Book Review On

Foreign Firms, Technological Capabilities and Economic Performance

Evidence from Africa, Asia and Latin America

(Rajah Rasiah, Author)

By

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Book Title :	Foreign firms, technological capabilities and economic performance Evidence from Africa, Asia and Latin America.
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The author, Rajah Rasiah is an international scholar who has written extensively on the topic of technological capabilities in developing countries. The later theme of the author's work was very much an extension in the spirit of the late Sanjaya Lall's philosophical meanderings. This was confirmed by Sanjaya Lall's preface, which served as an endorsement by the master. In writing this book, the author credited assistance to Geoffrey Gachino, Thabo Gopane, Henry Tamale, Ganesh Rasagam and Jorge Monge. This book was a major investigation into factors contributing to technological capabilities of firms in 7 countries namely Kenya, South Africa, Uganda, Indonesia, Malaysia, Brazil and Costa Rica. Specifically, the author deliberated on the question whether foreign firms contributed significantly to technological capabilities. This is a pertinent area of research because of the vigorous debate on this issue. I suspect that the author leaned to the opinion that foreign ownership indeed contributed to higher technological capabilities in firms.

This book was organized into 8 chapters. The first chapter was an introduction to the literature and methodology. Each of the 7 countries surveyed were given a full chapter treatment in the remaining chapters. A point to note was that Costa Rica chapter was an outlier in the book because it was a case study of the impact of Intel's plant in that country.

In the introductory chapter, the author gave an extensive review of the literature, which helped the reader to understand the historical development of the divergent theories on the carrier, diffusion and effect of technology on both the firm and the aggregate level of the economy. The author first traced the evolution of these theories to a common heritage in Adam Smith, which the fount of economic knowledge. The author then proceeded to demarcate these theories into 3 broad classifications - the Marxist, the Structural and the Neo-Classical. This classification was useful because it provided the reader with a philosophical framework to assess and classify theories in the area of foreign firms and technical change.

The Marxist approach broadly classified theories, which described technological change as an attribute of competitive forces and catalyst of capital accumulation, which diminishes the role of the government, in the tradition of Luxembourg and Schumpeter. The Structural approach took the lead from Hirschman who contended that imbalances in the local economy created by export-oriented foreign firms are opportunities to engender linkages and therefore, there existed the government has an important role to create a conducive environment. The Neo-Classical approach continued the arguments of Ricardo's comparative advantage and the production function of Solow's growth model, which relegated technical change to an exogenous and indeterminate residual in the growth accounting methodology, a process in which the government is insignificant.

The author himself described his approach as an alternative approach to the 3 classifications and uses a modified technological capability framework developed by Figuereido. The author's econometric model used firm level primary data painstakingly collected through numerous interviews and questionnaire from foreign and local firms in 6 countries. The author measured technology intensity by constructing normalized proxies for human resource, process technology and research development and then adding these 3 proxies. Subsequently, the technological intensity proxy was combined with control variables such as foreign ownership, firm size, age, local sourcing, owner manager, skills intensity and union to derive measurements for export incidence and labour productivity. Hence, in a single ambitious exercise, the author attempted to construct a comprehensive model, which measured 8 indicators namely research development, process technology, human resource, skills intensity, local sourcing, technological intensity, export incidence and labour productivity.

The richness and granularity of the model provided the basis for a deep and rigorous investigation into the factors, which contributed towards explaining the inter-country, intra-country, inter-industry and intra-industry differences in some or all of these 8 indicators between local and foreign firms. As an example of inter-country, the model could be used to investigate if foreign firms in Brazil contribute significantly to higher technological intensities compared to foreign firms in Malaysia. The model's granularity helps the reader to extend the analysis to answer the question if foreign firms with export incidence contribute significantly towards process technology when compared to local firms with export incidence within the same country and industry. Therefore, the model provides a good framework for analysis into the question of what contributes towards technological intensities and the other 7 indicators.

This book demonstrated the author's breadth and depth of knowledge on the industry in the countries surveyed. The introduction of each country's industry and explanations of the econometric results were useful to the user, while the generous sprinkling of anecdotes maintained the reader's attention from start to end. The conclusions of the author were that foreign ownership contributed to higher Technological Capabilities in the firms. Specifically, foreign firms in Kenya, Indonesia and Uganda have comparatively higher human resources and process technologies compared to local firms. However, there was no such technology gap between foreign and local firms in the more developed economies of Brazil, Malaysia and South Africa. Besides, Costa Rica proved that the entry of foreign firms such as Intel provided the catalyst for expansion in technology capabilities by engendering backward and forward linkages in the industry.

However, upon scrutiny of the econometric results, which I compiled in Table 1, I found that foreign ownership contributed to significantly higher human resources technology only in Kenya and Indonesia relative to local firms. Instead, in South Africa, local ownership contributed significantly to higher human resources technology. Foreign firms contributed to higher process technology only in Brazil. In terms of research and development, foreign firms had a significant positive contribution only in Uganda. In Brazil, local firms drove this indicator. Most importantly, foreign firms significantly higher technical intensities only in Kenya and Brazil. This was certainly counter intuitive to the thinking that foreign firms

unambiguously contributed towards significantly higher technical intensities. Having read this book, I am persuaded that the effect of foreign ownership on technological capabilities is ambiguous and inconclusive. Having stated this, the reader should bear in mind that a foreign firm having higher technological capability does not in itself imply that transfer of technology will be instantaneous and automatic without requiring a conducive and embedding environment.

Indicators	*Kenya*	*Indonesia*	*Uganda*	*Malaysia*	*Brazil*	*South Africa*
HR	F	F	NS	NS	NS	L
PT	NS	NS	NS	NS	F	NS
RD	NS	NS	F	NS	L	NS
TI	F	NS	NS	NS	F	NS
SI	X	X	NS	NS	NS	X
LS	X	X	X	L	NS	L
XI	NS	F	NS	NS	F	NS
LP	NS	X	NS	NS	NS	NS

Legend
F=Foreign Firm, L=Local Firm, NS= Not Significant at 10%
HR=Human Resource, PT=Process Technology, RD=Research Development,
TI=Technological Intensity, SI=Skill Intensity, LS=Local Sourcing,
XI=Export Incidence, LP=Labour Productivity

Table 1

I also observed that the indicators and variables were not applied consistently in the regressions for all the countries surveyed. A reason for this was perhaps because data was not collected consistently and therefore, there were differences in the usage of indicators and variables in the model. An example would be the labour productivity indicator, which was tested in each country in the survey except for Indonesia, while the variable age was not used in the regression for Kenya and Brazil. Consequently, cross-country comparison would be weaker. Additionally, different industries were selected for different countries and therefore introducing another source of variance to cross-country comparison because different industries could possibly have different propensities for technological intensities.

The author also suggested that institutional and systemic strength have an important role in stimulating R&D activities in foreign firms. I found this suggestion to be intuitive and yet plain vanilla policy prescription. The weakness was in stating the obvious by way of anecdotes instead of rigorous analysis and by inducing the correlation between institutional and systemic strength, and R&D activities. It could be that rigorous investigation could possibly unearth special cases on the correlation between R&D activities and institutional and systemic strength, which could be counter-intuitive to accepted wisdom. These special cases might then demand special and atypical policy prescriptions.

In my opinion, the readability of the book could be improved if more thought had been put into its organization because it contained repetitions, which could be avoided especially explanations on the econometric models, which was repeated throughout 6 chapters. A reason for this need to repeat was different model specifications due to data inconsistency. A consistent model specification would have allowed the model

specification to be specified once in the first chapter and thus allowing the author to devote the remaining chapters to the country specific analysis. The chapter on Costa Rica was the weakest link in this book because it was anecdotal and therefore an outlier with regards to the rest of the book. Hence, it distracted from the focus of the book. Therefore, I would venture to suggest that the chapter on Costa Rica to be omitted and to be replaced with a concluding chapter on cross-country analysis and policy implications, which would have provided it with an authoritative and thus fulfilling its potential to be the current definitive tome on factors that determine a firm's technological capabilities.

The value of a book lies in its contribution to the existing corpus of knowledge and I would like to praise the author for succeeding in producing this book, which I found to be a critical, timely and pertinent contribution. Its foremost contribution would be the original and creative construction of the econometric model to measure technological capabilities of a firm. Therefore, I would recommend this book as an important reference for scholars, policy makers and layman who would be interested in the question of Foreign Firms, Technological Capabilities and Economic Performance.

I have read a number of the author's publications and would not hesitate to testify to the steady progress of the author's developing a definitive theory in the area of technological capabilities. I believe in the author's potential and hence look forward to his next publication with anticipation and great expectations. I trust many readers would share my sentiments.

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