy framework

The Indian government's attitude towards foreign investments has varied during the post-Independence period. There was a gradual liberalization of the policy in the early post-Independence period (up to 1967). Between the late 1960s and late 1970s the regulatory and screening procedures were streamlined, and the policy was made relatively stricter. During the 1980s the policy has again been liberalized. However, a certain degree of selectivity has been present throughout in the government's policy. It has tried to restrict FDI and technology licensing to areas where Indian skills are not available. This is done through entry regulations for which elaborate procedures and guidelines have been evolved. FDI not accompanied by technology is not favoured. Even as a mode of technology transfer, FDI is made more difficult compared to licensing (purely technical) collaborations. The general ceiling on the proportion of foreign-held equity to 40 per cent encourages the formation of joint ventures. Companies with up to 40 per cent foreign equity, however, do not invoke any special regulations; remittances of profits, dividends, and other servicing charges (and capital repatriation in the case of disinvestment) are permitted.

The selective policy has influenced the pattern of FDIs in a number of ways. First, most of the FDIs during the post-Independence period were directed towards the manufacturing sector. The share of manufacturing in total FDI stock increased from 40 per cent in 1964 to nearly 90 per cent by 1980. This proportion is higher compared to that in the overall flows of FDI to all developing countries. Within the manufacturing sector the share of modern and technology-intensive sectors, such as electrical goods, non-electrical machinery and machine tools, chemicals, and medicines and pharmaceuticals, has gone up

compared to the traditional sectors such as food and beverages, textile products, and toiletries and other chemical products. Second, most (93 per cent in 1980) FDIs are now subject to Indian corporate legislation (as against 54 per cent in 1964). Furthermore, there is evidence of a wider acceptance by MNEs of minority ownership as a mode of FDI. Finally, there has been a diversification of sources of FDI; while the share of the United Kingdom has gone down from nearly 77 per cent in 1964 to 54 per cent in 1980, that of the United States has gone up from 14.5 per cent to 21 per cent during the same period.

Place of FCEs in the manufacturing sector

Previous estimates of the share of FCEs in sales or assets of the organized private corporate sector have ranged from 25 to 50 per cent, depending upon the sample used and the reference period. In this study the share of FCEs in sales or assets of large private corporate sector was estimated to be around 23 per cent in 1980–1 (depending upon the coverage of sample). Their share in profits was much higher than in either sales or assets. Inter-temporal comparisons indicated a decline in foreign shares over the period from 1972–3 to 1980–1. This suggested the reversal of the trend of an increasing share of FCEs noted by previous studies for an earlier period. This perhaps was an outcome of the particularly restrictive policy followed by the government towards foreign investments during the 1970s when some nationalizations and disinvestments also took place. FCEs, however, continued to be constituents of a significant and more prosperous segment of the private corporate sector.

Shares of FCEs in sales of fifty-four branches (3-digit) of manufacturing were also computed in the large private corporate sector. These were found to vary widely across industries. Of the fifty-four sectors, FCEs accounted for more than two-thirds of sample sales in eleven industries, between one-third and two-thirds in fifteen industries, and had a significant presence in nine industries with shares below one-third. In twelve industries, FCEs were of marginal consequence and they did not exist in seven. Compared to the 1960s for which some information is available, these sectoral shares have undergone considerable change as a consequence of the government's policy of containing market power of FCEs by encouraging local firms. Foreign shares have completely disappeared from a number of traditional industries such as jute and cotton textiles, paper, cement, and sugar. In consumer goods industries characterized by product differentiation, such as processed foods, cigarettes, leather products, dry batteries, medicines, toiletries, however, foreign shares have continued to be high despite the government's policy in this regard and the relative simplicity of the technology involved.

This can be attributed to the brand loyalties enjoyed by the firms, as well as other entry barriers.

Explanation of industrial distribution of foreign shares

The recent extensions of the theory of the internationalization of firms predict the incidence of FDI (hence foreign shares) to be high in those branches of industry in which intangible assets characterized by locational and high internalization incentives provide a competitive edge to the firms. Licensing is expected to be preferred when internalization incentives are low.

Empirical tests of these predictions have, however, been constrained mainly by the difficulty in actually classifying intangible assets between those with high and low internalization incentives. The study assessed the nature of four broad categories of intangible assets: product differentiation and goodwill, knowledge embodied in human skills (idiosyncracies) or tacit knowledge, knowledge embodied in capital goods, and access to sources of capital. The first two were judged to have high, and the latter two low, internalization incentives. Variables proxying each of these intangible assets as well as policy induced locational factors, such as import substitution, protection, entry regulations, and industrial policy, were constructed. The empirical test involved regressing foreign shares and intensity of licensing on all these variables across forty-nine manufacturing industries.

The findings suggested that foreign shares were high in those branches of manufacturing that were characterized by a high degree of product differentiation; hence brand goodwill could be a formidable competitive advantage. They were also high in industries intensive in the use of knowledge embodied in human skills. On the other hand, licensing was a dominant mode of foreign operation in industries intensive in the use of knowledge embodied in capital goods. The access to sources of capital was unimportant for both FDI and licensing. This could be due to the development of the capital market and the presence of public financial institutions. Licensing, and not FDI, dominated the industries which exhibited some local R&D activity. But this might be due to the fact that R&D in India is of mainly adaptive nature and has been undertaken in less complex technology areas. The import substitution programme of the government encouraged the erstwhile exporters to the country to set up local production facilities. The government's selective policy appeared to have discouraged both FDI and licensing in consumer goods sectors where local skills were available in some measure.

Discriminating characteristics of FCEs

Comparisons of conduct and performance of FCEs and LCEs can be helpful in evaluating the effects of FCEs. Previous studies comparing characteristics of FCEs and LCEs by and large had small samples, and were conducted in univariate contexts. Besides, a number of important aspects relating to the conduct of firms were not analysed.

The present exercise considered fifteen parameters for the purposes of comparison, denoting such diverse characteristics as the scale of operations, advertising and R&D intensities, profitability and growth, choice of techniques, employee compensation and skills, magnitude of vertical local linkages, export performance, and various aspects of financial strategy and management. Predictions on the nature of differences between FCEs and LCEs were made on the basis of general attributes of MNEs and existing evidence from India and abroad. The exercise was conducted for a sample of forty-nine Indian manufacturing industries and the statistical significance of the differences was evaluated using appropriate statistical tools in both univariate and multivariate frameworks.

The statistical findings suggest that FCEs have larger scales of operation and enjoy higher profit margins than their local counterparts. The proportion of sales spent on advertising by FCEs is not significantly different from that of LCEs but the efficiency of advertising by FCEs may be higher because of economies of scale and internalization of a part of goodwill generated by the advertising done by their associate companies the world over. R&D intensity and growth rates of FCEs are found to be lower only on account of extraneous influences. Factor proportions do not appear to be significantly different between the groups, but caution needs to be exercised while interpreting this finding because of limitations of measurement. Higher proportions of FCE employees are in the high income category than their local counterparts, on account of their tendency to employ qualitatively superior personnel by offering higher emoluments. In the case of skill-intensive industries, this could be an aspect of non-price rivalry and a source of a contrived entry barrier.

FCEs tend to have a greater degree of vertical integration than LCEs. Hence, they generate fewer vertical inter-firm linkages with the local economy than their local counterparts. The degree of import dependence of FCEs is not significantly different from that of local firms. FCEs also do not export a significantly different proportion of sales from that of their local counterparts.

The behaviour of FCEs in terms of retention ratio, dependence on borrowed funds, and tax planning is different only on account of extraneous influences. Their respective inventory management practices are also not

very different from each other. FCEs, however, enjoy a more comfortable liquidity position due to their better access to long-term sources of financing of their working capital.

The picture of FCEs that emerges from the analysis, therefore, is one of relatively larger, more prosperous, vertically integrated, fund flushed firms with better paid personnel. Some industry variation, however, does exist. In some industries such as motor vehicles, machine tools, man-made fibres, asbestos and asbestos cement, and automobile tyres and tubes, local firms affiliated with large local industrial houses with the complement of technology obtained on licensing from abroad have closely resembled their foreign controlled counterparts in almost all the dimensions covered.

Profit behaviour

To seek an explanation for the higher profit margins of FCEs, determinants of profitability of FCEs and LCEs were analysed. In view of the recent theoretical propositions, the inter-group profitability differences could exist if FCEs and LCEs constituted different strategic groups within an industry and enjoyed differential protection from the entry barriers. They could also be due to possible inter-group ability differences. To explore these propositions the profit functions of FCEs and LCEs were estimated across forty-three manufacturing industries using variables representing different sources of entry barriers, firm size, degree of seller concentration, growth rate, and levels of effective protection as the main determinants. In addition to the standard sources of entry barriers—product differentiation, skill intensity, and absolute capital requirements—two other sources—intensity of industry in the use of technological inputs, and length of production runs (degree of vertical integration)—were also considered.

The empirical results offer support for the proposition that FCEs and LCEs belong to different strategic groups in an industry and that FCEs are protected by the entry barriers more than their local counterparts. The profit margins of FCEs (and not of LCEs) are found to be significantly related to industry's intensity in the use of technological and skill inputs. FCEs, therefore, appear to enjoy special advantages over their local counterparts in knowledge-intensive industries (that is, intensive both in process and product technology, and human skills). This is because in such industries the overall technological strength and reputation of an enterprise and the width of product and services range play a crucial role in market transactions. Being part of global enterprises, FCEs enjoy a formidable edge over LCEs in these respects. It is possible that the two groups of firms serve different market segments; FCEs concentrating on the upper end of the market, consisting of discriminating consumers who

can accept higher prices, and LCEs concentrating on the usually more price-competitive lower end. Part of the higher profits might be on account of their greater degree of vertical integration.

The degree of seller concentration and protection from imports to the local industry are not found to be related to profitability in India's case. One of the reasons could be that operational inefficiency resulting from the lack of competition nullifies the possible favourable effect. Advertising intensity in Indian manufacturing also does not appear to play the role that it does in more competitive settings. This could, perhaps, be due to viability of non-advertising intensive strategies.

Export behaviour

The export behaviour of FCEs and LCEs was farther analysed to bring out the differences, if any, in the industry characteristics of exports of FCEs and LCEs. The export functions were fitted for Indian manufacturing industries in the framework of neo-factor endowments and neo-technology theories of international trade. The empirical results did not reveal any significant differences in the industry characteristics of exports of FCEs and LCEs. Hence the industry composition of exports of FCEs and LCEs is not significantly different. The firm size appeared to be an important determinant of exports only for FCEs. Therefore, while only larger FCEs concentrate on exports, smaller LCEs appear to be as dynamic as larger ones in this respect. The significant positive relationship observed between advertising intensity and export performance of LCEs is partly on account of their exports of consumer goods to East European countries under the rupee trade agreement. In these markets lack of established brand and trade names does not imply a big handicap. The firm profitability turns out to be a significant determinant of export performance in both cases.

Thus the present study does not reveal any statistically significant difference in either export performance or industry characteristics of exports of FCEs and their local counterparts in Indian manufacturing. In view of their captive access to the information and marketing networks of their parents, affiliates of MNEs are generally considered to be better placed to tap international markets than their local counterparts. However, the decision to export from the host country, being an important aspect of the global strategy of the enterprise, is not taken on the basis of advantages alone. In a large economy with sheltered and growing home market, such as India, an inward-oriented marketing strategy appeared a far more attractive option for MNEs than using it as an export

platform. Hence, they seem to have opted for it in the same way as their local counterparts.

Implications of the findings, policy applications, and directions for further work

The above findings have certain implications for the economic analysis of international operations of firms and industrial organization theory. For instance, the analysis of the determinants of the inter-industry variations in the intensity of FDI and licensing, by and large, upholds the role of internalization incentives in influencing the choice of the mode of foreign expansion. Dunning (1984), Contractor (1984), and Davidson and McFetridge (1984, 1985) have analysed the factors influencing the proportion of internal (external) transactions in total flows of technology through inter-country studies. The present study further extends it by undertaking a rigorous test of the recent propositions in the inter-industry context.

Second, the findings of the analysis of discriminating characteristics of foreign controlled and local firms in the multivariate context are quite different from those in the univariate test. This suggests that the findings of a number of previous studies on comparisons of FCEs and LCEs in terms of different parameters based on univariate tests require a fresh look on account of interactions between different characteristics.

Third, the analysis of profit margins finds support for the 'mobility barrier' hypothesis based on strategic differences between the groups of firms, in a given industry. The empirical findings support the proposition that FCEs and LCEs constitute different strategic groups and enjoy differential protection from entry barriers. The previous empirical studies identified the strategic groups (leader firms and follower firms) on the basis of their market shares (Newman 1978; Porter 1979). Identification of the strategic groups in this exercise has been on the basis of a more fundamental structural characteristic (i.e. the nationality of ownership connoting several associated differences in the asset bundles and hence strategies). Further, the performance of the explanatory variables in terms of the proportion of explained variation differs greatly between restricted and unrestricted profit functions. This suggests that intra-industry heterogeneity is an important determinant of the structure, and needs to be taken care of by future market structure-profitability studies.

Finally, advertising intensity was not found to be related to profit margins of foreign controlled and local firms. This is of interest because advertising has been posited to be one of the foremost sources of entry barriers in the literature on industrial organization. One of the explanations of this could be the viability of non-advertising-intensive strategies, as

indicated by Caves and Pugel (1980). The viability of non-advertising-intensive strategies in India's case, however, could be due to the high degree of seller concentration and insulation of markets from potential competition because of import and industrial licensing.

The estimated empirical relationships and the above findings can also be used as inputs for policy making. For instance, the analysis of determinants of foreign shares and licensing may help in identifying industries where technology is likely to be available on licensing terms and where it might have to be secured though direct investment. Hence, the findings may shed light on policies governing technology imports. The analysis bringing out the inter-group differences in conduct and performance may be useful for policy-makers in assessing the influence of the presence of FCEs in the country on different parameters of development, while reformulating the policy towards foreign investments. Similarly, the analysis of profit behaviour brings out the sources of market power of different groups of firms and hence may be useful for competition policy.

As in the case of any research, the present work has limitations arising mainly from data gaps. Given the scope of the data base, the study had to exclude the public sector and small private firms. Though the industrial policy defines branches of industry reserved for the public sector and those in which it would play an increasing role, in a significant number of industries public sector firms co-exist with FCEs and other LCEs. In the analysis of discriminating characteristics of FCEs and LCEs, the size of sample (consisting of 1,334 firms) did not allow us to cover certain other aspects of behaviour which would have required more detailed (and sometimes qualitative) information than is provided in financial statements such as the cost structures, relative pricing, investment strategy, marketing practices, creation of forward inter-firm linkages, qualifications and experience of employees, working conditions, diversification policy, capacity utilization, and relative dependence on foreign and local sources of technology. Therefore, the study needs to be complemented by detailed industry case studies. Such studies would also be able to control for some more extraneous factors such as the age of the firm and would be able to capture the dynamic influences of entry of FCEs in an industry. Furthermore, while the study has considered the strategic differences between FCEs and LCEs, in practice, further behavioural differences might exist among the firms within these broad strategic groups, such as between sole ventures and joint ventures (among FCEs), and between firms affiliated with local large industrial houses and other independent firms (among LCEs). More detailed firm-level attempts are needed to capture such differences.

Appendix I
The data base—sources, methodology, and definitions

The empirical analyses presented here have drawn for their data requirements from an exclusive data base containing two variable sets assembled for the study. This appendix discusses briefly the sources, coverage, and procedure of compilation of the data base. It first examines the nature, scope, and relevance of the official data base on Foreign Controlled Enterprises (FCEs) in India. It then deals with the data base of the present study and introduces the procedure of its compilation.

Official data base on FCEs

The Reserve Bank of India (RBI) is the official agency for collecting and publishing data on various aspects of foreign collaboration. The official data base in this sector comprises three parallel surveys, described below.

India's international investment position

These surveys replaced the RBI surveys of foreign assets and liabilities in 1964 and are available up to March 1980. They provide flows in the year as well as stock at the end of the financial year of foreign direct and portfolio investments, with sectoral and source country disaggregation. The surveys present only the net liabilities of the country to the foreign investors and not the volume of assets under foreign control. They have been useful for analysing pattern and trends in FDIs in Indian industry, as in Chapter 1.

Finances of foreign branches (FB) and foreign controlled rupee companies (FCRCs)

In conjunction with their quinquennial series of studies on Finances of Joint Stock Companies, RBI has also published consolidated balance

sheets, and profit and loss accounts of FBs and FCRCs. Though finances of public and private limited companies appeared regularly, those of FBs and FCRCs were stopped abruptly after the reference year 1972–3. RBI has made an attempt to revive this series by publishing finances of 313 FCRCs and FBs (a varying number from 123 in 1975–6 to only eight in 1981). However, this series is inferior to its predecessors in a number of respects. While the previous surveys claimed 90 per cent coverage, the present one is not clear about its scope. The industry disaggregation is also reduced, as it now presents data for just seven broad industry categories. The uncertainties of the coverage of the latest survey renders its comparison with previous ones difficult. These have been used by Chandra (1977) and the present study to compute share of FCEs in the private corporate sector at overall level.

Foreign collaborations in Indian industry

RBI has conducted four surveys of Indian companies with foreign collaborations providing data on the sales, value added, exports, imports, remittances, R&D, etc. These surveys have related to the periods 1960–1 to 1963–4, 1964–5 to 1969–70, 1970–1 to 1972–3, and 1977–8 to 1980–1 respectively. The companies covered have been classified under three groups: majority-owned foreign subsidiaries, minority-owned foreign affiliates, and companies with purely technical collaborations. These surveys together provide a time series for the period from 1960–1 to 1980–1 (barring 1972–3 to 1976–7). Deduction of trends from these is hazardous because neither the number of companies covered nor the industry composition are constant across these surveys. The coverage of surveys has varied and was about 25 per cent for the fourth survey. These surveys can not be used to compare performance of foreign and local enterprises because not all the minority-foreign owned affiliates (defined with foreign equity proportion between 0 and 50 per cent) are with controlling foreign ownership. Second, the industry composition is also not constant across the three categories of collaboration.

For the present study we needed a data base which would enable us to quantify shares of FCEs in relatively disaggregated industries and to compare characteristics of FCEs and LCEs in terms of parameters of conduct and performance. It is clear that none of the official data bases could really fulfil these requirements. Therefore, we had to look for an alternative source of data.

The data base of the study

For the purpose of the study we needed a data base on financial statistics of a large cross-section of companies including both FCEs and LCEs. RBI conducts quinquennial surveys on Finances of Medium and Large Public Limited Companies. The last series of this survey covered 1,720 companies in the period from 1975–6 to 1980–1. RBI publishes summary results of the survey in its *Bulletin* for two-digit industry disaggregation (see *RBI Bulletin,* July 1983, for summary results for 1980–1). But the summary results do not distinguish between FCEs and LCEs. An effort was made to gain access to the basic data file of the survey containing the company statistics. We were successful in gaining access to it but the names of the companies had to be held back for confidentiality requirements.

The coverage

The data base includes each of the non-government, non-financial public limited companies with paid-up capital (PUC) of Rs10 million or above and a sample from the smaller companies each with PUC of Rs0.5 million or more. The 1,720 companies selected and included in the data base accounted for 86 per cent of PUC of all public limited companies in the private sector in 1979–80.

Industry classification

Each of the companies included in the data file had been assigned a three-digit code (industry classification) on the basis of the industrial activity accounting for at least one-half of its turnover. Of the 1,720 companies, 386 had been classified in plantation, mining, and service activities. Since we confine ourselves here to the manufacturing sector, these were excluded from the sample for the study. The remaining 1,334 manufacturing companies had been classified into sixty-two industry codes.[1] Some regrouping of industry codes was found necessary, which yielded fifty-four industries, as indicated in Table 2.3.

The major firms in each industry were identified by matching the file data with that reported in the *Bombay Stock Exchange Directory*. This helped in checking their given industry codes which needed to be corrected in a few cases. The diversification of firms across different branches posed a problem in some cases. For instance, Hindustan Lever Ltd. (Unilever, UK and Holland), classified in toiletries and chemical products (not

elsewhere specified, code 468), on account of the major part of its output being detergents, soaps and other toilet preparations, is also a market leader in vegetable and hydrogenated oils (code 320). Similarly, Peico Electricals (N.V.Philips, Holland) is a market leader in electric lamps and fluorescent lights (code 447), but is classified in electrical machinery and appliances (code 448). In such cases the net sales of the companies were split up between the two industry groups they operated in the proportion of sales as reported in their annual reports for the year 1980. This splitting was done only for the purposes of share of FCEs (FS) and the four-firm concentration ration (CR4). For the rest of the variables, however, the full firm was treated to be in the original industry group. DCM and TOMCO were two other companies that were split up.

Identification of FCEs

In the absence of names, identification of the FCEs was done by computing the proportion of foreign-held equity capital and treating a company having at least 25 per cent direct foreign equity as FCEs, as per our definition (see the Introduction). The number of foreign-held shares is revealed in the annual reports only if there are any remittances of dividends to be made in foreign exchange. A few companies that are indirectly foreign controlled (i.e. through controlling interest by other foreign subsidiaries) may have failed to be classified as FCEs in this procedure as dividends in such cases are remitted in rupees. Furthermore, the dividend may not be remitted in all the years because of profitability fluctuations or deliberate policy of the management. Some companies tend to remit accumulated dividend for a few years at a time. Hence, checking the proportion of foreign equity in any particular year would be inadequate. Therefore, the proportion of foreign-held equity capital was checked for all the six years (i.e. 1975–6 to 1980–1). In addition, our attempt to identify major firms with the help of the *Bombay Stock Exchange Official Directory* enabled us to identify a few FCEs that had been incurring losses and were not likely to be identified as FCEs according to our procedure as there were no remittances of dividends. Of the 1,334 companies included in the sample, 262 were classified as FCEs.

Computation of variables

The data file after refining the industry classification and identifying the FCEs was used to generate two sets of variables. The first set includes variables that capture industry characteristics such as share of FCEs in

sales (FS), R&D intensity (RDS), advertising intensity (ADS), concentration ration (CR) and so on, as per the definition given below, for each of the fifty-four manufacturing industries. The second set includes variables for groups within the industry. In this case the industry was first split up between two 'groups' of firms, namely FCEs and LCEs, the variables were then computed as per the definition for each of the fifty-four industries, separately for FCEs and LCEs. These variables are suffixed by (i = FCE, LCE) for identification, and are used for analysing the discriminating characteristics of the two groups of firms.

Variable set I

An alphabetical list of the eighteen variables included in variable set I is as follows. Unless otherwise indicated the source of data for all these variables is the date file described above.

ADS: Advertising expenditure as a proportion of net industry sales, averaged over three years: 1978–9 to 1980–1.

AKR: Total capital employed per firm, averaged over three years: 1978–9 to 1980–1.

COR: Total capital employed as a proportion of net industry sales, averaged over three years: 1978–9 to 1980–1.

CR4: Share of top four firms in industry (sample) sales, averaged over three years: 1978–9 to 1980–1.

DCON: A dummy variable, taking a value of one if the industry supplies consumer goods (both durables and non-durables), and zero otherwise.

DCORE: A dummy variable taking a value of one if the industry is included in Appendix I of 'Industrial Policy-Government Decisions 1973', and zero otherwise.

ERP: Effective rates of protection for 1979–80 (Cordon Method). Source: National Council of Applied Economic Research, New Delhi.

FS: Share of foreign controlled enterprises (FCEs) in net industry (sample) sales, averaged over three years: 1978–9 to 1980–1.

GROW: Proportionate change in net industry sales over three years: 1978–9 to 1980–1.

ISP: Potential of import substitution: imports (c.i.f.) to total industry output ratio in 1960–1, computed on the basis of data compiled in Bharat-Ram (1982) from the Government of India sources.

LCG: Proportion of licensing of technology and other intangible assets: total royalty, technical, or other professional fees paid abroad as a proportion of net industry sales, averaged over three years: 1978–9 to 1980–1.

PCM: Profit before tax as a proportion of industry sales, averaged over three years: 1978–9 to 1980–1.

PMS: Gross book value of plant and machinery to net sales ratio in 1980–1.

RDS: Reported in-house R&D expenditure as a proportion of net sales, averaged over three years: 1978–9 to 1980–1.

$SKIL_1$: Non-production workers as a proportion of total work force in 1978–79, computed from the *Annual Survey of Industries: Census Sector Summary Results,* 1978–79, Central Statistical Organisation, Govt. of India.

$SKIL_2$: Earnings of high-salaried employees (those receiving Rs3,000 per month or more) as a proportion of the total wages and salaries bill, averaged over three years: 1978–9 to 1980–1.

TECH: In-house R&D expenditure and remittances on account of royalty and technical fees as a proportion of net sales, averaged over three years: 1978–9 to 1980–1.

VAS: Value-added as a proportion of net sales in 1980–1.

In the case of variables ERP, ISP, NPW for which data was obtained from other sources, the industry classifications were roughly comparable except for a few gaps which were filled up by repeating values for the closest industry.

Variable Set II

The variable set II contains fifteen variables for two groups of firms (i = FCEs, LCEs) for the same set of fifty-four industries. All these variables have been computed on the basis of the data file described above. An alphabetical list of the variables included in the variable set follows:

ADS_i: Advertising expenditure of ith group of firms as a proportion of net industry sales in 1980–1.

CUR_i: Ratio of current assets and current liabilities of ith group of firms, in 1980–1.

ERT_i: Provision for corporate tax made by ith group of firms as a proportion of their profit before tax in 1980–1.

EXP_i: Exports as a proportion of net sales of ith group of firms in 1980–1.

$GROW_i$: Proportionate change in net sales of ith group of firms over 1978–9 to 1980–1.

HIE_i: Earnings of high-income employees (those receiving Rs3,000 per month or above as a proportion of the total wages and salaries bill of ith group of firms in 1980–1.

IMP_i: Imported raw materials as a proportion of total raw material consumption of ith group of firms, in 1980–1.

INS_i: Ratio of inventory to net sales of ith group of firms, in 1980–1.
LEV_i: Long-term borrowings of ith group of firms as a proportion of their net worth, in 1980–1.
LKR_i: Total wages and salaries bill of ith group of firms as a proportion of their total fixed assets, in 1980–1.
PCM_i: Profit before tax of ith group of firms as a proportion of their net worth in 1980–1.
RDS_i: Reported in-house R&D expenditure of ith group of firms as a proportion of total sales in 1980–1.
REP_i: Retained earnings of ith group of firms as a proportion of total profit after tax in 1980–1.
$SIZE_i$: Average net sales per firm in the ith group in 1980–1.
VAS_i: Value added as a proportion of total net sales of ith group of firms in 1980–1.

Both of the variable sets have data for the same fifty-four industries. For the quantitative analyses presented in chapters 3 to 6, however, five industry groups had to be left out. Levels of competition were not representative in three of them: safety matches and tobacco products (other than cigarettes) due to reservation for the small-scale sector; and iron and steel due to reservation for the public sector. The other two industry classes were miscellaneous categories. Hence data on only forty-nine observations were used for the empirical analysis.

Notes

Chapter 1 Policy of government of India towards foreign investment

1 For a detailed analysis of the evolution of government policy up to the early 1960s see Kidron (1965, chaps 3 and 4).
2 See the Swadeshi Resolution of the Federation of Indian Chambers of Commerce & Industry, which was adopted in 1953.
3 Government of India, press note of 8 May 1961; cf. the earlier position of preferring local majority ownership.
4 Government of India, press note, 20 July 1968, and the announcement of the Government of India on 27 November 1968.
5 The Act replaced the Patents Act of 1911.
6 Government of India, press note, 19 February 1972.
7 Government of India, 'Guidelines for licensing of items reserved for small scale sector and entry of large/foreign houses in non-core industries', and 'Industrial Policy: Government Decisions', February 1973.
8 Foreign Branches are defined in the Indian Companies Act as enterprises which are incorporated abroad but have a place of business in India.
9 The industrial licensing policy restricts the expansion of local large and foreign companies in non-core industries; see note 7.
10 See the list of FERA companies, and the replies to the Lok Sabha Unstarred Question No. 4921 dated 18 September 1981.
11 See the replies to the Lok Sabha Unstarred Questions Nos. 2100 and 2214, dated 9 March 1984.
12 For instance, seventy-two companies diluted their foreign equity even before specific FERA directives were issued to them. Another fifty-four companies which were permitted to retain over 40 per cent foreign equity volunteered to dilute to 40 per cent. See Lok Sabha Question No. 4921, dated September 1981.
13 See Chaudhuri (1979), Goyal (1979), and Kumar (1982).
14 See, for instance, India, Ministry of Commerce, *Committee on Export Strategy* (Tandon Committee), New Delhi, Government of India, 1980.

15 ibid.
16 See *Multinational Business,* no. 3 (1985:10–17).
17 *Business America,* 7 February 1983.
18 *The Hindustan Times,* 1 June 1981.
19 *Financial Express,* 20 January 1987.
20 Industrial Policy Statement, July 1980, Government of India.
21 *Economic Times,* 10 December 1986.
22 *India Today,* 31 December 1988, p. 121.
23 *Business Standard,* 31 May 1988.
24 *Business America,* op. cit.
25 *India Today,* op. cit.

Chapter 3 Determinants of inter-industry distribution of foreign shares in Indian manufacturing: a test of the internalization theory

1 Horst (1972b), Baldwin (1979), Bergsten *et al.* (1978), Pugel (1978, 1981), Lall (1980a) and Swedenborg (1979) have used a similar framework to explain inter-industry variation in outward FDI from the home countries: the United States in all the cases except the last which is for Swedish FDI.
2 Licensing in this study refers to all those contractual agreements between business firms of two countries involving transfer of some intangible asset such as right to use brand name, patent, transfer of technology, turn-key plant construction in which the licensor does not hold the controlling interest.
3 Dunning (1984), Davidson and McFetridge (1984, 1985), and Contractor (1984) have undertaken verification of these propositions in inter-country studies.
4 We shall concentrate here only on horizontal foreign expansion because in India's case the bulk of foreign investments in the manufacturing sector are of this type.
5 Horst (1972a), Hirsch (1976), Baldwin (1979), Lall (1980a), and Buckley and Pearce (1981) have found evidence on interdependence of exports and FDI.
6 Buckley and Davies (1981) provide evidence on licensing fast gaining significance as a mode of foreign production by British firms in the 1970s. For evidence on increasing replacement by licensing of FDI, see Oman (1984).
7 Different versions of these propositions have been known differently, for example, eclectic or OLI (ownership, locational and internalization) theory (Dunning), Internalization (Rugman), transaction cost minimization

(Williamson, Teece), appropriability (Magee), transactional approach (Caves).

8 In the case of developing country firms that have recently emerged as technology suppliers, however, the buyer's uncertainty may persist despite guarantees because of the lack of established reputation. Hence, markets are often internalized (Wells 1983). This is usually not the case with advanced country investors with whom we deal here.

9 The original variable set had fifty-four branches of manufacturing industry. Five of them, however, were left out of the empirical analysis: safety matches, tobacco products (not elsewhere specified), and iron and steel, and two miscellaneous industries.

10 In addition to logarthmic transformation, logistic transformation of the type log (FS/1-FS) was also tried. The OLS results for the two transformations were not very much different. Since logit transformation makes interpretation of relationships difficult, we report results pertaining to logarithmic transformation only.

11 See Maddala (1979, chap. 12).

Chapter 4 Foreign and local enterprises in Indian manufacturing: an analysis of discriminating characteristics

1 See for instance Bos *et al.* (1974), Lal (1975), Lall and Streeten (1977), Weiss (1980), Kumar (1980, 1984), Pursell (1981), ILO (1981), and Rugman (1980a).

2 Here again we shall confine ourselves to forty-nine of the fifty-four manufacturing industries included in the data base for the empirical exercise.

3 Lim (1976) found capital utilization of FCEs to be more intensive in Malaysia. The difference, however, vanished when other factors were controlled for.

4 A comparison in terms of crude proxies sales: capital employed ratio and sales: wages did not reveal any significant differences.

5 The actual computer program used was BMD07—Stepwise Discriminant Analysis—Revised Version, 24 July 1969, Health Sciences Computing Facility, University of California, Los Angeles.

Chapter 5: Determinants of profitability of foreign and local firms in Indian manufacturing

1 This, however, necessitated adding trivial values to a few observations having zero or negative values.

2 See Corporate Studies Group (1983) for recent evidence on the underutilization of capacity.
3 Since these relationships have been estimated separately for FCEs and LCEs, the possible non-linearity could not be captured through a squared term.
4 The co-variance analysis presented above indicates statistical significance of the overall slope vectors of the profit functions of FCEs and LCEs. Which of the individual regression coefficients are significantly different is not clear from this analysis. The only way of finding out is to fit additional models with slope dummy variables capturing differential slopes for individual variables. Such an analysis was also attempted by us. However, due to severe multicollinearity among different dummy variables it landed us in the dummy variable trap. Hence, it proved to be futile.

Appendix I

1 We have included the manufacture of industrial and medical gases, and have excluded printing and publishing from the manufacturing sector for the present sample because of similarity of the former's process to that of chemical industries. The latter resembles, in most respects, a service industry.

References

Agarwal, J.P. (1976) 'Factor proportions in foreign and domestic owned firms in Indian Manufacturing', *Economic Journal* 86:529–95.

——(1979) 'Productivity comparisons in foreign and Indian manufacturing', *Weltwirtschaftliches Archiv* 115:116–27.

Aliber, Robert Z. (1970) 'A theory of direct foreign investment', in C.P. Kindleberger, *The International Corporation,* Cambridge, Mass.: MIT.

Arrow, K.J. (1962) 'Economic welfare and the allocation of resources for invention', in National Bureau of Economic Research (ed.) *The Rate andDirection of Inventive Activity: Economic and Social Factors ,* Princeton, NJ: Princeton University Press, pp. 609–25.

Bain, Joe S. (1956) *Barriers to New Competition: Their Character and Consequences in Manufacturing Industries,* Cambridge, Mass.: Harvard University Press.

Balasubramanyam, V.N. (1974) *International Transfer of Technology to India,* New York: Praeger.

——(1984) 'Factor proportions and productive efficiency of foreign owned firms in the Indonesian manufacturing sector', *Bulletin of Indonesian Economic Studies* 70–94.

Baldwin, Robert E. (1979) 'Determinants of trade and foreign investment: further evidence', *Review of Economics and Statistics* 61:40–8.

Bergsten, C.Fred, Horst, Thomas, and Moran, Theodore (1978) *American Multinationals and American Interests,* Washington, DC, Brookings Institution.

Bettelheim, Charles (1968) *India Independent* (English translation), London: MacGibbon.

Bhagwati, J.N. and Desai, Padma (1970) *India: Planning For Industrialisation,* London: Oxford University Press.

Bharat-Ram, Vinay (1982) *Towards a Theory of Import Substitution,Exchange Rates and Economic Development ,* Delhi: Oxford University Press.

Biersteker, T.J. (1978) *Distortion or Development: Contending Perspectives on the Multinational Corporation,* Cambridge, Mass.: MIT Press.

Billerbeck, K. and Yasugi, Y. (1978) *Private Direct Foreign Investment in Developing Countries,* Washington, DC: The World Bank (staff working paper no. 348).

Blomstrom, Magnus (1986) 'Multinationals and market structure in Mexico', *World Development* 14:523–30.

Bos, H.C., Sanders, Martin, and Secchi, Carlo (1974) *Private Foreign Investment in Developing Countries—A Quantitative Study of the Evaluation of the Macro Economic Effects,* Boston: D.Reidel.

Buckley, Peter J. and Casson, Marc (1976) *The Future of the Multinational Enterprise,* London: Macmillan.

Buckley, Peter J. and Davies, H. (1981) 'Foreign licensing in overseas operations: theory and evidence from the U.K.', *Research in International Business and Finance* 2:75–89.

Buckley, Peter J. and Pearce, Robert D. (1981) 'Market servicing by multinational manufacturing firms: exporting versus foreign production', *Managerial and Decision Economics* 2:229–46.

Casson, Marc (1979) *Alternatives to the Multinational Enterprise,* London: Macmillan.

Caves, Richard E. (1964) *American Industry: Structure, Conduct, Performance* Prentice Hall: Englewood Cliffs, NJ.

——(1971) 'International corporations: the industrial economics of foreign investment', *Economica* 38:1–27.

——(1974a) 'Causes of direct investment: foreign firms' shares in Canadian and United Kingdom manufacturing industries', *Review of Economics and Statistics* 56:279–93.

——(1974b) *International Trade, International Investment, and Imperfect Markets,* Special Papers in International Economics No. 10, Princeton, N.J.: International Finance Section, Department of Economics, Princeton University.

——(1982) *Multinational Enterprise and Economic Analysis,* Cambridge: Cambridge University Press.

Caves, Richard E. and Porter, M.E. (1977) 'From entry barriers to mobility barriers: conjectural decisions and contrived deterrence to new competition', *Quarterly Journal of Economics* 91:241–61.

Caves, Richard E. and Pugel Thomas A. (1980) *Intra industry Differences in Conduct and Performance: Viable Strategies in U.S. Manufacturing Industries,* Monograph Series in Finance and Economics, New York, New York University Graduate School of Business Administration.

Caves, Richard E. *et al.* (1975) 'Scale economies in statistical analyses of market power,' *Review of Economics and Statistics* 57:133–40.

Caves, Richard E. *et al.* (1980) *Competition in the Open Economy: A Model Applied to Canada,* Cambridge, Mass.: Harvard University Press.

Chakravarty, Sukhamoy (1984) 'India's development strategy for the 1980s', *Economic and Political Weekly,* May 19–26.

Chandra, N.K. (1977) 'Role of foreign capital in India,' *Social Scientist* 57:1.

Chaudhuri, Pramit (1978) *The Indian Economy: Poverty and Development,* New Delhi: Vikas Publishing House.

Chaudhuri, Sudip (1979) 'FERA: Appearance and reality', *Economic and Political Weekly,* April 21, pp. 734–44.

Chee, P.L. (1980) Unpublished MS, cited in Chen (1983).

Chen. Edward K.Y. (1983) *Multinational Corporations, Technology & Employment,* London: Macmillan.
Cheng. Leonard (1984) 'International trade and technology: a brief survey of the recent literature', *Weltwirtshaftliches Archiv* 120:165–89.
Chung, B.S. and Lee, Chung H. (1980) 'The choice of production techniques by foreign and local firms in Korea', *Economic Development and Cultural Change* 29:135–40.
Coase, R.H. (1937) 'The nature of the firm', *Economica* 386–405.
Cohen, B. (1975) *Multinational Firms and Asian Exports,* New Haven, Conn.: Yale University Press.
Collins, N.R., and Preston, L.E. (1970) *Concentration and Price Cost Margins in Manufacturing,* Berkeley: University of California Press.
Comanor, W.S. and Wilson, T.A. (1974) *Advertising and Market Power,* Cambridge, Mass.: Harvard University Press.
Connor, J.M. (1977) *The Market Power of Multinationals, A Quantitative Analysis of U.S. Corporations in Brazil and Mexico,* New York: Praeger.
Connor, J.M. and Mueller, W.F. (1977) *Market Power and Profitability of Multinational Corporations in Brazil and Mexico,* U.S. Senate, Washington, DC, G.P.O.
——(1982) 'Market structure and performance of US multinationals in Brazil and Mexico', *Journal of Development Studies* 18:329–53.
Contractor, Farok J. (1984) 'Choosing between direct investment and licensing', *Journal of International Business Studies,* Winter, pp. 167–88.
Corporate Studies Group (1983) *Functioning of Industrial Licensing System,* New Delhi: Indian Institute of Public Administration.
Courtney, William H. and Leipziger, D.M. (1975) 'Multinational corporations in LDCs: the choice of technology', *Oxford Bulletin of Economics and Statistics* 37:397–80.
Creamer, Daniel (1976) *Overseas Research & Development by United States Multinationals, 1966–75, Estimates of Expenditure and A Statistical Profile,* New York: Conference Board.
Dasgupta, Ajit and Natteri Siddharthan (1985) 'Industrial distribution of Indian exports and joint ventures abroad', *Development and Change* 16: 159–74.
Davidson, W.H. and Mcfetridge, Donald G. (1984) 'International technology transfer and the theory of the firm', *Journal of Industrial Economics* 32:253–64.
——(1985) 'Key characteristics in the choice of international technologytransfer' , *Journal of International Business Studies,* Summer, pp. 5–21.
Davies, Howard (1977) 'Technology transfer through commercial transactions', *Journal of Industrial Economics* 36:161–75.
de la Torre, Jr., J.R. (1974) 'Foreign investment and export dependency', *Economic Development and Cultural Change* 23:133–50.
Demsetz, Harold (1973) 'Industry structure, market rivalry and public policy', *Journal of Law and Economics* 16:1–9.

Desai, Ashok V. (1980) 'The origin and direction of industrial R&D in India', *Research Policy* 9:74–96.
DSIR (1986) *Foreign Collaborations—1985,* New Delhi: Government of India, Department of Scientific and Industrial Research.
Dunning, John H. (ed.) (1974) *Economic Analysis and Multinational Enterprises,* London: George Allen & Unwin.
——(1979) 'Explaining changing patterns of international production: in defence of the eclectic theory, *Oxford Bulletin of Economics and Statistics* 41:269–96.
——(1981) *International Production and Multinational Enterprise,* London: Allen & Unwin.
——(1983) 'Market power of the firm and international transfer of technology', *International Journal of Industrial Organisation* 1:333–51.
——(1984) 'Non-equity forms of foreign economic involvement and the theory of international production,' in Richard W.Moxon, *et al.* (eds) *International Business Strategies in the Asia-Pacific Region: Environmental Changes and Corporate Responses,* Greenwich, Conn. Jai Press.
——(1988) *Explaining International Production,* London: Unwin.
Dunning, John H. and Morgan, Eleanor (1980) 'Employee compensation in US multinationals and indigenous firms an exploratory micro/macro analysis', *British Journal of Industrial Relations* 27:179–201.
Esposito, L. and Esposito, F. (1971) 'Foreign competition and domestic industry profitability', *Review of Economics and Statistics* 53:343–53.
Evans, P.B. (1977) 'Direct investment and industrial concentration', *Journal of Development Studies* 13:373–80.
——(1979) *Dependent Development: The Alliance of Multinational, State and Local Capital in Brazil,* Princeton, NJ: Princeton University Press.
Fairchild, Loretta G. (1977) 'Performance and technology of United Statesand national firms in Mexico' , *Journal of Development Studies* 14: 14–34.
Fairchild, Loretta and Sosin, Kim (1986) 'Evaluating differences in technological activity between transnational and domestic firms in Latin America', *Journal of Development Studies* 22:697–708.
Fishwick, Francis (1981) *Multinational Companies and Economic Concentration in Europe,* Paris: IRM.
Forsyth, David J.C. and Solomon, Robert (1977) 'Choice of technology and nationality of ownership in manufacturing in a developing country', *Oxford Economic Papers* 29:258–82.
Gale, Bradley (1972) 'Market share and rate of return', *Review of Economics and Statistics* 54:412–23.
Gershenberg, Irving and Ryan, T.C.I. (1978) 'Does parentage matter? an analysis of transnational and other firms: an East African case,' *Journal of Developing Areas* 13:3–10.
Giddy, Ian H. and Alan M.Rugman (1979) *A Model of Trade, Foreign Direct Investment and Licensing,* Research Working Paper No. 274A, New York: Columbia University Graduate School of Business.

Gordon, Myron, J. and Fowler, David J. (1983) 'Performance of the multinational drug industry in home and host countries: a Canadian case study', in C.P.Kindleberger and David B.Audretsch (eds), *The Multinational* Corporations in the 1980s, Cambridge, Mass.: MIT Press, 139–61.

Gorecki. Paul K. (1976) The determinants of entry by domestic and foreign enterprises in Canadian manufacturing industries: some comments and empirical results', *Review of Economics & Statistics* 57:485–88.

——(1980) 'The determinants of foreign and domestic enterprise diversification in Canada: a note,' *Canadian Economic Journal* 3: 329–39.

Goyal, S.K. (1979) 'The impact of foreign subsidiaries on India's balance of payments', New Delhi: Indian Institute of Public Administration (mimeo).

Gruber, William H., Mehta, Dileep, and Vernon, Raymon (1967) 'The R&D factor in international trade and international investment of US industries,' *Journal of Political Economy* 75:20–37.

Gruber, William H. and Vernon, Raymond (1970) 'The technology factor in a world trade matrix,' in Raymond Vernon (ed.) *Technology Factor in International Trade,* New York: NBER, pp. 223–72.

Gupta, Vinod K. (1983) 'A simultaneous determination of structure, conduct and performance in Canadian manufacturing', *Oxford Economic Papers* 35:281–301.

Gulati, I.S. and Bansal, Swaraj K. (1980) 'Export obligation, technology transfer and foreign collaboration in electronics', *Economic and Political Weekly,* Vol. 25, Special Number, October.

Hathi Committee (1975) *Report of the Committee on Drugs and Pharmaceutical Industry,* New Delhi: Ministry of Petroleum, Chemicals and Fertilizers.

Hay, Donald A. and Morris, Derek J. (1979) *Industrial Economics: Theory and Evidence,* Oxford: Oxford University Press.

Helleiner, G.K. (1973) 'Manufactured exports from less developed countries and multinational firms', *Economic Journal* 55:21–47.

——(1976) 'Transnational enterprise, manufactured exports and employment in less developed countries', *Economic and Political Weekly,* Annual Number, 247–62.

Hennart, Jean-Francois (1982) *A Theory of Multinational Enterprise,* Ann Arbor: The University of Michigan Press.

Hirsch, Seev (1970) 'Technological factors in the composition and direction of Israel's industrial exports', in Raymond Vernon (ed.) *The Technology Factor in International Trade,* New York: NBER, 145–231.

Hirsch, Seev (1976) 'An international trade and investment theory of the firm,' *Oxford Economic Papers* 28:258–70.

Hirsch, Seev and Bijaoui, Ilan (1985) 'R&D intensity and export performance: a micro view,' *Weltwirtschaftliches Archiv* 121:238–51.

Hitris, T. (1978) 'Effective protection and economic performance in UK manufacturing industry, 1963 and 1968', *Economic Journal* 88:107–20.

Horst, Thomas (1972a) 'The industrial composition of US exports and the subsidiary sales to the Canadian market,' *American Economic Review* 62:37–45.

——(1972b) 'Firm and industry determinants of the decision to invest abroad: an empirical study', *Review of Economics and Statistics* 54:258–66.

Howe, J.D. and McFetridge, D.G. (1976) 'The determinants of R&D expenditures', *Canadian Journal of Economics* 9:57–71.

Hufbauer, G.C. (1966) *Synthetic Materials and the Theory of International Trade*, London: Gerald Duckworth.

Hughes, Kirsty (1986) *Export and Technology,* Cambridge: Cambridge University Press.

Hymer, Stephen H. (1976) *The International Operations of National Firms: A study of Direct Foreign Investment,* Ph.D. Dissertation (MIT 1960), Cambridge, Mass.: MIT Press.

IIPA (1983) 'Political dimensions of multinational corporations', New Delhi: Indian Institute of Public Administration (mimeo).

ILO (1976) *Wages and Working Conditions in Multinational Enterprises,* Geneva: International Labour Office.

ILO (1981) *Employment Effects of Multinationals Enterprises in Developing Countries,* Geneva: International Labour Office.

ILO (1984) *Technology Choice and Employment Generation by Multinational Enterprises in Developing Countries,* Geneva: ILO.

India, Ministry of Industry (1982) *Guidelines for Industries: Part-I,* New Delhi: Indian Investment Centre.

Jackson, Barbara B. (1983) *Multivariate Data Analysis: An Introduction,* Homewood: Irwin.

Jansson, Hans (1982) *Interfirm Linkages in A Developing Economy: The case of Swedish Firms in India,* Uppsala: Acta Universitatis Uppaliensis, Studia Oeconomiae Negotiorum 14.

Jenkins, R. (1979) 'The export performance of multinational corporations in Mexican Industries', *Journal of Development Studies,* 15:89–107.

Jo, Sung-Hwan (1980) 'Direct foreign private investment,' in Chong Kee Park (ed.) *Macroeconomic and Industrial Development in Korea,* Seoul: Korea Development Institute, 129–82.

Johnson, Harry G. (1970) 'The state of theory in relation to the empirical analysis,' in Raymond Vernon (ed.) *Technology Factor in International Trade,* New York: NBER, 9–21.

Johnston, J. (1972) *Econometric Methods* 2nd edn, Tokyo: McGraw Hill.

Katrak, Homi (1980) 'Industry structure, foreign trade and price-cost margins in Indian manufacturing industries,' *Journal of Development Studies* 17.

——(1983) 'Global profit maximisation and export performance of foreign subsidiaries in India,' *Oxford Bulletin of Economics and Statistics* 45: 205–22.

——(1985) 'Imported technology, enterprise size and R&D in a newly industrialising Country: the Indian experience', *Oxford Bulletin of Economics and Statistics* 47:213–30.

Kelkar, Vijay (1977) 'Impact of private foreign investments in India, 1964–72: an economic analysis', in Charan Wadhwa (ed.), *Some Problems of India's Economic Policy,* New Delhi: Tata McGraw Hill, 729–43.

Khalilzadeh-Shirazi, Javed (1974) 'Market structure and price-cost margins in United Kingdom manufacturing industries,' *Review of Economics and Statistics* 56:67–76.

Kidron, Michael (1965) *Foreign Investments in India,* London: Oxford University Press.

Kindleberger, C.P. (1969) *American Business Abroad: Six Lectures on Direct Investment,* New Haven, Conn.: Yale University Press.

Kirim, A.S. (1986) 'Transnational corporations and local capital: comparative conduct and performance in the Turkish pharmaceutical industry', *World Development* 14: April, 503–22.

Klecka, William R. (1980) *Discriminant Analysis,* Beverly Hills, Sage.

Kojima, Kiyoshi (1978) *Direct Foreign Investment,* London: Croom Helm.

Kumar, Manmohan S. (1984) *Growth, Acquisition and Investment: An Analysis of the Growth of Industrial Firms and their Overseas Activities,* Cambridge: Cambridge University Press.

Kumar, Nagesh (1980) *Evaluation of Direct Foreign Investment in India: A case study of Drugs and Pharmaceutical Concerns,* M.Phil, dissertation, Delhi School of Economics, Delhi University, Delhi.

——(1982) 'Regulating multinational monopolies in India', *Economic and Political Weekly* May, 909–18.

——(1984) 'Social cost-benefit analysis of an export-oriented project with foreign collaboration in India', *Industry & Development,* No. 10, UNIDO, 9–46.

——(1985) 'Cost of technology imports: the Indian experience,' *Economic and Political Weekly* 20: August 31, M103–14.

——(1986) 'Foreign participation, market structure and employee compensation in Indian manufacturing', *Indian Journal of Industrial Relations* 21:297–309.

——(1987a) 'Foreign investment and export orientation: the case of India', in Seiji Naya *et al.* (eds) *Direct Foreign Investment and Export Promotion: Policies and Experiences in Asia,* Kuala Lumpur and Honolulu, Hawaii, SEACEN Research and Training Centre and East West Resource Systems Institute, 357–82.

——(1987b) 'Technology imports and local research & development in Indian manufacturing', *The Developing Economies* 25:220–33.

——(1987c) 'Intangible assets, internalisation and foreign production: direct investments and licensing in Indian manufacturing', *Weltwirtschaftliches Archiv* 123:325–45.

——(1988) 'Foreign controlled enterprises in Indian manufacturing: overall and sectoral shares', *Economic and Political Weekly* 23, November 26, M-167–71.

Kumar, Nagesh and Chenoy, Kamal M. (1983) 'Multinational corporations in less developed countries: a case study of Indian drugs and pharmaceutical industry', *Internationales Asienforum* 14:175–94.

Kurien, K.Mathew (1966) *Impact of Foreign Capital on Indian Economy,* New Delhi: PPH.

Lal, Deepak (1975) *Appraising Foreign Investment in Developing countries,* London: Heinemann.

Lall, Sanjaya (1976) 'Financial and profit performance of MNCs in developing countries: some evidence from an Indian and Colombian Colombian sample,' *World Development* 4:713–24.

——(1979) 'Multinationals and market structure in an open developing economy: the case of Malaysia,' *Weltwirtschaftliches Archiv* 115: 325–48.

——(1980a) 'Monopolistic advantages and foreign involvement by US manufacturing industry', *Oxford Economic Papers* 32:102–22.

——(1980b) 'Exports of manufactures by newly industrialising countries: a survey of recent trends', *Economic and Political Weekly,* December 6and 13 , 2051–62, and 2103–12.

——(1981) *The Multinational Corporation,* London: Macmillan.

——(1985) 'Multinationals and technology development in host countries,' in Lall, Sanjaya, *Multinationals, Technology and Exports,* London: Macmillan, 114–31.

Lall, Sanjaya and Mohammad, Shariff (1983a) 'Multinationals in Indian big business: industrial characteristics of foreign investments in a heavily regulated economy', *Journal of Development Economics,* 13: 143–57.

——(1983b) 'Foreign ownership and export performance in the large corporate sector of India', *Journal of Development Studies* 20:56–67.

Lall, Sanjaya and Siddharthan, N.S. (1982) 'The monopolistic advantages of multinationals: lessons from foreign investment in the U.S.', *The Economic Journal* 92:668–83.

Lall, Sanjaya and Streeten, P. (1977) *Foreign Investments, Transnationals and Developing Countries,* London: Macmillan.

Lecraw, Donald (1983) 'Performance of transnational corporations in less developed countries, *Journal of International Business Studies* 14 (Spring/ Summer):15–33.

Leipziger, D.M. (1976) 'Production characteristics in foreign enclaves and domestic manufacturing: the case of India', *World Development* 4: 321–5.

Lim, David (1976) 'Capital utilisation of local and foreign establishments in Malaysian manufacturing,' *Review of Economics and Statistics* 58: 209–17.

——(1977) 'Do foreign companies pay higher wages than their local counterparts in Malaysian manufacturing?', *Journal of Development Economics* 7:55–66.

Maddala, G.S. (1979) *Econometrics,* Tokyo: McGraw Hill.

Magee, Stephen P. (1977) 'Information and multinational corporations: An appropriability theory of direct foreign investment', in Jagdish Bhagwati (ed.) *The New International Economic Order,* Cambridge, MA: MIT Press, 317–40.

Mancke, Richard B. (1974) 'Causes of inter-firm profitability differences: a new interpretation of the evidence,' *Quarterly Journal of Economics* 88: 181–93.
Mansfield, Edwin, Teece, D.J., and Romeo, A. (1979) 'Overseas research and development by US based firms', *Economica* 46:187–96.
Markensten, Klas (1972) *Foreign Investment and Development: Swedish Companies in India,* Lund: Student Literatur.
Marris, Robin (1964) *The Economic theory of Managerial Capitalism,* Glances, NY: Free Press.
Marsh, L., Newfarmer, R., and Moreira, Lino (1983) *Employment and Technological Choice of Multinational Enterprises in Developing Countries,* Working Paper No. 23, Geneva, International Labour Office.
Martinussen, John (1988) *Transnational Corporations in a Developing Country: The Indian Experience,* New Delhi: Sage.
Mason, R.Hal (1973) 'Some observations on the choice of technology by multinational firms in developing countries', *Review of Economics and Statistics* 55:349–55.
McAleese, D. and McDonald, Donogh (1978) 'Employment growth and the development of linkages in foreign-owned and domestic manufacturing enterprises', *Oxford Bulletin of Economics and Statistics* 40:321–39.
McManus, J.C. (1972) 'The theory of the international firm', in G.Paquet (ed.) *The Multinational Firm and the Nation State,* Don Mills, Ontario: Collier-Macmillan, 66–93.
Meller, Patricio and Mizala, Alejandra (1982) 'US Multinationals and LatinAmerican manufacturing employment absorption,' *World Development* 10:115–26.
Melo, Jaime de and Urata, Shujiro (1986) 'The influence of increased foreign competition on industrial concentration and profitability,' *International Journal of Industrial Organisation* 4:287–304.
Morgenstern, R.D. and Muller, R. (1976) 'Multinational versus local corporations in LDCs: an econometric analysis of export performance in Latin America', *Southern Economic Journal* 42:399–406.
Morley, S.A. and Smith, G.W. (1977) 'Limited search and the technology choices of multinational firms in Brazil,' *Quarterly Journal of Economics,* 91:263–88.
Nayyar, Deepak (1978) 'Transnational corporations and manufactured exports from poor countries', *Economic Journal* 88:59–84.
——(1983) 'International relocation of production and industrialisation in LDCs', *Economic and Political Weekly* 18: PE-13–26.
NCAER (1971) *Foreign Technology and investment: A study of their role in India's Industrialisation,* New Delhi: National Council of Applied Economic Research.
Newfarmer, R.S. (1980) *Transnational Conglomerates and the Economics of Dependent Development: A Case Study of the International Electrical Oligopoly and Brazils's Electrical Industry,* Greenwich, Conn.: Jai Press.

Newfarmer, R.S. and Marsh, L.C. (1981) 'Foreign ownership, market structure and industrial performance—Brazil's electrical industry', *Journal of Development Economics* 8:47–75.

Newfarmer, R.S. and Mueller, W.F. (1975) *Multinational Corporations in Brazil and Mexico: Structural Sources of Economic and Non-Economic Power,* U.S. Senate Washington, DC: G.P.O.

Newman, Howard H. (1978) 'Strategic groups and the structure performance relationship', *Review of Economics and Statistics* 60: 417–27.

Oman, Charles (1984) *New Forms of International Investment in Developing Countries,* Paris: OECD Development Centre.

Oster, Sharon (1982) 'Intra-industry structure and the Ease of strategic change,' *Review of Economics and Statistics* 64:376–83.

Owen, Robert F. (1982) 'Interindustry determinants of foreign direct investments: a Canadian perspective', in Alan M.Rugman (ed.), *New Theories of the Multinational Enterprise,* London: Croom Helm, 238–53.

Pagoulatos, Emilio and Sorensen, R. (1976) 'International trade,International Investment and Industrial Profitability of US Manufacturing,' *Southern Economic Journal* 42.

Palda, Kristian S. and Pazderka, Bohumir (1982) 'International comparisons of R&D effort: the case of the Canadian pharmaceutical industry', Discussion paper IIM/IP 82–6, Berlin, International Institute of Management.

Panchamukhi, V.R. (1977), 'A quantitative analysis of trade policies in India,' in Charan Wadhwa (ed.) *Some Problems of India's Economic Policy,* New Delhi: Tata McGraw Hill, 668–706.

——(1978) *Trade Policies of India: A Quantitative Analysis,* New Delhi: Concept.

——(1987) 'Inflow of private capital and choice of planning strategies,' *Management Science* 13 (reproduced in V.R.Panchamukhi, *Planning Development and the World Economic Order,* New Delhi: Radiant).

Parry, Thomas G. (1980) *The Multinational Enterprise: International Investment and Host Country Impacts,* Greenwich, Conn.: Jai Press.

Phillips, Almarin (1976) 'A critique of empirical studies of relations between market structure and profitability', *Journal of Industrial Economics* 24:241–49.

Porter, Michael E. (1979) 'The structure within industries and companies' performance,' *Review of Economics and Statistics* 61:214–27.

Posner, Michael V. (1961) 'International trade and technical change,' *Oxford Economic Papers* 13:11–37.

Possas, M.L. (1979) *Employment Effects of Multinational Enterprises in Brazil,* Working Paper No. 7 (MNE Programme), Geneva: International Labour Office.

Pugel, Thomas A. (1978) *International Market Linkages and US Manufacturing: Prices, Profits and Patterns,* Mass: Ballinger.

——(1980) 'Foreign trade and US market performance', *Journal of Industrial Economics* 29:119–29.

——(1981) 'The determinants of foreign direct investment: An analysis of US manufacturing industries', *Managerial and Decision Economics* 2: 220–28.
Pursell, Garry (1981) 'Cost-benefit evaluation of LDC industrial sectors which have foreign ownership', Staff Working Paper, Washington, DC, The World Bank.
Radhu, Ghulam (1973) 'Transfer of technological know-how through MNCs in Pakistan', *Pakistan Development Review* 12:361–74.
Ragachand, U.K. (1981) 'Characteristics of research and development performing firms in Canadian Manufacturing', *Research Policy* 11: 193–203.
RBI (1975) 'Finances of foreign branches and foreign controlled rupee companies, 1972–73,' *RBI Bulletin,* July.
——(1968, 1974, 1985) *Foreign Collaboration in Indian Industry,* I, II, and IV Survey Reports, Bombay, respectively.
——(1984) 'Finances of foreign controlled rupee companies and branches of foreign companies, 1975–76 to 1980–81, *RBI Bulletin,* August, 291–360.
——(1985) 'India's international investment position, 1979–80', *Reserve Bank of India Bulletin,* April.
Riedel, J. (1975) 'The nature and determinants of export-oriented direct foreign investment in a developing country: a case study of Taiwan', *Weltwirtschaftliches Archiv* 111:505–28.
Reuber, G.L., with Crookel, H., Emerson, M., and Gallais-Hamonno, G. (1973) *Private Foreign Investment in Development,* Oxford: Clarendon Press.
Rosenbluth, G. (1970) 'The relation between foreign control and concentration in Canadian industry', *Canadian Journal of Economics* 3: 14–38.
Rugman, Alan M. (1980a) *Multinationals in Canada: Theory, Performance, and Economic Impact,* Boston: Martinus Nijhoff.
——(1980b) 'Internalisation as a general theory of foreign direct investment: a re-appraisal of the literature', *Weltwirtschaftliches Archiv* 116:365–79.
——(1981) *Inside the Multinationals: The Economics of Internal Markets,* London: Croom Helm.
——(ed.) (1982) *New Theories of the Multinational Enterprise,* London: Croom Helm.
Saunders, Ronald S. (1982) 'The determinants of interindustry variation of foreign ownership in Canadian manufacturing', *Canadian Journal of Economics* 25:77–84.
Scherer, F.M. (1970) *Industrial Market Structure and Economic Performance,* Chicago: Rand McNally.
Schneider, Friedrich and Frey, Bruno S. (1985) 'Economic and political determinants of foreign direct investment,' *World Development* 13: 161–75.
Shepherd, William G. (1972) 'The elements of market structure,' *Review of Economics and Statistics* 54:25–37.
Siddharthan, N.S. (1981) *Conglomerates and Multinationals,* New Delhi, Allied.
Siddharthan, N.S. and Lall, Sanjaya (1982) 'The recent growth of thelargest U.S. Multinationals,' *Oxford Bulletin of Economics and Statistics.*

Siddharthan, N.S. and Dasgupta, Ajit K. (1983) 'Entry barriers, exports, and inter-industry differences in profitability,' *Developing Economies* 21: 14–23.
Siegel, Sidney (1956) *Non-parametric Statistics for the Behavioural Sciences,* New York: McGraw Hill.
Singer, H.W. (1970) 'Dualism revisited: a new approach to the problems of the dual society in developing countries', *Journal of Development Studies* 7:60–75.
Singh, A. and Whittington, G. (1968) *Growth Profitability and Valuation,* Department of Applied Economics, Occasional Papers, No. 7, Cambridge: Cambridge University Press.
Solomon, R.F. and Forsyth, D.J.C. (1977) 'Substitution of labour for capital in the foreign sector: some further evidence', *Economic Journal* 59:283–9.
Solomon, R.F. and Ingham, K.P.D. (1977) 'Discriminating between MNC subsidiaries and indigenous companies: a comparative analysis of the British mechanical engineering industry', *Oxford Bulletin of Economics and Statistics* 39:127–38.
Stewart, Frances (1979) *International Technology Transfer: Issues andPolicy Options ,* Washington DC. World Bank (Staff Working Paper No. 344).
Stopford, John M. and Dunning, John (1983) *Multinationals: Company Performance and Global Trends,* London: Macmillan.
Strickland, A.D. and Weiss, L.W. (1976) 'Advertising, concentration and price cost margins', *Journal of Political Economy* 34.
Subrahmanian, K.K. (1972) *Import of Capital and Technology,* New Delhi: Peoples.
Subrahmanian, K.K. and Pillai, Mohanan P. (1979) *Multinationals and Indian Export,* New Delhi: Allied.
Swedenborg, B. (1979) *The Multinational Operations of Swedish Firms: An Analysis of Determinants and Effects,* Stockholm: IUI.
Tatsuoka, Maurice M. (1971) *Multivariate Analysis: Techniques for Educational and Psychological Research,* New York: John Wiley.
Teece, David (1981) 'The market for know-how and efficient international transfer of technology', *Annals of American Academy of Political and Social Science* 458:81–96.
——(1983) 'Technological and organisational factors in the theory of the multinational enterprise', in Mark C.Casson (ed.), *The Growth of International Business,* London: Macmillan, 51–62.
Telesio, P. (1979) *Technology Licensing and Multinational Enterprise,* New York: Praeger.
Tyler, W.G. (1978) 'Technical efficiency and ownership charcteristics of manufacturing firms in a developing country: a Brazilian case study,' *Weltwirtschaftliches Archiv* 114:360–79.
UN (1974) *The Acquisition of Technology from Multinational Corporations by Developing Countries,* New York, the United Nations, (UN Sales No. E-73-II.4.11).
UNCTAD (1983) *Technology Issues in the Capital Goods Sector: A Case Study of Leading Machinery Producers in India,* Geneva: UNCTAD.

UNCTC (1978) *Transnational Corporation in World Development:* A Reexamination, New York: United Nations (E/c. 10/38).
——(1981) *Transnational Corporation Linkages in Developing Countries: The Case of Backward Linkages via Subcontracting,* New York: United Nations (E.81. IIA.A.4).
——(1983) *Transnational Corporations in World Development-Third Survey,* New York: UN.
——(1988) *Transnational Corporations in World Development: Trends and Prospects,* New York: UN.
UNCTC-ESCAP (1980) *Monitoring and Regulating Transnational Corporations in India,* Working paper No. 12, Joint CTC-ESCAP Unit on Transnational Corporations, Bangkok, UN.
UN ESCAP/UNCTC (1985) *An Evaluation of Export Processing Zones in Selected Asian Countries,* Bangkok: United Nations (ST/ESCAP/395).
US Tariff Commission (1973) *Implications of Multinational Firms for World Trade and Investment and For US Trade and Labour,* Washington DC: Committee on Finance, US Senate, Government Printing Office.
Vaitsos, C. (1974) *Inter-country Income Distribution and Transnational Enterprises,* Oxford: Oxford University Press.
Vendrell-Alda, J.L.M. (1978) *Comparing Foreign Subsidiaries and Domestic Firms: A Research Methodology Applied to Efficiency in Argentine Industry,* New York: Garland.
Vernon, Raymond (1966) 'International investment and international trade in the product cycle', *Quarterly Journal of Economics* 80:190–207.
——(1974) 'The location of economic activity', in John H.Dunning (ed.) *Economic Analysis and Multinational Enterprise,* London: George Allen & Unwin, 89–114.
——(1977) *Storm over the Multinationals: The Real Issues,* London: Macmillan.
Weiss, John (1980) 'Cost benefit analysis of foreign industrial investment in developing countries,' *Industry and Development,* No. 5.
Wells, L.T. (1973) 'Economic man and engineering man: choice of technology in a low wage country,' *Public Policy* 21:39–42.
——(1983) *Third World Multinationals: The Rise of Foreign Investment from Developing Countries,* Cambridge, MA: MIT Press.
Williamson, Oliver H. (1975) *Markets and Hierarchies: Analysis and Antitrust Implications: A Study in the Economics of Internal Organisation,* New York: Free Press.
——(1981) 'The modern corporation, origins, evolution, attributes', *Journal of Economic Literature* 19:1537–68.
Willmore, L.N. (1976) 'Direct foreign investment in Central American manufacturing', *World Development* 4:499–518.
——(1986) 'The comparative performance of foreign and domestic firms in Brazil', *World Development* 14:489–502.
Wolf, Martin (1982) *India's Exports,* New York: Oxford University Press (for the International Bank for Reconstruction & Development).

Index