# AN ANALYSIS OF THE LINKAGES OF FOREIGN TRADE FOR THE INDIAN ECONOMY: 1951-52 TO 1978-79

# DHANMANJIRI SATHE

OCTOBER 1990

# AN ANALYSIS OF THE LINKAGES OF FOREIGN TRADE FOR THE INDIAN ECONOMY: 1951-52 TO 1978-79

A THESIS

SUBMITTED TO THE

UNIVERSITY OF POONA

FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

(IN ECONOMICS)

BY

DHANMANJIRI SATHE

GOKHALE INSTITUTE OF POLITICS AND ECONOMICS
PUNE 411 004

**OCTOBER 1990** 

#### CERTIFICATE

CERTIFIED that the work incorporated in the thesis, "An Analysis of the Linkages of Foreign Trade for the Indian Economy: 1951-52 to 1978-79" submitted by Ms. Dhanmanjiri Sathe was carried out by the candidate under my supervision. Such material as has been obtained from other sources has been duly acknowledged in the thesis.

P. Venkatiamaial

P. Venkatramaiah Supervisor

#### **ACKNOWLEDGEMENTS**

I wish to thank Prof. P. Venkatramaiah for guiding me in this doctoral project. I would always view with a great sense of gratitude the innumerable things which he has taught me and the insight of the subject which he gave in the course of this work.

I would also like to thank Dr. (Mrs.) Latika Argade for discussing at length, various issues with me and helping me in many other important ways. My sincere thanks to Dr. Vidya Pitre for posing many pointed questions which clarified certain basic issues and for making various important suggestions. I also wish to thank Mr. Pradeep Apte for providing stimulating interaction and making many useful comments.

Mr. D.B. Sardesai and Miss Anjali Radkar solved my programming difficulties. My heartfelt thanks to them.

I also wish to thank Mr. V.N. Inamdar for meticulous and efficient typing of the thesis.

Dhanmanjiri Sathe

Gokhale Institute of Politics and Economics Pune-411 004

October 1990

#### CONTENTS

				Page
ACKNOWLEDGEMENTS	•••	•••	• • •	(1)
LIST OF TABLES	• • •	•••	• • •	(vii)
LIST OF CHARTS	• • •	•••	•••	(x)
Chapter				
I INTRODU	CTION	•••	•••	1
II LINKAGE	S: A REVIEW	OF LITERATURE	•••	9
2.1	Introduction System	on to the Input-Outpu	t	9
2.2	Measures of		•••	10
	. Direct Link	**	•••	11
	Total Links	× ×	• • •	13
		Measures of Linkages	• • •	19
		and Actual Linkages	• • •	24
2.2.5	Employment	and Capital Linkages	•••	24
2.3	Hirschmania Development	an Linkage Hypothesis	of •••	26
2.4	Application Hirschmania Development	ns and Criticisms of an Linkage Hypothesis	of	20
2.5		nd Foreign Trade	•••	30 38
		ICAL EXAMPLES OF OUTP	•••	90
	LINKA	GES	•••	43
III DATA BA	SE AND THE	CREATION OF IMPORT MA	TRIX.	47
3.1		es and Adjustments	• • •	47
3.1.1	Sources	• • •		1.7

## (111)

Chapter				Page
	3.1.2	Adjustments	• • •	48
	3.1.3	The Export-Import Data	•••	54
	3.1.4	Inclusion of the Decade of the Eighties	•••	59
	3.2	Treatment of Exports and Imports	• • •	60
	3.3	Method for Creating the Import Matrix	•••	67
	3.4	Some Other Import Matrices	• • •	71
	3.5	Concluding Remarks	• • •	75
IA	STIMULUS	TO THE OUTPUT FROM FOREIGN TRADE	• • •	77
	4.1	Introduction	• • •	77
	4.1.1	Foreign Trade in India	• • •	79
	4.2	Dependence on Imports	• • •	95
	4.2.1	Direct Dependence on Imports	• • •	96
	4.2.2	Total Import Linkages	• • •	99
	4.2.3	Import Intensity of Exports and Consumption	of •••	109
	4.3	Advantage to the Economy from Foreign Trade	•••	116
	4.3.1	Gain and Loss Through Linkages of Foreign Trade	f •••	117
	4.3.2	Clarificatory Remarks	• • •	119
	4.3.3	Stimulus-Deprivation Framework	•••	120
	4.3.4	Limitations of the Framework	• • •	124
	4.3.5	Desirable Directions in the Move ments of the Linkages of Foreign Trade	-	126
	4.3.6	Results	•••	128
	4.3.7	Change in the Structure of Forei Trade as Shown by Linkages	gn	1 37

Chapter				Page
	4.4	Income Linkages of Exports	• • •	140
	4.5	Linkages as Criteria for Determing the Pattern of Exports	in-	146
	4.5.1	Domestic Total BL from the Poir of View of Exports	it •••	147
	4.5.2	An Evaluation of the Performant Exports on the Basis of Linkage		150
	4.6	The Impact of Trade Liberalizat on the Indian Economy	ion	156
	4.6.1	Trade Liberalization in the Inc	ian	157
	4.6.2	Consequences of Liberalization	• • •	159
	4.6.3	Impact of Liberalization	• • •	165
	4.7	Conclusions	• • •	169
V	OF THE L	NATION OF CERTAIN CHARACTERISTIC INKAGES OF FOREIGN TRADE AND AN OF THE SOURCES OF GROWTH	os ···	179
	5.1	Composition and Variability of Linkages of Foreign Trade	the	180
	5.1.1	Methodology	• • •	182
	5.1.2	Results	• • •	183
	5.2	Factors Affecting Change in Linages of Foreign Trade	nk-	191
	5.2.1	Methodology	• • •	193
	5.2.2	Results	• • •	198
	5.3	Sources of Growth in the Total Output	• • •	208
	5.3.1	The Balance Equation	• • •	210
	5.3.2	Methodology	• • •	212
	5.3.3	Issues Relating to the Model	•••	215

Chapter					Page
	5.3.4	A Brief Review	• • •	• • •	218
	5.3.5	Results	•••	• • •	221
	5.4	Conclusions	•••	•••	235
	APPENDIX	A <sub>5</sub> : SCHEME FOR N CLASSIFICATI	IEW SECTORAL	•••	242
VI		CHART ANALYSIS AND OUTPUT AND FOREIC		N OF	243
	6.1	Skyline Chart Ana	lysis	•••	243
	6.1.1	Methodology	•••	•••	244
	6.1.2	Results	• • •	•••	246
	6.2	Balanced Output a	nd Foreign Tra	de	264
	6.2.1	Methodology	•••	•••	269
	6.2.2	Results	•••	• • •	278
	6.2.3	A Comparison betw Criterion and Bal Criterion		•••	290
	APPENDIX	A6: THE DYNAMIC ANALYSIS	INPUT-OUTPUT	•••	292
VII	SUMMARY A	AND CONCLUSIONS	•••	•••	294
	7.1	Outline of the Pr	oblem	•••	294
	7.2	Data Base	•••	•••	294
	7.3	Creation of Impor	t Matrix	• • •	295
	7.4	Stimulus-Deprivat	ion Framework	• • •	296
	7.5	Foreign Trade Pol	icy	• • •	296
	7.6	Conclusions	• • •	•••	297
	7.6.1	Performance of Ex	ports	• • •	297

# (vi)

Chapter			Page
	7.6.2	Linkages as Criteria for Determin- ing the Pattern of Exports	301
	7.6.3	Performance of Imports	302
	7.6.4	Performance of Linkages	305
	7.6.5	Performance of Foreign Trade in the Economy	306
	7.6.6	Balanced Output and Foreign Trade	311
	7.6.7	Impact of Trade Liberalization in the Eighties	313
	APPENDIX	A-1: IMPORT MATRICES FOR 1951-52, 1959, 1963, 1968-69, 1973-74 and 1978-79	317
BIBLIOGR	RAPHY	•••	323

#### LIST OF TABLES

Table No.			Page
A <sub>2</sub> .1	Transaction Matrix .	••	43
A <sub>2</sub> .2	A Matrix .	••	44
A <sub>2</sub> .3	B Matrix	••	44
A <sub>2</sub> .4	$(I-A)^{-1}$	••	44
A <sub>2</sub> .5	$(I-B)^{-1}$	• • •	45
A <sub>2</sub> .6	A <sub>d</sub> Matrix	• • •	45
A <sub>2</sub> .7	1	•••	46
3.1	Export-Import Data	• • •	55
4.1	Exports and Imports of India	•••	81
4.2(a)	India's Exports		82
4.2(b)	India's Imports	• • •	85
4.3	Coefficient of Variation of Exports/Impor	ts.	86
4.4	India's Share in World Exports	•••	92
4.5	Distribution of Imports	•••	96
4.6	Dependence on Final Demand Imports	•••	97
4.7	Dependence of Production on Imported Inpu	its.	98
4.8	Total Import Linkages	•••	104
4.9	Import Intensity of Exports	•••	110
4.10(a)	Import Intensity of Final Demand	•••	112
_4.10(b)	Import Intensity of Domestic Consumption.	•••	113
4.10(c)	Import Intensity of Private Consumption	•••	115

### (viii)

Table No.			Page
4.11	Direct Linkages of Foreign Trade	•••	130
4.12	Impact of Foreign Trade	• • •	133
4.13	Direct Linkages of Foreign Trade (independent of scale effects)	n-	138
4.14	Income Linkages	• • •	144
4.15	Income Linkages of Exports	• • •	145
4.16	Sectoral Total (Direct Plus Indirect) Baward Linkages (based on Domestic Matrix)		149
4.17	Exports and Imports in the Eighties	• • •	160
4.18(a)	Composition of Exports	• • •	162
4.18(b)	Composition of Imports	•••	163
4.19	Import Intensity of Exports in the Eight	ies	164
4.20	Direct Linkages of Foreign Trade in the Eighties	•••	166
4.21	Impact of Foreign Trade in the Eighties	•••	167
5.1	Sectoral Total BL of Exports (based on domestic inverse, in percentage terms)		184
5.2	Sectoral Income Linkages of Exports (in percentage terms)	•••	186
5.3	Sectoral Direct FL of Imports (based on allocation matrix, in percentage terms)	•••	188
5.4	Coefficient of Variation of Linkages	•••	189
5.5	Exports and Imports of India [in Rs. lal at constant prices (1952-53 = 100)]	chs,	200
5.6	Composition of Exports [in constant price (1952-53 = 100); in percentage terms]	es •••	202
5.7	Composition of Imports [in constant price (1952-53 = 100); in percentage terms]	:es	203

Table No.		Page
5.8	Factors Affecting the Change in the Output Generated Due to the Total BL of Exports [at constant prices (1952-53 = 100), in percentage terms]	205
5.9	Factors Affecting the Change in the Output Generated Due to the Direct FL of Imports [at constant prices (1952-53 = 100), in percentage terms]	207
5.10	Sources of Deviations in Total Output (in Rs. lakhs)	222
5.11	Contribution of Sectors to Deviations in Total Output (in Rs. lakhs) (for 1951-52 to 1978-79)	228
5.12	Sources of Deviations in Total Output (at sectoral level, for 1951-52 to 1978-79, in percentage terms)	229
5.13	Sources of Deviations in Total Output for Korea and Mexico (in percentage terms)	230
6.1	Rate of Self-Sufficiency	247
6.2	Overall Rate of Self-Sufficiency	259
6.3	Maximum Rate of Balanced Growth	279
6.4	Patterns of Trade	280

#### LIST OF CHARTS

				Page
Skyline	Chart	1951-52	• • •	253
Skyline	Chart	1959	•••	254
Skyline	Chart	1963	• • •	255
Skyline	Chart	1968-69	•••	256
Skyline	Chart	1973-74	• • •	257
Skyline	Chart	1978-79	•••	258