

RESUMEFOREIGN AID, DEVELOPMENT AND REGIONAL DISPARITIES:  
A CASE STUDY OF THE EMERGENCE OF BANGLADESH(Aide étrangère, développement et disparités régionales:  
un cas d'étude: l'émergence du Bangladesh)

La plupart des pays en voie de développement ont eu à faire face aux contraintes, soit de devises étrangères, soit d'épargnes, soit des deux à la fois. Le but de cette étude est d'analyser le problème dans le contexte d'afflux de ressources étrangères vers le Pakistan<sup>1</sup>, pays confronté à la contrainte de devises étrangères et ayant à faire face à des disparités économiques régionales allant en s'aggravant. Le concept des "two-gap" fournit le cadre de base à cette analyse.

L'incertitude quant à l'afflux de ressources étrangères provoquée par la désillusion et le désenchantement du programme d'aide a pour conséquence de rendre le climat de l'aide plutôt lourd. L'étude néanmoins prouve qu'il n'y a pas suffisamment de raisons pour ne pas être optimiste.

En ce qui concerne le Pakistan, l'étude prouve qu'une application directe d'une analyse "two-gap" s'avère être un désastre. Le transfert de ressources du Pakistan de l'Est au Pakistan de l'Ouest suivi ou même accompagné par l'afflux de la plus grande partie des ressources étrangères aggravent les disparités économiques régionales qui engendrèrent un mécontentement

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<sup>1</sup> Le Pakistan - dans cette étude - comprend l'ensemble des deux - Pakistan avant leur séparation pour la période d'août 1947 à décembre 1971.

social et politique et provoquèrent la désintégration du Pakistan, c'est-à-dire la naissance du Bangladesh.

L'étude prouve qu'aucune tentative sérieuse n'a été faite pour définir une région au Pakistan et qu'aucune politique régionale sérieuse n'a été adoptée si l'on ne tient pas compte des promesses répétées faites par le gouvernement Pakistanais et par les planificateurs désignés par le gouvernement afin de remédier à ce problème de disparités.

L'"analyse Cluster" telle qu'appliquée au Pakistan montre que les deux parties (Est et Ouest) sont distinctes et très différentes et qu'elles ne peuvent en aucun cas être groupées et appelées "une économie". Notre étude portant sur un échantillon d'intellectuels Bengali montre que la majorité admet que l'aide étrangère contribue d'une manière positive au développement économique.

La contribution majeure de l'étude est dans la modification du modèle conventionnel "two-gap". Les modifications résident dans la mise en valeur des uniformités inter-régionales. Ces aspects ont reçu très peu d'attention de la part de ceux qui ont construit le modèle "two-gap".

L'étude suggère que l'un doit prendre en considération - entre autre - la réduction des inégalités régionales, la possibilité d'obtenir l'identification des régions, et l'inclusion explicite des uniformités inter-régionales dans la formulation d'un modèle "two-gap" ayant un sens.



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FOREIGN AID, DEVELOPMENT AND REGIONAL DISPARITIES:  
A CASE STUDY OF THE EMERGENCE OF BANGLADESH

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THESE PRESENTEE A LA FACULTE DES ETUDES SUPE-  
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## Sommaire

Les pays en voie de développement avec une "flexibilité de structure limitée" doivent faire face soit à la contrainte de devises étrangères soit à la contrainte de l'épargne comme obstacle effectif à leur développement. Dans ce contexte, les économistes spécialistes en développement expliquent le rôle de l'aide étrangère à l'intérieur du cadre théorique "two-gap".

L'étude montre que l'approche conventionnelle "two-gap" est inadaptée principalement parce que cette approche ne considère que les "gaps nationaux" ignorant toutes les implications des "gaps régionaux". Cette inadaptation - peu importante en temps normal - devient importante si le pays considéré doit faire face à des économies régionales dont les divergences vont en s'aggravant. Le Pakistan est l'exemple classique d'un tel cas. Le cas d'étude du Pakistan montre - entre autre - qu'une des causes économiques principales de l'éclatement du Pakistan (c.a.d. la naissance du Bengladesh) fut une compréhension inadéquate du "gap régional" de la part du gouvernement Pakistanais et de ses planificateurs.

L'étude suggère que l'un doit prendre en considération - entre autre - la réduction des inégalités régionales, la possibilité d'obtenir l'identification des régions, et l'inclusion explicite des uniformités inter-régionales dans la formulation d'un modèle "two-gap" ayant un sens.

DEDICATED TO THE MILLIONS OF  
INNOCENT MEN, WOMEN AND CHILDREN  
WHO LOST THEIR LIVES TO ATTAIN  
THE INDEPENDENCE OF BANGLADESH

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Chapter 1

Introduction

### Objectives of the study

The present study aims at the analysis of the development process of a less developed country, in a setting where regional considerations and heavy dependence on foreign aid assume crucial significance.

Pakistan<sup>1</sup> as a case study is well suited for this kind of analysis; it is one of the largest aid-recipients in the world and, at the same time, is one of those less developed countries like Italy and Brazil, where regional disparities dominate development plans and strategies. Pakistan's recent dismemberment has brought the problem of inter-regional allocation of external resources and of divergent regional disparities in much sharper focus.

To be sure, a thorough discussion of Pakistan's disintegration would call for, among other things, an inter-disciplinary approach encompassing political, socio-cultural, linguistic and economic issues. The present study has a more limited goal: to analyze the major weaknesses in the conventional two-gap theory of foreign aid - - - a theory that has profoundly influenced development policies of the less developed countries. This theory is examined particularly in the context of the 'economic bases of disaffection' in East Pakistan, in terms of inter-wing allocation of external resources, and of widening regional disparities.

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<sup>1</sup>This case study of Pakistan covers the period from August 1947 through December 15, 1971. On December 16, Pakistan's armed forces in the Eastern Wing surrendered to the joint forces of Bangladesh Mukti Bahini (the freedom-fighters of Bangladesh) and Indian armed forces. Thus Pakistan was dismembered into two sovereign parts --- West Pakistan (which has assumed the old name Pakistan) and Bangladesh (Land of the Bengalis), formerly called East Pakistan.

Pakistan's planned-development process can be conveniently classified into three phases: (1) the Pre-Plan period (1947-1955); (2) the First-Five-Year Plan period (1955-1960); and (3) the Second and the Third Plan periods (1960-1970). External resource-inflows fluctuated over the period. Until 1950, Pakistan did not receive any 'respectable' magnitude of foreign resource-inflows. Between 1950 and 1965, the flows were massive<sup>2</sup>. Interestingly, during the first phase when the external assistance was low, Pakistan's economic performance was poor, but the second phase that witnessed a high level of foreign assistance also witnessed the remarkable economic performance of Pakistan.

There is room for strong belief that foreign aid inflows contributed significantly to the achievements of most of the plan targets. As compared with other less developed countries, Pakistan earned the most enviable position<sup>3</sup>; yet it had to disintegrate. What went wrong?

Despite the commendable economic performance as reflected in the national economic indicators, the widening regional economic disparities, among other things, conspired with the inflammable linguistic, social, and cultural differences to produce persistent social unrest that culminated in the disintegration of Pakistan. One of the main purposes of the study is to

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<sup>2</sup>During the Third Five-Year Plan of Pakistan, particularly after 1965 India-Pakistan War, assistance from the United States, the largest donor, started declining slowly.

<sup>3</sup>"Although the industrial base in 1949-50 was extremely small, the growth rate of industry (in Pakistan over the period 1949-69) was among the most rapid of any country in the world." Stephen R. Lewis, Jr., Economic Policy and Industrial Growth in Pakistan (London: George Allen and Unwin, 1969), p. 1.

analyze the major economic factors that contributed significantly to such a disintegration.

#### Organization of the study

The study is organized as follows. Chapter 2 is designed to provide a survey of the existing literature on Two-Gap models. Chapter 3 deals a first major blow to the existing two-gap theory of foreign aid in the context of those less developed countries that suffer from strong regional economic disparities; an attempt is made to provide a meaningful and much-needed extension of the two-gap theory to allow for regional considerations. Chapter 4 is devoted to the emergence of Bangladesh; and Chapter 5 is addressed to the regional disparities of Pakistan. Then, the study dives into the empirical analysis. Chapter 6 provides a cluster analysis to show that East Pakistan (now Bangladesh) and West Pakistan were never economically one country. Chapter 7 unfolds the empirical evidences that explode the concept of national two gaps and suggests the use of alternative regionally disaggregated two-gap models. Finally, Chapter 8 draws together the loose strands and provides summary and conclusions of the study.

An effective implementation of any economic programme in a less developed country calls for, among other things, an adequate awareness and clear understanding of the various implications of interregional allocation of internal as well as external resources. The dimension becomes all the more crucial if the country concerned experiences a chronic, acute, and divergent regional disparities. What is disturbing is that the aid-literature, theoretical as well as empirical, so far has missed this point; and to this



omission the study is primarily addressed.

Chapter 2

A review of selected foreign aid models

## Introduction

The purpose of this chapter is to review critically a few selected planning models which set forth "elegant" theories of foreign aid. Before we get into the critical analysis of foreign aid models, it would be useful to bear in mind clearly the distinction between a "Growth" and a "Planning" model.

## Growth vs. Planning Models<sup>1</sup>

Professor A.K. Sen quite humourously put the recent trend towards growth theory as follows:

The war-damaged economies after the second World War were trying hard to reconstruct fast, the underdeveloped countries were attempting to initiate economic development, the advanced capitalist countries being relatively free from periodic slumps were trying to concentrate on raising the long-run rate of growth; and the socialist countries were determined to overtake the richer capitalist economies by fast economic expansion...

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<sup>1</sup>It is useful to distinguish between a model and a theory. A model is defined as "an ordered set of admissible hypotheses" from all possible hypotheses relating a complex system; a theory is defined as a "sequence of conceptional models" that seek to reflect the reality with all its complexity and enormity. For details relating models and theories, see A. Papandreou, Economics As a Science. (New York: Lippincott, 1958); Milton Friedman, Essays on Positive Economics (5th Impression; Chicago, 1961); and T.C. Koopmans, Three Essays on the State of Economic Science. (New York: McGraw-Hill, 1957).

With this immensely practical motivation it would have been natural for growth theory to take a fairly practice-oriented shape. This, however, has not happened and much of modern growth theory is concerned with rather esoteric issues. Its link with public policy is often remote. It is as if a poor man collected money for his food and blew it all on alcohol.<sup>2</sup>

It is indeed surprising, if not shocking, to see that quite a large proportion of the best brains in the discipline have been used in increasing the degree of abstraction in formulating economic growth models, while enjoying prestige and reward from the circle which is fully conscious of their extremely limited applicability. Even the Nobel Laureate J.R. Hicks denied any relevance of growth theory to "underdevelopment economics". The distinction between growth and planning models is best drawn by W.J. Baumol:

The theoretical materials relating to economic growth in the underdeveloped areas, the writings of noted economists such as W.A. Lewis, Ragnar Nurkse ... are ... more empirical and applied in their orientation than the traditional 'formal theory of economic growth'.<sup>3</sup>

Thus, we can define the growth models as those that incorporate the concept of long-run equilibrium growth rate of an expanding economy - - - a growth rate towards which there exists some, weak or strong, converging tendency<sup>4</sup>. The essential distinction between a growth (formal)

<sup>2</sup>A. Sen (Ed.), Growth Economics. (Penguin Books Ltd., 1970), Introduction, p.9.

<sup>3</sup>W.J. Baumol, Economic Dynamics. (3rd ed., 1970), p. 380, footnote 1. See also J.R. Hicks, Capital and Growth. (Oxford, 1965), Preface.

<sup>4</sup>Harrod-Domar models and their generalized varieties (Solow, Swan, Joan Robinson Phelps, etc.) are known in the literature as neo-classical growth models. One should also note the two other refinements: the von Neumann model, and Dorfman-Samuelson-Solow's turnpike theorem.

model and a planning model lies in the fact that while the former is concerned with a "closed" economy, the latter deals with an "open economy" with special emphasis on the characteristics and constraints of an LDC. Thus, a planning model is a policy model, while a growth model is a search-for-long-run-equilibrium model. The former attempts to be operational while the latter has often turned out to be "hardly realistic" and is blamed for not jibbing "with the mainstream of economic analysis."<sup>5</sup>

#### Foreign Aid Models

Foreign Aid models are, in general, based on any combination of the following basic approaches:

- (i) the absorptive capacity approach;
- (ii) the savings-investment gap (Gap I) approach; and
- (iii) the export-import gap (Gap II) approach.

The planning models designed to analyze the role of foreign aid are classified in this study according to the following versions:

#### The Harrod-Domar version

(A tabular Survey of Foreign Aid Models of this version is presented in Table 2.1)

- A. The Rosenstein-Rodan Model (May 1961).
- B. The McKinnon Model (June 1964).
- C. The Fei-Paauw Model (August 1965).
- D. The Chenery-Strout Model (September 1966).

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<sup>5</sup>W.J. Baumol, op. cit., p. 383.

Table 2.1

A TABULAR SURVEY OF FOREIGN AID MODELS  
(HARROD-DOMAR VERSION)

MODEL BUILDERS	ABSORPTIVE CAPACITY CONSTRAINT	SAVINGS CONSTRAINT	FOREIGN EXCHANGE CONSTRAINT	SOLUTIONS
Rosenstein-Rodan [May 1961]		$F_t = I_t - S_t$ $= a + (kr-b)Y_t \dots (R.1)$ <p>where</p> $S_t = -a + bY_t$ $I_t = krY_t$ <p>where <math>k = \frac{\Delta K}{\Delta Y}</math></p> $r = \frac{\Delta Y}{Y}$ <p><math>b = \text{MPS}</math> <math>b = \text{APS}</math></p>		$A = \sum_{t=0}^{\infty} F_t$ $= \sum_{t=0}^{\infty} [a + (kr-b)Y_t]$ $= 5(b-b)Y_0$ $- (kr-b)Y_0 \left[ \frac{(1-r)^5 - 1}{r} \right] \dots (R.2)$ $\frac{\partial A}{\partial k} = rY_0 \left[ \frac{(1-r)^5 - 1}{r} \right] \dots (R.3)$ $\frac{\partial A}{\partial b} = -5Y_0 \dots (R.4)$ $\frac{\partial A}{\partial b} = 5Y_0 - Y_0 \left[ \frac{(1-r)^5 - 1}{r} \right] \dots (R.5)$
McKinnon [June 1964] Model 1		$F_t = I_t - S_t$ $= I_0 e^{rt} - bY_0 e^{rt} + bY_t$ $= (I_0 - bY_0) e^{rt} + bY_t$ <p>... <math>I_0 = F_0</math> (by assumption)</p> $= bY_0 + (F_0 - bY_0) e^{rt}$ <p>where</p> $S_t = b[Y_t - Y_0]$ $I_t = I_0 e^{rt} = F_0 e^{rt}$ <p>and</p> $Y - Y_0 = \text{Min} \left[ \frac{K, B, K, B, Y}{E, Y, E, Y, B, Y} \right]$ <p>where <math>E, Y, E, Y, B, Y</math></p>		$A = \int_0^{\infty} [F_t] dt$ $= \int_0^{\infty} [bY_0 + (F_0 - bY_0)e^{rt}] dt \dots (M.1)$ <p>where <math>r = \frac{k}{b} \log \left[ \frac{b}{b-b} \right]</math></p> <p>For <math>F_t</math> in equation (M.1) to decline</p> <p><math>F_0 - bY_0 &lt; 0</math> must hold i.e. <math>F_0 &lt; bY_0</math> Note: <math>I_t = krY_t</math> ... <math>krY_0 &lt; bY_0</math> ... <math>I_0 = krY_0</math> or <math>kr &lt; b \dots (M.2)</math></p> <p><math>b &lt; b \dots (M.2)</math> ... <math>b = kr</math> (condition for eventual elimination of foreign aid-dependence)</p>

Table 2.1 (continued)

A TABULAR SURVEY OF FOREIGN AID MODELS  
(HARROD-DOMAR VERSION)

MODEL BUILDERS	ABSORPTIVE CAPACITY CONSTRAINT	SAVINGS CONSTRAINT	FOREIGN EXCHANGE CONSTRAINT	SOLUTIONS
McKinnon June 1964 Model 11			$F_t = I_{ft} - F'_t \dots (M.6)$ $\text{where } E'_t = (\epsilon - \beta) [Y_t - Y_0]$ $= \epsilon [Y_t - Y_0]$ $I_{ft} = \frac{B}{KB_2} Y_t = \frac{K}{KB_2} Y_0 e^{rt}$ <p>where <math>B = \frac{S_t}{Y_t}</math>  <math>\epsilon_{max} = \epsilon [Y_t - Y_0]</math>                      and <math>Y_t - Y_0 = \text{Min} [K_1, K_2, B_2]</math>                      where <math>B_1 &gt; 0, B_2 &gt; 0,</math>  <math>B_3 &gt; 1</math></p>	$\frac{F_t}{Y_0} = \frac{I_{ft}}{Y_0} - \frac{E'_t}{Y_0}$ $= \frac{(\delta - \epsilon') e^{rt} + \epsilon \dots (M.4)}{KB_2}$ <p>... For <math>F_t</math> to decline  <math>\frac{B}{KB_2} - \epsilon' &lt; 0</math>                      or <math>\frac{B}{K} &lt; F_2 \epsilon'</math> (condition for eventual                      elimination of foreign                      aid-dependence)</p> $A = V_0 \int_0^{t^*} \left[ \frac{B}{KB_2} - \epsilon' \right] e^{rt} + \epsilon' dt \dots (M.5)$ <p>where <math>t^* = \frac{1}{r} \log \left[ \frac{\epsilon' - \frac{B}{KB_2}}{\epsilon' - \frac{B}{K}} \right] \dots (M.6)</math></p>

Table 2.1 (continued)

A. TABULAR SURVEY OF FOREIGN AID MODELS  
(HARROD-DOMAR VERSION)

MODEL BUILDERS	ABSORTIVE CAPACITY CONSTRAINT	SAVINGS CONSTRAINT	FOREIGN EXCHANGE CONSTRAINT	SOLUTIONS
<p>Fei-Paauw { August 1965 }</p>	<p><math>F_t = I_t - S_t</math> ... (F.1) (aggregates are in per capita figures) where</p> <p><math>\frac{dS_t}{dt} = u \frac{dY_t}{dt}</math> ... (F.2)</p> <p>For short, <math>\dot{S} = u\dot{Y}</math> <math>u &gt; \dot{b}_0 &gt; 0</math></p> <p><math>I_t = \frac{dk_t}{dt} = k \frac{dY_t}{dt} = k \left[ \frac{d(Y_0 e^{rt})}{dt} \right]</math> <math>= k(r+p) Y_t</math></p> <p>Integrating Equation (F.2) <math>S_t = uY_t + C</math> ... (C = constant term) (F.3)</p> <p>Given <math>S_0 = \dot{b}_0 Y_0</math> we have</p> <p><math>C = S_t - uY_t</math> at <math>t = 0</math> <math>= S_0 - uY_0</math> <math>= \left[ \frac{\dot{b}_0}{Y_0} - u \right] Y_0</math> <math>= \left[ \dot{b}_0 - u \right] Y_0</math> ... (F.4)</p>	<p><math>F_t = I_t - S_t</math> or <math>\frac{F_t}{Y_t} = \frac{I_t}{Y_t} - \frac{S_t}{Y_t}</math> <math>= k(r+p) - \left[ u - \frac{u - \dot{b}_0}{e^{rt}} \right]</math></p> <p><math>\therefore F_t = \left[ k(r+p) - \left( u - \frac{u - \dot{b}_0}{e^{rt}} \right) \right] Y_t</math> ... (F.6)</p> <p>at <math>t = t^*</math>, <math>F = 0</math></p> <p><math>\therefore \left[ k(r+p) - \left( u - \frac{u - \dot{b}_0}{e^{rt^*}} \right) \right] Y_{t^*} = 0</math></p> <p>or <math>k(r+p) - \left( u - \frac{u - \dot{b}_0}{e^{rt^*}} \right) = 0</math></p> <p>or <math>e^{rt^*} = \frac{\dot{b}_0 - u}{k(r+p) - u} = \left( \frac{\dot{b}_0 - u}{k} \right) \frac{1}{k - (r+p)}</math></p> <p>Taking <math>\log</math> of both sides <math>t^* = \frac{1}{r} \log \left[ \frac{\dot{b}_0 - u}{k} \frac{1}{k - (r+p)} \right]</math> ... (F.7)</p> <p><math>A = \int_0^{t^*} [F_t] dt</math></p>		



Table 2.1 (continued)

A TABULAR SURVEY OF FOREIGN AID MODELS

(HARROD-DOMAR VERSION)

MODEL BUILDERS (Continued) (August 1965)	SKILL CONSTRAINT ABSORPTIVE CAPACITY CONSTRAINT	SAVINGS CONSTRAINT	FOREIGN EXCHANGE CONSTRAINT	SOLUTIONS
		Replacing (F.4) in (F.3), we have $S_t = uY_t - (b_0 - u)Y_0$ $= uY_0 e^{rt} - (b_0 - u)Y_0$ $= \left[ u - \frac{b_0 - u}{e^{rt}} \right] Y_0 e^{rt}$ $= \left[ u - \frac{u - b_0}{e^{rt}} \right] Y_t$ $\frac{S_t}{Y_t} = u - \left( \frac{u - b_0}{e^{rt}} \right)$ $\bar{b} = u - \frac{u - b_0}{e^{rt}} \dots (F.5)$		$= \frac{\hat{\lambda}}{P(r+p)} \left[ \frac{\hat{\lambda}}{\hat{b}} \right]^{-1} \left[ \frac{\hat{\lambda}}{P(r+p)} \right]^{-1} \dots (F.8)$ <p>Where <math>\hat{\lambda} = \frac{u}{k} - \frac{b_0}{k}</math></p> $\hat{b} = \frac{u}{k} - (r+p)$

Table 2.1 (continued)

A. TABULAR SURVEY OF FOREIGN AID MODELS  
(HARROD-DOMAR VERSION)

MODEL BUILDERS	GAP I' ABSORPTIVE CAPACITY CONSTRAINT	GAP I SAVINGS CONSTRAINT	GAP II FOREIGN EXCHANGE CONSTRAINT	SOLUTIONS
Chenery-Strout [Sept 1966]	$F_t = I_t - S_t$ <p>where  <math>I_t \leq (1+B) I_{t-1}</math>                      B = maximum growth rate of investment; it represents "skill limit" or absorptive capacity constraint.                      "Skill-limit" reflects the skill information required of managers, skilled labour, and civil servants in order to increase productive investment.                      [Chenery-Strout, Study p.686]</p> $S_t \leq \bar{S} = S_0 + b [Y_t - Y_0]$ $Y_t \leq Y_0 + \frac{1}{k} \sum_{t=0}^{t-1} I_t$ <p>where <math>I^* = \sum_{t=0}^{t-1} I_t</math>                      where <math>\bar{S}_t</math> = maximum (potential) domestic savings</p>	$F_t = I_t - S_t$ <p>where  <math>S_t = S_0 + b [Y_t - Y_0]</math>  <math>Y_t \leq (1+r) Y_{t-1}</math>  <math>r^* =</math> target growth rate as opposed to actual growth rate (r).  <math>Y_t = Y_0 + \frac{1}{k} I^*</math></p>	$F_t \geq M_t^{\min} E_t$ <p>where  <math>Y_t = (1+r) Y_{t-1}</math>  <math>Y_t = Y_0 + \frac{1}{k} I^*</math>  <math>M_t^{\min} = M_0^{\min} + m [Y_t - Y_0] (M_t^{\min} \geq M)</math>  <math>E_t = E_0 (1+r)^t</math>                      where <math>m = \left( \frac{\Delta M}{M} \right)</math> marginal import rate  <math>e = \left( \frac{\Delta E}{E} \right)</math> export growth rate</p>	$\text{Gap I}' = F_t$ $= F_0 + (Bk-b) [Y_t - Y_0]$ <p>where  <math>I_t = I_0 + Bk [Y_t - Y_0] \dots (21)</math>  <math>\text{Cap I} = F_t</math>  <math>= (kr-b) Y_0 e^{rt} - (b_0-b) Y_0</math>  <math>= (b-b_0) Y_0 + (kr-b) Y_t \dots (2)</math>  <math>\text{Gap II} = F_t</math>  <math>= M_t^{\min} E_t</math>  <math>= M_0^{\min} + m [Y_t - Y_0] - \sum_0 (1+r)^t \dots (4)</math></p>

List of Notations<sup>1/</sup> (Table 2.1)

A	=	Total amount of foreign capital inflows (F) over a planning horizon, i.e. $A = \sum_{t=0}^T F_t$
C	=	Consumption
E	=	Exports (goods and services)
MaxE, E <sup>max</sup>	=	Maximum potential exports (i.e. there exists an upper bound)
E'	=	Exports net of 'maintenance imports' ( $\bar{M}$ or $M^{\min}$ )
F	=	Gross foreign capital inflows (both official and private)
	=	I - S
I	=	Gross investment = $I_d + I_f$
I <sub>d</sub>	=	Domestic component of I
I <sub>f</sub>	=	Foreign component of I
K	=	Capital stock = $K_d + K_f$
K <sub>d</sub>	=	Domestically produced capital goods
K <sub>f</sub>	=	Foreign-produced capital goods
$\bar{M}, M^{\min}$	=	Maintenance Imports or required minimum imports (there exists a lower bound)
M	=	Imports (goods and services)
N	=	Population

<sup>1/</sup>In the Fei and Paauw model, economic growth variables are expressed in per capita figures.

P	=	Potential domestic capacity of the economy; for planning purposes, we assume $Y = P$ and $Y = \dot{P}$ (Y and P are used synonymously in the study)
Y	=	Domestically generated output or Gross domestic product (GNP)
a	=	Constant term
b	=	$\frac{\Delta S}{\Delta Y}$ i.e. marginal saving rate.
$\bar{b}$	=	$\frac{S}{Y}$ i.e. average saving rate.
$B_1$	=	Domestic output-capital ratio.
$B_2$	=	Foreign output-capital ratio.
$B_3$	=	Foreign output-maintenance-import ratio.
$\epsilon$	=	$\frac{\Delta E}{\Delta Y}$ marginal export rate.
$\epsilon'$	=	$\epsilon - \frac{1}{B_3}$ marginal export rate net of maintenance import rate $\left(\frac{1}{B_3}\right)$
k	=	$\frac{K}{Y} = \frac{\Delta K}{\Delta Y}$ i.e. (constant) capital-output ratio.
$k_d$	=	$\frac{1}{B_1}$ domestic capital-output ratio
$k_f$	=	$\frac{1}{B_2}$ foreign capital-output ratio
m	=	$\frac{1}{k} = \frac{1}{k_d + k_f} = \frac{1}{\frac{1}{B_1} + \frac{1}{B_2}}$ = output-capital ratio
	=	Import coefficient = $\frac{\Delta M}{\Delta Y}$
p	=	Population growth rate, i.e. $N = N \cdot e^{pt}$
r	=	$\frac{\Delta Y}{Y}$ growth rate (in some context, it also stands for target growth rate)

- $r^*$  =  $\frac{\Delta Y}{Y}$  target growth rate
- $t$  = Time period (zero suffix denotes the initial period)
- $t^*$  = Date of aid-termination
- $u$  =  $\frac{S}{Y}$  per capita marginal saving rate (FMSR)

The Linear Programming version

- A. The Chenery-Bruno Model (March 1962).
- B. The Chenery-MacEwan Model (Summer 1966).

The Econometric version

The Chenery-Adelman Model (February 1966).

The Harrod-Domar versionA. The Rosenstein-Rodan Model<sup>6</sup>

Although several studies<sup>7</sup> prior to 1961 are available regarding the estimation of foreign aid requirements of the LDCs, perhaps the most ambitious attempt is that of Professor Rosenstein-Rodan.

Incorporating the planning horizon and the savings constraint, he has built up a simple model of the Harrod-Domar variety. With slight changes in symbols, the model is presented in Table 2.1. As is obvious, the model completely ignores the aspect of foreign exchange constraint on economic development. He makes the questionable assumption that savings is the only constraint to growth. Constancy of capital-output ratio ( $k = 3$ ) over the

<sup>6</sup>P.N. Rosenstein-Rodan, "International Aid for Underdeveloped Countries," Review of Economics and Statistics, May 1961, pp.107-138 (See also Explanatory Notes for Tables 4-A and b-E, p. 135).

<sup>7</sup>See U.N., Measures for the Economic Development of Underdeveloped Countries (Report by a group of Experts appointed by the Secretary General, New York: U.N., 1951); W.W. Rostow and Max Millikan, A Proposal: Key to an Effective Foreign Policy. (New York: Harper and Brothers, 1957).

planning period is another serious limitation in his model.

The solutions of his model are<sup>8</sup>:

$$\frac{\partial A}{\partial k} = r V_0 \left[ \frac{(1+r)^5 - 1}{r} \right] \dots\dots\dots(R.3)$$

$$\frac{\partial A}{\partial b} = 5 V_0 - V_0 \left[ \frac{(1+r)^5 - 1}{r} \right] \dots\dots\dots(R.4)$$

Thus, total foreign-capital inflow (A) is more sensitive to changes in the capital-output ratio (k) than to changes in the marginal savings rate (b). Given a 4% growth rate, a fall of k from 3 to 2.7 (that is, roughly a 10% reduction) would imply a 21% reduction of foreign capital requirements<sup>9</sup>.

Since the measurement of the aggregate capital output ratio is hardly accurate, any analysis of foreign aid based solely on it may result in misleading policy recommendations.

The empirical conclusions of Rosenstein-Rodan: "India seems to be in a 'take-off' stage ... Pakistan's tempo of development appears to be somewhat lower, but it is promising - - -Indonesia is an example of limited absorptive capacity "<sup>10</sup> - - - appear to be far from satisfactory. They are too general to be acceptable as the results of a serious study.

In the development of his model, Rosenstein-Rodan argued that the target growth rate (r) reflects the "absorptive capacity" of the economy.

<sup>8</sup>Reproduced from Table 2.1 for convenience; note: all the numbers to identify equations in this chapter are referred to Table 2.1.

<sup>9</sup>Rosenstein-Rodan, op. cit., p. 117.

<sup>10</sup>Ibid., p. 113.

But, unfortunately, no clear-cut definition or method of measurement of the absorptive capacity has been given or suggested.

The Higgins and Adler analysis,<sup>11</sup> and recently the Dorfman-Dobbell Analysis<sup>12</sup> of absorptive capacity underline the crucial role it plays in the determination of optimal growth policy of an economy, especially a LDC's economy.

However, the central message of the Rosenstein-Rodan model is that the savings function be convex with respect to the income axis at least up to a point where the economy attains self-sustained growth rate. Vanek argued that if the marginal propensity to save is greater than the average (i.e. the savings function is convex with respect to the income-axis), the savings gap, if filled, would eventually lead the growth process into a self-sustaining one. There does not exist such an "automatic" mechanism for foreign aid given to relieve foreign exchange constraint. - - - to "become self-liquidating unless specific policies are pursued to that end".<sup>13</sup>

Whatever the limitations of his model, one must admit that this pioneering study has been useful as a stepping-stone towards comprehensive analysis of foreign aid.

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<sup>11</sup>J.H. Adler, Absorptive Capacity: the Concept and its Determinants. (The Brookings Institution, Washington, D.C., June 1965); Benjamin Higgins, Economic Development. (New York: W.W. Norton and Company, 1968, Revised edition), pp. 579-582.

<sup>12</sup>R. Dorfman, and R. Dobbell, "Optimal Growth When Absorptive Capacity is Limited," Working Paper Series, No. 7201 (University of Toronto, August 1971).

<sup>13</sup>Quoted from Findlay, "The 'Foreign Exchange Gap' and Growth in Developing Economics," in J.N. Bhagwati, R.W. Jones, R.A. Mundell, and J. Vanek (Eds.) Trade, Balance of Payments and Growth. (Amsterdam: North-Holland Publishing Company, 1971), pp. 171-172, No. 2.



### B. The McKinnon Model

McKinnon's contribution must be considered as one of the basic works in the analysis of foreign aid<sup>14</sup>. While Rosenstein-Rodan dealt only with the savings constraint on the growth process, McKinnon, as is evident from the title of his article, stressed the foreign exchange constraint, not ignoring the other two constraints \_\_\_\_\_ the absorptive capacity and the savings constraint.

Basically, the McKinnon model is a "growth model of the Harrod-Domar type which incorporates in a crude way the effects of international trade on the growth of newly developing countries."<sup>15</sup> Being divorced from "behavioural" equations, the model reflects only the "potentialities" of the economy. The fundamental equation in McKinnon model (see Table 2.1) is the production function for potential domestic output capacity (Y) over the rudimentary initial capacity (Y<sub>0</sub>) of the economy:

$$Y(t) - Y(0) = \text{MIN} \left[ B_1 K_d, B_2 K_f, B_3 M \right]$$

where  $B_1 > 0$ ,  $B_2 > 0$ ,  $B_3 > 1$  and  $Y(t) > Y(0)$  where  $K_d$  is domestically produced capital goods,  $K_f$  foreign-produced capital goods, and  $M$ , maintenance imports<sup>16</sup>.

One of the major contributions of McKinnon is the explicit recognition that "'foreign goods' enter as an input into domestic production

<sup>14</sup>R.I. McKinnon, "Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation," Economic Journal, June 1964, pp. 388-409.

<sup>15</sup>Ibid., p. 389.

<sup>16</sup> $B_3 > 1$  implies that the value of output in the economy exceeds the value of inputs from foreign sources.

function".<sup>17</sup> Subsequently, Chenery-Strout study, which we shall discuss below, developed the theme on the assumption that the productivity and allocation of this separate and distinct input provide "one of the central problems for a modern theory of development."<sup>18</sup>

Table 2.1 depicts the solutions of the models:

$$\begin{aligned}
 A &= \int_0^{t^*} [F_t] dt \\
 &= \int_0^{t^*} [(F_0 - bY_0) e^{rt} - bY_0] dt \dots\dots\dots (M1)
 \end{aligned}$$

when savings constraint is binding (Model I)

$$\begin{aligned}
 \text{and } t^* &= \frac{1}{r} \log_e \left[ \frac{\epsilon'}{\epsilon - rk_f} \right] \\
 A &= \int_0^{t^*} \left[ \left( \frac{b}{kB_2} - \epsilon' \right) e^{rt} + \epsilon' \right] dt \dots\dots\dots (M5)
 \end{aligned}$$

When foreign exchange constraint is binding (Model II).

If foreign aid has to decline over time, the first term on the right-hand side of the integral (M1) must be negative. This implies:

<sup>17</sup>McKinnon, op. cit., p. 389.

<sup>18</sup>H.B. Chenery and A.M. Strout, "Foreign Assistance and Economic Development," American Economic Review, September 1966, p. 679.

$$\begin{aligned}
 & F_0 - bY_0 < 0 \\
 \text{or} & F_0 < bY_0 \\
 \text{since} & F_0 = krY_0 \quad \text{given } I_0 = F_0 \\
 \text{We have} & krY_0 < bY_0 \\
 & \therefore kr < b \\
 & \text{or } \bar{b} < b \quad \dots\dots\dots (1)^{19}
 \end{aligned}$$

i.e. marginal saving rate ( $b$ ) must exceed the average saving rate ( $\bar{b}$ ) in order that the economy reaches the point of time,  $t^*$ , when foreign aid would be terminated, and attains the self-sustained growth path. For Model II, the condition becomes

$$\frac{b}{k} < \frac{\epsilon'}{k_f} \quad \dots\dots\dots (2)$$

The findings of McKinnon are summarized below by integrating his Table I and Table II:

Table 2.2  
Aid-Termination Date, Marginal Savings and Exports Rates

T (No. of years required to terminate aid) (1)	$\frac{A}{Y_0}$ (Aid-GNP ratio) (2)	b (Savings rate) (3)	$\frac{A}{Y_0}$ (Aid-GNP ratio) (4)	$\epsilon'$ (Export rate) (5)
27	3.3	0.25	.94	.06
18	2.2	0.30	.65	.08
11	1.3	0.40	.28	.10
4	.4	1.00	.13	.20

<sup>19</sup>This reinforces the central conclusion of Rosenstein-Rodan's model. More  $b$  exceeds  $\bar{b}$ , the more quickly the economy would generate enough savings and the smaller the time interval for eliminating dependence on foreign aid.

Comparing the two constraints, McKinnon concludes that while A is inversely related to b, it is strongly inversely related to  $\epsilon'$ .<sup>20</sup> The implication is that foreign aid is more effective when binding constraint is the foreign exchange gap; for model II suggests that the larger is  $\epsilon' (= \epsilon - \frac{1}{E_3})$ , i.e. the larger the proportion of current output in excess of maintenance imports which could be transformed into foreign goods (via exports), the smaller will be the time interval for Aid-termination (T) and capital transfer

$$\frac{A}{Y_0} .$$

The McKinnon model underscores one important point: the significance of gap between the two gaps. He concludes that if  $I - S > M - E$ , then  $E < E^{\max}$  and  $S = S^{\max}$ ; if  $M - E > I - S$ , then  $S < S^{\max}$  and  $E = E^{\max}$ . These conclusions cannot be maintained if McKinnon were to include the possibilities of Investment-requirements-cut, increase in "maintenance imports", increase in import-substitution and/or export promotion<sup>21</sup>.

Despite these and other minor weaknesses in the model, one must admit that McKinnon has for the first time brought out quite clearly the fundamentals of the "dual gap" problems.

<sup>20</sup>This conclusion confirms the conclusions of an earlier study of Mexico by Manne. See A. Manne, "Key Sectors of the Mexican Economy, 1960-1970," Studies in Process Analysis (Ed. Alan S. Manne & Harry M. Markowitz), Monograph No. 18, Cowles Foundations for Research in Economics at Yale University (New York: John Wiley & Sons, 1963).

<sup>21</sup>Vanek partially remedied this weakness by offering his concept of "compressibility" of the gaps. See J. Vanek, Estimating Foreign Resource Needs for Economic Development. (New York: McGraw-Hill Book Company, 1967), chap. 6.

### C. The Fei-Paauw Model<sup>22</sup>

Following the footsteps of Rosenstein-Rodan's savings gap analysis, Fei and Paauw developed a model to throw light, among other things, on "the interaction between foreign aid and domestic austerity efforts."<sup>23</sup>

In the context of their analysis, it has been shown that the usual Harrod-Domar model yields "the conclusion that the direction of capital movement will continue for ever..." and then they show how a variant of the Harrod-Domar model can introduce the terminal-point in the direction of capital movement.

The Fei-Paauw model, like the Rosenstein-Rodan model, attempts to explain the savings gap as the only constraint on economic growth. The major difference between the two is that Fei and Paauw have "dynamized" the Keynesian-type aggregate savings function, while Rosenstein-Rodan has used it without any change.

The dynamized version of the Keynesian Savings function is (see Table 2.1):

$$\frac{\frac{ds}{dt}}{\frac{dy}{dt}} = u \quad \text{i.e.} \quad \frac{ds}{dt} = u \left( \frac{dy}{dt} \right)$$

$$\text{or} \quad \dot{s} = u\dot{y} \dots\dots\dots (F2)^{24}$$

<sup>22</sup>J.C.H. Fei and D.S. Paauw, "Foreign Assistance and Self-Help," Review of Economics and Statistics, August 1965, pp. 251-267.

<sup>23</sup>Ibid., p. 251.

<sup>24</sup>Compare Rosenstein-Rodan's simple Keynesian savings function:  
 $S_t = -a + bY_t$ .

Integrating equation (F.1) (Figures are expressed in per capita ; See Table 2.1) we have

$$\bar{b} = u - \frac{u - \bar{b}_0}{e^{rt}} \quad \dots \quad (F.5)$$

Equation (F2) is the fundamental equation in the Fei-Paauw model; it assumes that the incremental per Capita Savings (S) is a constant fraction (u) of the increment in per Capita Income (Y).<sup>25</sup>

<sup>25</sup>See the solution column in Table 2.1. Foreign Aid is obtained

$$\begin{aligned} A_T &= \int_0^{t^*} F(t) dt = \frac{1}{r} \log e \left[ \frac{\frac{u}{k} - \frac{\bar{b}_0}{k}}{\frac{u}{k} - (r+p)} \right] \\ &= \int_0^{t^*} \left[ k(r+p) - \left( u - \frac{u - \bar{b}_0}{e^{rt}} \right) \right] V_t dt \\ &= \int_0^{t^*} \left[ \left\{ (r+b) - \frac{u}{k} \right\} + \left\{ \frac{u}{k} - \frac{\bar{b}_0}{k} \right\} e^{-rt} \right] K_0 e^{(r+p)t} dt \\ &\quad \text{let } \hat{\alpha} = \left( \frac{u}{k} - \frac{\bar{b}_0}{k} \right) \text{ and } \hat{\beta} = \left[ \frac{u}{k} - (r+p) \right] \\ &= \int_0^{t^*} \left[ \hat{\alpha} e^{-rt} - \hat{\beta} \right] K_0 e^{(r+p)t} dt \\ &= \hat{\alpha} K_0 \int_0^{t^*} e^{pt} dt - \hat{\beta} K_0 \int_0^{t^*} e^{(r+p)t} dt \\ &= \frac{\hat{\alpha}}{p(r+p)} \left[ \left( \frac{\hat{\alpha}}{\hat{\beta}} \right)^{-1} \left\{ p+r \left( \frac{\hat{\alpha}}{\hat{\beta}} \right)^{1+\frac{r}{p}} \right\} - (r+p) \right] \end{aligned}$$

The beauty of the Fei-Paauw model lies in its ability to distinguish three distinct types of LDCs (1) the unfavourable case  $[(p+r) > \frac{u}{k}]$ : countries which would require foreign aid for an indefinite period; (2) the intermediate case  $[\frac{b}{k} < (p+r) < \frac{u}{k}]$ : countries which would depend upon aid for a certain finite period of time; and (3) the favourable case  $[(p+r) < \frac{b}{k}]$ : countries which would not require any foreign aid.

The model further distinguishes two sub-cases in the intermediate case: (1) where foreign aid first rises, reaches a "peak" and then declines (the "hump-scale" case); and (2) where foreign aid declines from the outset continuously (the "glide-path" case).

Fei and Paauw find that countries in case (1) must raise their marginal (per capita) savings rate with "greater self efforts" if they want to achieve a constant growth rate with a terminal date for foreign aid; the aid must produce "leverage effects" on the domestic savings rate. In case (2) foreign aid acts as "complementary" to the country's own self-help efforts. In the hump-scale case, a period of time must elapse before Gap I (Savings Gap) can be narrowed because the domestic savings rate has to reach a certain minimum level. In the 'glide-path' case, the domestic savings rate is high enough to reduce dependence on foreign aid at once.

It may be noted that neither the Rosenstein-Rodan model nor the McKinnon model brings the "population factor" into the analysis. This exclusion makes their models less realistic, particularly in dealing with South and Southeast Asian countries where population pressure on land and other resources is very high. An explicit recognition of this factor by Fei and

Paauw makes their model more realistic. Application of this model to 31 LDCs relating the terminal date for foreign aid (given the population growth rate, and the target growth rate) yields the results which are summarized as follows:

Table 2.3

Aid Termination Dates ( $t^*$ ) for "Glide Path" Case in Case (2)

$$\text{Given } \bar{b}_0 = .10; \quad u = .20; \quad k = 3.3; \quad \text{and } t^* = \frac{1}{r} \log_e \left[ \frac{u/r - \bar{b}_0/k}{u/k - (r+p)} \right]$$

Population Growth Rate (p)	Target Growth Rate (r)								
	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5
1.5	0	0	0	8	15	23	30	42	100
2.0	0	0	12	20	27	35	48	100	-
2.5	0	17	26	33	42	65	∞	∞	-

The main conclusion of the Fei-Paauw study may be summed up in their own words:

We tentatively conclude ... that while there is a margin of doubt as to whether additional domestic austerity (raising of  $u$ ) is crucial for the 20 per cent savers, there is no doubt that it is an indispensable adjustment for the other 'unsuccessful countries'.<sup>26</sup>

<sup>26</sup> Fei and Paauw, op. cit., pp. 263-264.



D. The Chenery-Strout Model<sup>27</sup>

This is perhaps the most widely read and oft-quoted model in the foreign aid literature. The study has almost become a study of 'treaties'. According to this model, an economy with 'limited structural flexibility' is characterized by the fact that the following factor supplies represent separate constraints on economic growth at a given point of time: (a) the supply of skills (the absorptive capacity constraint); (b) the supply of domestic savings (the savings constraint, Gap I); and (c) the supply of "strategic" imports (the foreign exchange constraint, Gap II).

Chenery and Strout have developed three distinct models based on the above three distinct constraints. (For the models and their solutions see Table 2.1). These models are regarded as three "growth regimes" appearing in some "definite sequential" order giving rise to what is known as 'the three-phased thesis'.

The absorptive-capacity-constrained model (Model I) is based upon the assumption that there is no tendency or inducement to generate "excess capacity" in the economy and that there exists no incentive to increase foreign aid by reducing savings (i.e. aid does not act as a substitute for domestic savings)<sup>28</sup>. The binding constraint on the increase in real GNP is the "ability to invest". This is the first phase in the development process.

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<sup>27</sup>H.B. Chenery and A.M. Strout, "Foreign Assistance and Economic Development", American Economic Review, September 1966, pp. 679-733.

<sup>28</sup>Later we shall see that aid in fact may substitute domestic savings.

In the second phase (Model II), savings constraint (given a target growth rate) replaces the absorptive capacity constraint. During both these phases, it is assumed that the required aid-quantum is not affected due to "the adjustment process" of the economy caused either by market mechanism or government control.

Then comes the third phase. The foreign exchange constraint replaces the savings constraint as a binding constraint on economic growth (Model III). The crucial assumption of this model is that there exists an indispensable minimum imports level, given growth rate at time  $t$ . In symbol,

$$M(t) \geq \min M(t)$$

The general assumptions that underlie all these three-phased models are:

- (a) Foreign aid enters as a separate and distinct input in domestic production function of an underdeveloped economy;<sup>29</sup>
- (b) there is an upper bound on the supply side of foreign aid. It is unlikely that foreign aid would be available to finance a growth rate much above 6 to 7%, even if the economy is capable of reaching this goal;
- (c) no aid is available [only] to increase consumption without securing some rise in GNP.

As already noted, Chenery and Strout's three models correspond to three distinct phases of growth: (i) the skill-limited phase (the

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<sup>29</sup>It will be recalled that this assumption played a crucial role in the McKinnon model and does so again in the Chenery-Strout model. In a sense, the Chenery-Strout study is an elaboration of the fundamental theme developed by McKinnon. See McKinnon, op. cit., p. 339 and Chenery and Strout, op. cit., p. 679.

absorptive-capacity-limited-phase); (ii) the savings-limited phase; and (iii) the foreign-exchange-limited phase. The study proposes that, with fixed parameters, "the commonest sequence ... is from Phase I to either Phase II or Phase III".<sup>30</sup>

Chenery and Strout's three-phase thesis represents a kind of "normal metamorphosis" of the LDCs based on highly questionable assumptions "which are not deduced from accepted hypothesis in economics".<sup>31</sup> This concept of 'phase' has evoked severe criticisms.<sup>32</sup> They have defended their three-phase thesis by pointing out that it is more "a planning device rather than a basis for historical analysis".<sup>33</sup>

It should be noted that the central message of the Chenery-Strout study lies not in "the sequence" in which the constraints become binding but in the fact that there does not exist any "built-in" mechanism to eliminate the gap between the two gaps in the short-run.<sup>34</sup>

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<sup>30</sup>Chenery and Strout, op. cit., p. 690, n. 23.

<sup>31</sup>G. Ranis and J.C.H. Fei, "Foreign Assistance and Economic Development: Comment", American Economic Review, September 1968, p. 907.

<sup>32</sup>See, for example, J.H. Adler and P.W. Kuznets (Eds.), Capital Movements and Economic Development. (New York: St. Martin's Press, 1967), p. 290.

<sup>33</sup>H.B. Chenery and A.M. Strout, "Foreign Assistance and Economic Development: Reply", American Economic Review, September 1968, p. 914.

<sup>34</sup>Chenery-Strout, Ibid., p. 715.

A general critique of Harrod-Domar type foreign aid models

Rosenstein-Rodan (1961) took Harrod-Domar (simple) model which includes, among other things, the Keynesian savings function (i.e. savings (S) is a constant fraction(s) of income (Y)) and used it to measure the amount of foreign aid requirements. Fei and Paauw simply adapted the model by assuming that per capita saving is a constant fraction of the increase in per capita income. McKinnon model unfolded all three constraints on economic growth more on a theoretical basis than on empirical support.

The Chenery-Strout model, in a sense, is a synthesis of all these three models. The Phase II of this model corresponds to the Fei-Paauw and Rosenstein-Rodan models, while Phase I and III capture the spirit of the McKinnon model.

The most effective attack against the Chenery-Strout model has been made by Ranis and Fei. They have shown that the model implicitly solves the "identification problem" through the assumptions, as noted below, which in turn kill the model's central hypothesis: that there exists a gap between the two gaps. This hypothesis constituted an essential aspect of the two-gap theory.

The Chenery-Strout model, as Ranis and Fei point out, can estimate export growth rate,  $\epsilon$  (i.e.  $\epsilon$  is identified) only because of the assumptions

$$S = \max S \dots\dots\dots(i)$$

$$M = \max M \dots\dots\dots(ii)$$

and can estimate import coefficient  $m$  (i.e.  $m$  is identified) for it is assumed:

$$I-S = M-E^{35} \dots\dots\dots(iii)$$

Before we turn to the other versions of the two-gap theory, it would be fair to conclude that, though foreign aid models of Harrod-Domar breed have various shortcomings, the efforts and attempts to provide a rationale for foreign aid program have not gone in vain. These efforts, though they scratch the surface of the problem, have nevertheless served useful purposes in development strategy in formulating the quantity of and the timing and terminal date for foreign aid for a LDC's economy.

#### The linear-programming version

Of all the planning models, the linear programming ones are by far the most elegant, if not the most operational. "Essentially, linear programming is a mode of expressing the problem of allocating scarce resources that has the peculiar virtue of lending itself to statistical estimation and numerical solution."<sup>36</sup> It is quite realistic to assume that an economy has a limited number of "activities",<sup>37</sup> given a limited number of available

<sup>35</sup>Ranis and Fei, op. cit., p. 910, also see Chenery-Strout Study, p. 694, Footnotes to Table 4 for the hypothesis-killing assumptions. For further criticisms and comments of the Chenery-Strout model, see H.J. Bruton, "The Two Gap Approach to Aid and Development: Comment", American Economic Review, June 1969, pp. 439-446; also in the same journal see Chenery's Reply to Bruton (pp. 446-449).

<sup>36</sup>See Robert Dorfman, "Operations Research", Survey of Economic Theory. (New York: St. Martin's Press, 1967), Vol. III, pp. 29-74; see also Jeffrey B. Nugent, "Linear Programming Models for National Planning: Demonstration of a Testing Procedure", Econometrica, Vol. 38, No. 6, November 1970.

<sup>37</sup>Each "choice" variable is assumed to indicate the level of some operation, known as an "activity" or "process".

resources. The problem is how to allocate the scarce resources optimally<sup>38</sup> among these limited number of activities. Linear programming is one of the most powerful optimizing techniques and hence it is often used to tackle this kind of problem.<sup>39</sup>

Various types of objective functions have been used in formulating the linear programming model for the analysis of foreign aid. A sample of them is given below.

A. The Chenery-Bruno model<sup>40</sup>

$$\text{Maximize } W = W(C, G, F, K) \dots\dots\dots(1)$$

subject to the following constraints:

1. a) the labour productivity constraints;
- b) the balance-of-payments constraints;
- c) the savings constraints; and

<sup>38</sup>Optimizing is a catch-call term for maximizing, minimizing or finding a saddle point. See K. Lancaster, Mathematical Economics. (New York: The MacMillan Company, 1968), p. 91.

<sup>39</sup>H.B. Chenery and K.S. Kretschmer, "Resource Allocation for Economic Development", Econometrica, October 1956. See also H.B. Chenery and M. Bruno, "Development Alternatives in an Open Economy: the Case of Israel", Economic Journal, March 1962; H.B. Chenery and A. MacEwan, "Optimal Pattern of Growth and Aid: the Case of Pakistan", Pakistan Development Review, Summer 1966, pp. 209-242; M. Bruno, "Optimal Patterns of Trade and Development", Review of Economics and Statistics, November 1967, pp. 545-554; M. Bruno, "A Programming Model for Israel", in I. Adelman and E. Thorbecke (Eds.), The Theory and Design of Economic Development. (Baltimore: The Johns Hopkins Press, 1966); I. Adelman and F.F. Sparrow, "Experiments with Linear and Piece-Wise Linear Dynamic Programming Models", in I. Adelman and E. Thorbecke (Eds.), The Theory and Design of Economic Development. (Baltimore: The Johns Hopkins Press, 1966).

<sup>40</sup>Chenery and Bruno, ibid., pp. 79-103.

d) the foreign capital inflow constraint.

2. Non-negativity constraints

where

C = Private consumption expenditure

G = Government consumption expenditure

F = Foreign capital inflow

K = Capital stock

W = Welfare variable

B. The Chenery-MacEwan model<sup>41</sup>

$$\text{Maximize } W = A - B - C \dots\dots\dots(2)$$

subject to:

1. a) the definitional constraints;
- b) the behavioural constraints; and
- c) the policy constraints.

2. Non-negativity constraints

where

A = Discounted sum of consumption (prior to the terminal year of plan)

B = Discounted sum of consumption (for all post-plan years)

C = Discounted sum of foreign capital inflow

W = Welfare variable

The functions (1) and (2) are called the objective functions.

Chenery and Bruno maximized Equation (1) in the case of Israel and Chenery

<sup>41</sup>Chenery and MacEwan, op. cit., pp. 209-242.

and MacEwan maximized Equation (2) in the case of Pakistan. Both case studies have yielded reasonable results.

In some cases we may choose to minimize the objective function as in the case of the discounted sum of net foreign capital inflows or the average unemployment level.

However, the real problem does not lie so much in picking up an objective function consistent with a development policy as in combining the various objectives of a plan (often these are conflicting) into a single objective function in order to maximize or minimize it, as the case may be. More fundamental than this is the problem of distinguishing an objective from a constraint. As a matter of fact, these are essentially indistinguishable and we only separate them to suit our purpose. Dorfman confesses, "In principle, I suppose it [distinguishing one from the other] cannot be done."<sup>42</sup> Despite this limitation, linear programming models have been built up on the assumption that the objective function is separable from the constraint, and have been used with some usefulness.

We shall discuss Chenery and Eruno's graphical representation of their linear programming model which has been used in the case of Israel.

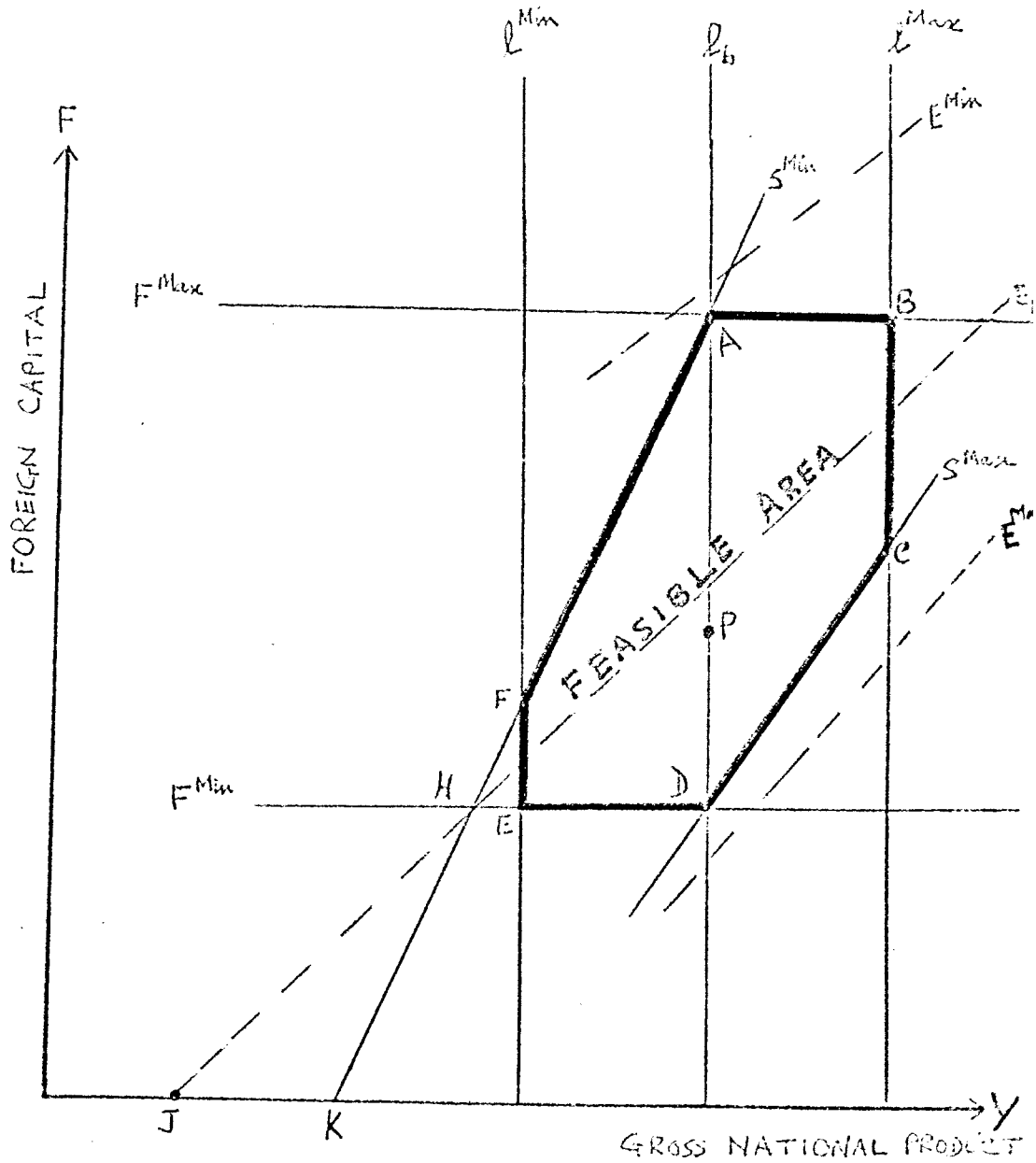
The horizontal axis of Figure 2.1 represents the G.N.P. (Y) and the vertical axis represents Foreign Capital Inflow (F). In search of 'feasible solutions', it is often the standard practice of the linear programmer to impose upper and/or lower bounds on the optimal values of the

<sup>42</sup>Dorfman, op. cit., p. 61.



FIGURE 2.1

Graphical Representation of the Chenery-Eruno Model



Source: H.B. Chenery and M. Eruno, "Development Alternatives in an Open Economy: The Case of Israel", Economic Journal, March 1962, p. 96.

decision variables.

Each of the four structural constraints--labour productivity ( $l$ ) constraint, savings ( $s$ ) constraint, balance of payments ( $E$ ) constraint and foreign capital inflow ( $f$ ) constraint--is assumed to have an upper limit and a lower limit.<sup>43</sup> These four linear constraints with their upper and lower limits give the shaded closed feasible set  $AECDEF$ <sup>44</sup> (see Figure 2.1). The points A, B, C, D, E and F are the extreme points (or corners); none of these points lies on any line joining two points within the feasible set and every other boundary point is on a line joining the extreme points and every interior point is on a line joining boundary points. Once the feasible set is obtained, the optimal solution<sup>45</sup> is obtained as follows: the objective function is evaluated at each of the above six extreme points and then the optimal one is chosen, i.e., an optimal solution occurs at any corner of the feasible set  $AECDEF$ .

<sup>43</sup>The following notations are used to indicate the lower and upper limit: the superscripts "min" and "max" represent minimum and maximum level respectively and the subscript "b" represents the average or intermediate level. Viz.:  $F^{max}$  implies maximum F level;  $l_b$  represents average labour productivity level,  $s^{min}$  indicates minimum savings level, etc.

<sup>44</sup> $AECDEF$  is called a closed feasible set because every point such as P which lies within or on its boundary represents a combination of values which does not violate the constraints, i.e. any such combination lies within the attainable capacity of the economy.

<sup>45</sup>Any point on or within the feasible region,  $AECDEF$ , is a feasible solution. Any feasible solution is a basic solution if the point occurs at a corner; and any basic solution is an optimal solution if it maximizes (or minimizes, as the case may be) the objective function subject to the set of linear constraints, provided it is a "non-degenerate" case. "Degeneracy" occurs when more than two constraints pass through any of the six corners--more generally, if more than  $n$ -constraint hyper-planes coincide at a point in the  $n$ -ordinary variable case. In a degenerate case, the problem becomes complicated. See R. Dorfman, P.A. Samuelson and R.M. Solow, Linear Programming and Economic Analysis. (New York: McGraw-Hill Book Company, 1958).

Suppose the economy starts at point J where no foreign aid is available. If the export level is maintained constant at an average level (i.e., if the economy moves along the path  $E_b$ ) and if foreign aid is allowed to flow in, the point (H)--an intersection of  $F^{\min}$  and  $S^{\min}$  -- is hit. After this point, the savings constraint is dominant. It is quite evident from the Figure that the economy would require more foreign aid if it follows the minimum savings path ( $S^{\min}$ ) than if it follows the average export path ( $E_b$ ) to maintain the same level of G.N.P.

As the economy hits A, it arrives at the stage of maximum attainable G.N.P. with the minimum possible savings ( $S^{\min}$ ), the maximum possible foreign capital inflow ( $F^{\max}$ ) and the average level of productivity ( $b$ ). The boundary ABC shows the effect on the G.N.P. (V) of a shift in savings from their minimum path ( $S^{\min}$ ) to their maximum path ( $S^{\max}$ ). It is clear from the Figure that as the economy meets B, the labour productivity reaches its maximum ( $b^{\max}$ ) and no further increase in G.N.P. is possible. Any increase in savings beyond B would have the effect of reducing F for the same level of G.N.P.

As the economy hits C, "the process stops" because this is the maximum savings boundary ( $S^{\max}$ ).<sup>46</sup> The optimal solution lies either at B or C, depending on the objective of maintaining either maximum foreign capital inflow or maximum savings respectively along with the maximum labour productivity assumption.

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<sup>46</sup>Chenery and Bruno, op. cit., p. 95.

### C. Critique

Although the linear programming approach has an irresistible charm of its own in the operational sense, some of its shaky assumptions betray its elegance. The weakest point in the linear programming model is its "linearity". The linearity assumption in the production function of the Leontief variety is often made in the linear programming model. This assumption not only rules out the possibility of substitution between alternative factors of production, but eliminates the external and internal economies of scale so fundamental in the development process.

Again, in the linear programming model, price level is assumed to be constant over the entire range of production. This assumption implies that no changes in the "marginal and social utility of various products" take place.<sup>47</sup> But this is a very unrealistic assumption in the development context.

Another limitation of the ordinary linear programming model is the assumption that there exists no uncertainty element.<sup>48</sup> But it may be recalled that both the scale and continuity of foreign aid are essentially functions of non-economic factors which, by their nature, involve uncertainty.

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<sup>47</sup>Adelman and Sparrow, op. cit., p. 309.

<sup>48</sup>Stochastic linear programming has emerged to tackle the problem of uncertainty and risk. The empirical studies are not yet conclusive. Unfortunately some recent Linear Programming studies have apparently ignored this 'element'. For example, Mohiuddin Alamgir, A Planning Model for East Pakistan with Special Emphasis on Manpower and Education. (Harvard University: Unpublished Doctoral Dissertation, April 1971). Arthur MacEwan, Development Alternatives in Pakistan: A Multisectoral and Regional Analysis of Planning Problems. (Harvard University: Unpublished Doctoral Dissertation, August 1968).

As already mentioned, the distinction between an objective function and a constraint is arbitrary. And it is often argued that the optimal strategy of an economy is highly sensitive to the nature of the arbitrary assumptions of the objective functions. The Sparrow-Adelman study confirms this. They have found that "both the nature of the goals the economy is assumed to pursue and the shape of the objective function postulated exert significant influences upon the optimal results."<sup>49</sup>

It is suggested that extreme care has to be taken in considering the assumptions relating to the objective function before the application of the linear programming technique.

#### The Econometric Version

The first econometric study of foreign aid and economic development has been done by H.B. Chenery and I. Adelman.<sup>50</sup> The study is an econometric analysis of (1) the effects of aid on growth, and (2) the policy problems presented by dependence on external assistance in Greece. Their model consists of 29 equations in 33 variables; they applied ordinary least squares, two stage least squares and limited information methods for estimation with a sample size of 11. Their model consists of a set of disaggregated functions in the following sectors: (1) consumption by households and government; (2) private and public gross capital formation; (3) imports of goods and services; and (4) exports of goods and services. They claim

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<sup>49</sup>Adelman and Sparrow, op. cit., p. 312.

<sup>50</sup>H.B. Chenery and Irma Adelman, "Foreign Aid and Economic Development: The Case of Greece", Review of Economics and Statistics, February 1966, pp. 1-19.

that the "main virtue" of this econometric model lies in its ability to make "consistent" projections of the various performances of assumptions. It is not clear how Chenery and Adelman coped with the problem of "serial correlation" when the lagged dependent variable appears in the equation as an explanatory variable. Under such a situation, as the Taylor and Wilson, and Wallis Studies show<sup>51</sup>, the D-W (Durbin-Watson) statistic, in general, fails to be a reliable detector of the presence (absence) of serial correlation.

In Equation (7) of the Chenery-Adelman model, gross domestic investment in non-residential and other constructions ( $I_c$ ) has appeared as a dependent variable and its lagged  $I_{c-1}$  has also appeared in the same equation as an explanatory variable.<sup>52</sup> Chenery and Adelman have obtained  $d$  (Durbin-Watson statistic) = 2.44, implying the absence of serial correlation. It has been shown that when lagged endogenous variables are included in an equation estimated by ordinary least squares, the Durbin-Watson statistic is asymptotically biased towards 2.<sup>53</sup>

Again, the Chenery-Adelman model does not incorporate population and labour supply explicitly. This is an unfortunate limitation of the model. In constructing an econometric model for a developing economy, Klein suggests

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<sup>51</sup>See L.D. Taylor and T.A. Wilson, "Three Pass Least Squares: A Method of Estimating Models with Lagged Dependent Variables", Review of Economics and Statistics, November 1964, pp. 329-346; K.F. Wallis, "Lagged Dependent Variables and Serially Correlated Errors: a Reappraisal of the Three Pass Least Squares", Review of Economics and Statistics, November 1967, pp. 555-567.

<sup>52</sup>Chenery and Adelman, op. cit., p. 6.

<sup>53</sup>M. Nerlove and K.F. Wallis, "Use of the Durbin-Watson Statistic in Inappropriate Situations", Econometrica, January 1966, p. 235.

"there must be an explicit set of equations on population and labour supply. These may be complicated and difficult to construct but they are essential."<sup>54</sup>  
(Underlining added)

Recently Adelman and Morris have made an econometric investigation into the socio-economic and political changes in the underdeveloped countries.<sup>55</sup> Their model consists of 14 equations in 19 unknowns with a sample size of 6. By evaluating multipliers of the 19 variables in 74 underdeveloped countries, they have found to almost everybody's expectation that of 19 variables, 10 are quantitatively significant in determining the development prospects of the less developed countries. Out of these ten variables, six are non-economic; (i) modernization of outlook; (ii) decrease in dualism; (iii) increase in the size of the indigenous middle class; (iv) a) levels of secondary and higher education, b) literacy; (v) social mobility; and (vi) the extent of leadership commitment to economic development.

This is a significant step in confirming the hypothesis that economic development does not depend on economic forces alone. Adelman and Morris state:

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<sup>54</sup>L.R. Klein, "What Kind of Macroeconometric Model for Developing Economies?", Econometric Annual of the Indian Economic Journal, Vol. 13, No. (3), 1965, p. 324. See also F.J. Dhrymes et al., "Criteria for Evaluation of Econometric Models", Annals of Economic and Social Measurement, Vol. 1, No. 3, 1972, pp. 291-324.

<sup>55</sup>I. Adelman and C.T. Morris, "An Econometric Study of Socio-Economic and Political Change in Underdeveloped Countries", American Economic Review, December 1968, pp. 1185-1218.

The model suggests that ... the creation of a stable political environment, the transformation of attitudes in a direction favourable to modernization and a fundamental change in the power elite are the forces which, in combination, are most likely to produce more effective national efforts to achieve economic progress.<sup>56</sup>

It remains to be seen how useful the Adelman-Morris model would be if it were to include foreign aid as an explanatory variable. In the ultimate analysis, what we desperately need is a general theory of socio-economic equilibrium.<sup>57</sup>

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<sup>56</sup>Adelman and Morris, op. cit., pp. 1191-1192.

<sup>57</sup>For an in-depth treatment, see Kenneth J. Arrow, "The Organization of Economic Activity: Issues Pertinent to the Choice of Market Versus Non-Market Allocation", The Analysis and Evaluation of Public Expenditures: The PPP System (Joint Economic Committee, 91st Congress, United States, 1st Session; Vol. 1, 1969), pp. 47-86.



Chapter 3

Theory of foreign aid: a new approach

### The controversy

By now it is well known that formulating a sensible analytical framework for foreign aid policy is a far more complex game than is generally understood. Professor Higgins has sharply pointed out:

There is little truly sophisticated literature on the theory of foreign aid, and it could hardly be claimed that in practice foreign aid programs have been shaped by such theories as there are. Foreign aid policy developed first on an ad hoc basis, and social scientists have tried to provide a logically consistent rationale afterwards.<sup>1</sup>

In the two decades which have elapsed since foreign aid embarked upon its maiden voyage, development economists have failed to find 'the rationale' which could be generally acceptable. Philosophically speaking, it is almost like searching for a black cat in a dark room which is not there. One thing has happened. The continuous search has given rise to a considerable controversy regarding the role of foreign aid in the development process of LDCs. Two extreme groups have emerged with opposing trends of thought. For one group, foreign aid is indispensable for an economy with limited structural flexibility, striving to attain socially

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<sup>1</sup>Benjamin Higgins, "Foreign Economic Policy and Economic Development", in R. Butwell (Ed.) Foreign Policy and the Developing Nations. (Kentucky University Press, 1969), p. 15.

desirable self-sustaining growth rate. For the other, foreign aid is neither a necessary nor a sufficient condition for economic growth; on the contrary, it might turn out to be more an obstacle than a co-operating factor.

### The proponents

The proponents of foreign aid, explicitly or implicitly, rely upon three basic assumptions:

- 1° Capital formation is the key to 'development'.
- 2° LDCs are usually faced with the problem of 'capital shortage'.
- 3° Government Planning is a sine qua non for creating "growth perspective" in a LDC.

Given these assumptions and the objective to attain the self-sustained growth, the theory of balanced growth (Nurkse, Rosenstein-Rodan) and the theory of unbalanced growth (Perroux, Hirschman) have emerged. The former theory reveals "the importance of an appropriate balance between industrialization and agricultural improvement, between raising productivity and meeting immediate minimum standards of welfare (economic versus social development)";<sup>2</sup> the latter stresses the significance of "distinguishing or creating pôles de croissance, growing points, leading sectors, and deliberately created imbalance in the form of sectors or regions which for a time will grow more rapidly than the rest of the economy, later generating "spread effects", so that other sectors and regions will then enjoy more rapid growth."<sup>3</sup> The basic theme throughout this development literature has been

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<sup>2</sup>B. Higgins, "The Evaluation of Technical Assistance", International Journal, Vol. XXV, No. 1, Winter 1969-70, p. 37.

<sup>3</sup>Ibid., p. 37.

the problem of "capital shortage". Foreign aid has been considered as a solution to such a problem. Chenery and his various associates have developed a theory of foreign aid which has come to be known in the development literature as 'the two-gap theory of foreign aid'. According to this theory, an LDC's economy confronts two constraints: the savings constraint and the foreign exchange constraint. The problem of development is a problem of overcoming the binding constraint with the co-operation of foreign resource inflows.

The proponents of the theory have argued for a considerable increase in foreign resource inflows in order to relieve the effective binding constraint

#### The dissenters

Milton Friedman<sup>4</sup> and Hans Morgenthau<sup>5</sup> are perhaps the most influential, articulate and explicit critics of the role of foreign aid. Morgenthau sharply criticizes the donors for never managing to "develop an intelligible theory of foreign aid that could provide standards of judgement ... (ior) a particular measure". He identified aid, depending on purposes, with bribery, subsistence, military force, prestige, and humanitarian and economic development, expressing great doubt about the political achievements of aid policies. On the economic front, Friedman launched a major criticism. He attempted to demolish the basic assumptions, as noted earlier, underlying foreign aid

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<sup>4</sup>Milton Friedman, "Foreign Economic Aid: Means and Objectives", The Yale Review, (Summer 1958). Reprinted in H. Kohler (Ed.), Readings in Economics. (New York: Holt, Rinehart; 2nd ed., 1970).

<sup>5</sup>Hans Morgenthau, "A Political Theory of Foreign Aid", American Political Science Review, LVII, No. 2, June 1962, pp. 301-309.

programs. He cited ironically the example of India, a remarkable guinea pig for modern foreign-aid experiments, as a country long known in history as "a sink" for precious metals while unable to utilize them for productive purposes<sup>6</sup>. Capital availability, according to Friedman, though important, is of secondary nature in the development process. Other things present, growth itself would take care of generating capital.<sup>7</sup>

Lately Professor P.T. Bauer<sup>8</sup> has joined the community of dissenters. He has questioned the so-called "planning-investment-foreign aid" - approach as a key to economic development in LDCs. He argues that once foreign aid is assumed to be "axiomatically beneficial", then either progress or retardation in development can be considered as ground for "the continuation or expansion of foreign aid".<sup>9</sup>

#### The compromise

Both of these views are extreme and untenable. The proponents often tend to identify foreign aid as the key to economic development in LDCs oblivious of the fact that many countries (particularly those who are industrially advanced now) took off into self-sustained growth-paths without foreign aid (government-to-government direct resource assistance) and others with massive injection of foreign aid, like Indonesia and India, have not yet been able to take off.

<sup>6</sup> Keynes made a similar observation, though somewhat in a different context:

"The history of India at all times has provided an example of a country impoverished by a preference for liquidity amounting to strong a passion that even an enormous and chronic influx of the precious metals has been insufficient to bring down the rate of interest to a level which was compatible with the growth of the real wealth": J.M. Keynes, The General Theory of Employment, Interest and Money. (London, 1936), p. 337.

<sup>7</sup> Friedman, op. cit., pp. 710-711.

<sup>8</sup> P.T. Bauer, "Dissent on Development", Scottish Journal of Political Economy, Vol. XVI, February 1969; see also Peter Bauer, Dissent on Development. (Harvard: Harvard University Press, 1972).

<sup>9</sup> Ibid., p. 88.

Similarly the dissenters have simply made foreign aid a scape-goat<sup>10</sup>. Their arguments are often self-contradictory. For example, in his article "Dissent on Development", Professor Bauer points out:

It is difficult or even impossible to ascertain confidently what would have happened without aid.<sup>11</sup>

Then, in the next paragraph of the article, he concludes (with confidence!):

The flow of foreign aid since the Second World War has probably more often retarded rather than promoted economic advance in the recipient countries.<sup>12</sup>

However, Professor Bauer is not the only one to jump to such a conclusion. The numbers of dissenters are on the increase, disillusioned and disappointed by the failures of some developing countries to attain the self-sustained growth path with prolonged foreign-resource inflows.

Empirical attempts to discredit foreign aid have also recently been made. Commenting on Leontief's paper presented in a Study Week on the Econometric Approach to Developing Planning in Rome (1965), Haavelmo proposed an interesting hypothesis:

$$I(t) = a [Y(t) + H(t)]$$

where I stands for gross investment, Y for gross national product and H for capital inflows, with the implication that "domestic savings could be

<sup>10</sup>They tend to attribute failures of LDCs to the inability of foreign aid alone to do its assigned job.

<sup>11</sup>Bauer, op. cit., p. 89.

<sup>12</sup>Ibid., p. 89.

negative if H is very large".<sup>13</sup> This hypothesis was picked up for empirical validity by Rahman who, slightly modifying Haavelmo's equation, postulated:

$$\frac{S(t)}{Y(t)} = a + b' \frac{H(t)}{Y(t)} \dots\dots\dots(1)$$

where S = Domestic savings

Using the data for 31 LDCs from the celebrated Chenery-Strout study, Rahman estimated<sup>14</sup> the equation (1) by ordinary least squares method and found the regression coefficient negative and significant at the 5 per cent level. This led him to conclude that the LDCs "may voluntarily relax domestic savings efforts when more foreign aid is available than otherwise."<sup>15</sup> This is a serious conclusion, if valid. The main purpose of foreign aid is

<sup>13</sup>f. Haavelmo, Comment of W. Leontief's, "The Rates of Long-run Economic Growth and Capital Transfers from Developed to Underdeveloped Areas". Study Week on the Econometric Approach to Development Planning, Pontificiae Academic Scientiarum Scripta Varia. (Amsterdam: North Holland, 1965), p.1062.

<sup>14</sup>Econometricians would note that a simple one-equation model with one dependent and only one independent variables may be far from satisfactory from policy implications point of view. Only when the model is arrived at by the process of elimination of other equally acceptable variables in the argument, we can be sure of the negligible influence of "missing" variables. However, this estimation was meant for watching the signs mainly and thus, commenting on the probable directions of the variable (H) with respect to Y. In short, such results are "suggestive" but obviously not conclusive.

<sup>15</sup>A. Rahman, "Foreign Capital and Domestic Savings: A Test of Haavelmo's Hypothesis with Cross-Country Data", Review of Economics and Statistics, February 1968. Rahman (1968) obtained the following estimated relationship:

$$\frac{S}{Y} = 0.14 - 0.25 \frac{H}{Y}$$

(t=2.5)

A similar regression carried out by Griffin and Enos (1970)

$$\frac{S}{Y} = 0.11 - 0.73 \frac{H}{Y}$$

(t=6.6)

See K.E. Griffin and J.L. Enos, "Foreign Assistance: Objectives and Consequences", Economic Development and Cultural Change, Vol. 18, No. 3, April 1970.

to supplement domestic savings, apart from being a "source" of foreign exchange, and a "vehicle" for transfer of technical know-how. But one thing Rahman did not observe was that foreign aid could partly substitute and partly supplement domestic savings. These two functions need not be mutually exclusive. However, even if one is to assume that foreign aid could act as a complete substitute for domestic savings, one need not be overly concerned unless consumption per se is considered detrimental to development. One could argue that the increase in development, however small, obtained without reducing the original consumption level<sup>16</sup> might in fact inject 'motivation' into the people for development. However, if no increase in development occurs, only then the so-called 'substitution' may be considered harmful.

Weisskopf has recently argued in favour of Rahman's view of the substitutability between domestic savings and foreign inflows:

Foreign capital inflow represents an addition to the total supply of resources, available to a country and thereby increases the possible magnitude of domestic expenditures. Any plausible utility function, balancing the immediate benefits derived from current consumption and the future benefits to be derived from current investment, would lead to a marginal allocation of expenditures partly to consumption and partly to investment. But to the extent that private or public decision-makers wish to use the additionally available external resources to increase private or public consumption, there will be a decline in the intended domestic savings, for domestic income remains unchanged.<sup>17</sup>

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<sup>16</sup>The implication is that in the absence of foreign aid, consumption level had to be reduced to get this level of development.

<sup>17</sup>E. Weisskopf, "The Impact of Foreign Capital Inflow on Domestic Savings in Underdeveloped Countries", Journal of International Economics, Vol. 2, No. 1, February 1972, pp. 25-26.



Not being convinced of Rahman's findings, Gupta<sup>18</sup> decided to classify all 50 countries listed in the Chenery-Strout study on the basis of per capita income level. He formed three groups and argued that "it makes sense" to do so rather than to "lump them together". Then the equation (1) was estimated separately for each group. The results contradict Rahman's conclusion. Gupta concludes that foreign capital inflows "may really spur efforts towards greater savings".<sup>19</sup>

Thus, Gupta supports a view contrary to that of Rahman, that foreign aid only supplements savings.<sup>20</sup>

Rahman's lumping all the LDCs together is unsatisfactory; so is Gupta's classification of them on the basis of per capita income alone, though the latter may enjoy the advantage of being more objectively determined.

It is being increasingly recognized that economic as well as non-economic factors must be taken into account for any meaningful classification of less developed countries. Recently Galbraith has argued:

India, in per capita income, is almost as poor as any country in Africa. Yet we recognize that her capacity to use capital is greater...

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<sup>18</sup> K.L. Gupta, "Foreign Capital and Domestic Savings: A Test of Haavelmo Hypothesis with Cross-country Data: A comment", Review of Economics and Statistics, May 1970.

<sup>19</sup> Ibid.

<sup>20</sup> While writing on the thesis was in progress, these two articles drew my attention. A note was sent to contradict Gupta and partly Rahman. for details see my article "A Note on the Haavelmo Hypothesis", Review of Economics and Statistics, November 1971, pp. 413-414.

... It is at least as unwise to associate a country with a narrow cultural base such as Congo, Niger ... with a culturally advanced country as India as to prescribe a common policy for India and the United States.<sup>21</sup>

Following, somewhat flexibly, the line of reasoning put forward by Galbraith, the fifty countries have been classified into four types:

- Type I : South Asia and Far Eastern Countries;
- Type II : Near Eastern Countries;
- Type III : African Countries;
- Type IV : Latin American Countries.

Using the least squares method, equation (1) is estimated for each type separately and the results are given below:

Table 3.1  
Regression Equations for Four Types<sup>a/</sup>

Type	Number of observations	Intercept	Regression Coefficients	R
Type I	11	0.15388	-1.142750 (5.158629)	0.86445
Type II	7	0.17492	-0.851593 (3.622967)	0.85097
Type III	13	0.09607	-0.0240527 (0.371569)	0.11134
Type IV	19	0.16114	-0.571007 (2.170370)	0.46580

<sup>a/</sup> Students' t values are reported directly below the regression coefficients in parantheses.

<sup>21</sup> J.K. Galbraith, The Underdeveloped Country. (Toronto: CEC Publication, 1965), pp. 20 and 33.

The following points can be readily seen from the table:

- (1) The sign of the regression coefficient for each type (without any single exception) is negative. That is, the domestic savings and foreign capital inflows are inversely related, if at all. This is in sharp contrast to Gupta's findings where the sign is positive except his group II "where the sign is negative." Gupta himself admits that this negative sign "still remains to be explained."<sup>22</sup> (2) The regression coefficient of the Type I is negative and significant at 0.001 level of significance; the regression coefficients of Type II and Type IV are negative and significant at 0.01 and 0.05 levels of significance respectively.

The only exception has come from the Type III where the coefficient is negative but insignificant. This is in sharp contrast to Gupta's findings: the regression coefficients (under per capita income classification) are positive and significant except "group II" where it is negative and insignificant.

Thus, the results (Table 3.1) cast doubts on conclusions of Gupta as well as of Rahman.<sup>23</sup> Gupta concludes:

... On the whole we find that inflows of foreign capital instead of leading towards slackening of domestic savings may actually intensify them.<sup>24</sup>

This cannot be supported from the data and premises used by Gupta.

<sup>22</sup>K.L. Gupta, op. cit., p. 215.

<sup>23</sup>Recently, Gustav Papanek, through a different route, has come to the same conclusion regarding Rahman-type studies: "In short, the critics' case for a negative causal relationship between foreign inflows and savings is not proved by their quantitative analyses". "The Effect of Aid and Other Resource Transfers on Savings and Growth in Less Developed Countries", E.J., Sept. 1972, p. 948.

<sup>24</sup>K.L. Gupta, ibid.

The exception from the Type III (table 3.1) challenges Rahman's conclusions and warns the unwary investigators who want to treat the less developed countries as a "class" and tend to prescribe a "common therapy" applicable to all less developed countries<sup>25</sup>.

#### The conventional Two-Gap theory

Nothing succeeds like success. Among the academicians, the LDCs' governments and planners, and the aid-officials, the two-gap theory à la Chenery has gained immense popularity.

The basis of the theory is simple. Given a socially desirable target growth rate ( $r = \frac{\Delta Y}{Y}$ ), and a constant capital-output ratio ( $k = \frac{K}{Y} = \frac{\Delta K}{\Delta Y}$ ), the gross investment requirements (I) of an economy at time  $t$  is given by

$$I_t = krY_t \dots\dots\dots(1) \text{ where } Y = \text{GDP}$$

Given the Keynesian-type savings function<sup>26</sup>

$$S_t = -a + bY_t \dots\dots\dots(2) \text{ where } S = \text{gross Savings}$$

it is possible that  $I_t$  might exceed  $S_t$  in the ex ante sense for in the ex post sense I must equal S by definition. When  $I_t > S_t$ , the economy's rate of growth is said to be constrained by the Savings Gap (Gap I).

<sup>25</sup>Regarding the role of foreign aid, the aid-literature has virtually left the attitudes and opinion of the recipients untouched; to throw some light on this aspect, a survey of the attitude of East Pakistani intellectuals was undertaken. See appendix E.

<sup>26</sup>For a discussion on the savings function concerning LDCs, see Raymond F. Mikesell and James E. Zinser, "The Nature of the Savings Function in Developing Countries: A Survey of the Theoretical and Empirical Literature", Journal of Economic Literature, March 1973, vol. XI, no. 1, pp. 1-26.

At the same time, it is possible that the required level of imports ( $M_t$ ) at  $t$ , consistent with the target growth rate, might exceed the level of exports ( $E_t$ ). This is, as before, true in the ex ante sense. In the ex post sense,  $M$  equals  $E$  by definition.<sup>27</sup> When  $M_t > E_t$ , there then emerges what is known as the Foreign Exchange Gap (Gap II) - - - a constraint upon the LDCs' growth rate.

Foreign aid model-builders (Rosenstein-Rodan, McKinnon, Ranis and Fei, Chenery and his collaborators)<sup>28</sup> have utilized either Gap I or Gap II, or both, to explain the problem of development in LDCs. They argue that, in the first place, the planners should be able to identify the gaps, i.e. the existence of  $(I_t - S_t)$  and  $(M_t - E_t)$ ; in the second place, the dominant gap - - - the larger of the two gaps - - - has to be sorted out. This dominant gap is considered as the effective (binding) constraint upon the rate of development.

Once these two steps have been soundly followed, all that remains to be done is to fill the dominant binding gap by "foreign resource inflows" ( $F$ )<sup>29</sup>. They, however, warn against the possibility that in case  $F$  fills in

<sup>27</sup>This is usually proved in the following way. Resource availability ( $Y+M$ ) must be used up in  $(C + I + E)$ . That is:

$$\begin{array}{rcl} & \text{supply} & \text{uses} \\ & \overbrace{Y + M} & = \overbrace{C + I + E} \\ \text{or} & Y + M - C & = I + E \\ & S + M & = I + E \\ \text{or} & M - E & = I - S \end{array}$$

when  $I = S$ ,  $M$  must equal  $E$  or vice versa. That is resources used up must equal resources supplied.

<sup>28</sup>See Chapter 2 for a survey of their models.

<sup>29</sup>Notice that foreign aid model-builders are in fact arguing that  $F$  and  $F_p$  are indistinguishable.

the smaller of the two gaps, the target growth rate cannot be achieved.

Thus, the condition for attaining the target growth rate is given by

$$F = \text{Max} [(M - E), (I - S)] \dots\dots\dots(3) \text{ where } M > E, I > S$$

Vanek<sup>30</sup> modifies this condition by suggesting that the gaps have to be compressed in order to get the minimum consistent ('hard') gaps. For example,  $(M - E)$  can be reduced by cutting down the non-essential imports (viz., luxury consumer goods). Hence, the dominant gap as found in (3) may in fact turn out to be less dominant one. Thus, the danger for filling the wrong gap looms. Vanek proposes:

$$F = \text{Max} [\min(M-E), \min(I-S)] \dots\dots\dots(4)$$

Most of the models based on the theoretical framework of two-gap analysis are essentially modified versions of the Harrod-Domar model. Hence, they inherit all the weaknesses inherent in the Harrod-Domar model, particularly the assumption of constant capital-output ratio.<sup>31</sup>

Some models, however, have followed the constrained maximization path (Linear Programming Analysis), for example, Chenery-Bruno and Chenery-MacEwan studies<sup>32</sup>. These models assume that LDCs in fact follow optimal

<sup>30</sup>J. Vanek, Estimating Foreign Resource Needs for Economic Development: Theory, Methods and a Case Study of Columbia. (New York: McGraw-Hill, 1967).

<sup>31</sup>For the theoretical and empirical problems concerning the role and measurement of capital, Solow-Robinson controversy and polemics are noteworthy. See, for example, R.M. Solow, Capital Theory and the Rate of Return. (Amsterdam: NorthHolland, 1963), where he reinterprets and defends the concept of marginal productivity, and Joan Robinson, "Solow on the Rate of Return", Economic Journal, June 1964, pp. 410-417; see also Joan Robinson, Economic Heresies. (New York: Basic Books, 1971), p. 109.

<sup>32</sup>See Chapter 2.

policies despite the insurmountable obstacles such as "lack of knowledge", "lack of instrument for maximization".

Also, there are some econometric applications of the two-gap analysis.<sup>33</sup> The problem of collinearity of the time series data used remains to be solved.

The Two-Gap theory: A new approach

This study takes the position that the conventional theoretical framework of two-gap analysis is weak and fragile. The major criticism of the two-gap theory is that the gaps are national gaps which conceal the realities of the regional gaps.

On the regional level, some interesting and pertinent issues may arise. It is quite conceivable that an LDC economy with acute divergent regional economic disparities may show that its economic development is not constrained by any gap (in the "national" gap sense). That is

$$M - E = I - S = 0 \dots\dots\dots(5)$$

Given the equation (5), two-gap planners would conclude that the economy is not in need of foreign aid.

It is easily shown that this policy prescription could be misleading, and even dangerous. This is because there exists the following

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<sup>33</sup>See Chapter 2. Regarding an interesting analysis of the "side-effects" of foreign aid, see Leonard Dudley and R.J. Sandilands, "The Side-Effects of Foreign Aid: The Case of PL 480 Wheat in Colombia", Economic Development and Cultural Change (forthcoming).

distinct possibility, given that the economy could be divided into, say, two economic regions.

Equation (5) can be re-written as

$$(M_D + M_L) - (E_D + E_L) = (I_D + I_L) - (S_D + S_L) = 0 \dots\dots(6)$$

where the subscripts D and L stand for developed and lagging region respectively.

Given equation (6), we could see the possibility

$$\begin{array}{l} \text{Region D} \\ \text{Region L} \end{array} \left\{ \begin{array}{l} M_D - E_D > 0 \\ I_D - S_D > 0 \\ M_L - E_L < 0 \\ I_L - S_L < 0 \end{array} \right\} \dots\dots\dots(7)$$

To be sure, there are various other combinations. The combination (7) involves deeper implications.

Developed region (D), by the grace of biased planners, is experiencing "import-surplus" perhaps with  $M_D - E_D > I_D - S_D$ ; on the other hand, lagging region (L), being perhaps forced upon by the deliberate government policies, is creating "export-surplus".

Thus, though on the surface there is no constraint on development, the lagging region (L), below the surface, is in fact financing the development of the advanced region (D).

In an economy, where there is wider diffusion of the external and



internal economies (spill-over and 'spread effect') emanating from a region, the situation described by system (7) may not necessarily be serious. A regional dominant binding gap of the developed region (D) may pass for the dominant binding national gap of the economy.<sup>34</sup> Even there the identification and explicit recognition of the leading region, for the purpose of planning strategies, is in order.

But there may be cases where the spread-effect via "forward and/or backward linkages" is negligible.<sup>35</sup> And it is precisely this situation that makes the conventional two-gap analysis (in the national aggregate sense) less meaningful. To put it differently, unless the national gaps are made consistent with regional gaps, the policy implications based on national gaps may be misleading.

The problem of inconsistencies between the 'national' gap and 'regional' gaps is fundamental. The problem could be formulated as follows:

The two-gap theory says that the level of foreign resource inflows (F) into an LDC is determined by the larger of the two gaps - - - the savings and the trade gap. That is:

$$F = \text{Max} \{ (M - E), (I - S) \} \dots\dots\dots(8)$$

Consider an economy with two regions - - - one a lagging region

<sup>34</sup>In two-gap analysis, the bigger gap is called the 'dominant' gap and of the two gaps, the dominant gap is the binding (effective) constraint on economic development. Hence, the term 'the dominant binding gap'. For example, if  $M - E > I - S$ , then (M-E) is the dominant and, therefore, binding gap.

<sup>35</sup>Hirschman, op. cit., chap. 10, p. 84.

and the other an advanced region. Subscript 1 and 2 would indicate the former and the latter region respectively. Then the regional foreign resource inflows could be determined as follows:

$$F_1 = \text{Max} \left[ (M_1 - E_1), (I_1 - S_1) \right] \dots\dots\dots(9)$$

$$F_2 = \text{Max} \left[ (M_2 - E_2), (I_2 - S_2) \right] \dots\dots\dots(10)$$

$$\text{Let } F^* = F_1 + F_2 \dots\dots\dots(11)$$

Now the problem is whether or not  $F$  as determined by the equation (8) equals  $F^*$  as determined by the equation (11). If they are always and necessarily equal, then it does not matter which equation we choose as far as determining the level of foreign resource inflows is concerned.

The point is they are, in general, not equal. Only under extremely restrictive assumptions could they be equal. Let us elaborate the point.

Assume that in equation (8),  $I - S > M - E$ .<sup>36</sup> Then, in order to attain the target growth rate, we must have

$$F = I - S \dots\dots\dots(12)$$

To determine  $F$ , we have to estimate  $I$  and  $S$ . Given

$$I = krY \dots\dots\dots(13)$$

where  $k$  = constant capital-output ratio

$$= \frac{\Delta K}{\Delta Y} = \frac{K}{Y}$$

$$r = \frac{\Delta Y}{Y} \text{ (target growth rate)}$$

<sup>36</sup>A similar analysis could be carried out when  $M - E > I - S$ .

and  $S = -a + bY \dots\dots\dots(14)$

where  $b =$  marginal propensity to save

substitute (13) and (14) in (12), and we get

$$\begin{aligned} F &= krY + a - bY \\ &= a + (kr - b)Y \\ &= a + \beta Y \dots\dots\dots(15) \end{aligned}$$

where  $\beta = kr - b$

Thus, on the basis of 'national' gap, equation (15) determines  $F$ .

On the other hand, for regional levels, we have

$$\begin{aligned} F_1 &= a_1 + (k_1r_1 - b_1)Y_1 \\ &= a_1 + \beta_1 Y_1 \dots\dots\dots(16) \end{aligned}$$

where  $\beta_1 = k_1r_1 - b_1$

$k_1 =$  constant capital-output ratio of region 1

$r_1 =$  target growth rate of region 1

$b_1 =$  marginal saving rate of region 1

and  $F_2 = a_2 + (k_2r_2 - b_2)Y_2$   
 $= a_2 + \beta_2 Y_2 \dots\dots\dots(17)$

where  $\beta_2 = k_2r_2 - b_2$

$k_2 =$  constant capital-output ratio of region 2

$r_2 =$  target growth rate of region 2

$b_2 =$  marginal saving rate of region 2

Therefore  $F^*$  is given by

$$F^* = F_1 + F_2 \dots\dots\dots(18)$$

Now the question is under what conditions  $F$  as determined by equation (15) is equal to  $F^*$  as determined by equation (18).

Notice that, by substituting (16) and (17) in (18), we get

$$\begin{aligned} F^* &= a_1 + \beta_1 Y_1 + a_2 + \beta_2 Y_2 \\ &= (a_1 + a_2) + \beta_1 Y_1 + \beta_2 Y_2 \dots\dots\dots(19) \end{aligned}$$

A close examination of equation (19) reveals that, given

$$Y = Y_1 + Y_2,$$

$$F^* = F \dots\dots\dots(20)$$

if and only if

$$a = a_1 + a_2 \dots\dots\dots(21)$$

$$\beta = \beta_1 = \beta_2 \dots\dots\dots(22)$$

Since in econometric estimation constant term is often ignored, we shall concentrate on  $\beta$ .

With (22), three interesting cases emerge:

Case I:

If  $\beta = \beta_1$ , we have

$$kr - b = k_1 r_1 - b_1$$

or  $kr - k_1 r_1 = b - b_1$

assume  $r = r_1 > 0$  and  $b = b_1 > 0$

then

$$r(k - k_1) = 0$$

or  $k = k_1$

similarly,  $k = k_2$

therefore, if  $r = r_1 = r_2$  and  $b = b_1 = b_2$ , we get

$$k = k_1 = k_2 \dots\dots\dots(23)$$

Case II:

$$\text{Given } k = k_1 = k_2 > 0$$

$$\text{and } b = b_1 = b_2 > 0$$

we get

$$r = r_1 = r_2 \dots\dots\dots(24)$$

Case III:

$$\text{Given } r = r_1 = r_2 > 0$$

$$k = k_1 = k_2 > 0$$

we get

$$b = b_1 = b_2 \dots\dots\dots(25)$$

From cases I, II and III, it is clear that in order  $F^* = F$ , we must have  $\beta = \beta_1 = \beta_2$ ; and in order to have this we must find that any two of the following three must hold:

$$k = k_1 = k_2 \dots\dots\dots(23)$$

$$r = r_1 = r_2 \dots\dots\dots(24)$$

$$b = b_1 = b_2 \dots\dots\dots(25)$$

In words, the national capital-output ratio must equal the capital-output ratio of region 1, which again must be equal to the capital-output ratio of region 2. The same must be true for the target growth rate or marginal saving rate.

In reality, the condition that any two of (23), (24), and (25) must hold in order that  $F^*$  equals  $F$  would not, in general, be fulfilled. Particularly if there are reasons and evidences to believe that there exists regional disparities in an economy, the above condition cannot be fulfilled.

The above theoretical discussions are summarized in terms of the Chenery-Weisskopf model and our regionally disaggregated model.

#### The Chenery-Weisskopf model

##### The structure<sup>37</sup>:

$$Y + M = C + I + E \dots\dots\dots(26) = \text{Equilibrium condition}$$

$$Y = C + S \dots\dots\dots(27) = \text{definition}$$

$$F = M - E \dots\dots\dots(28) = \text{definition}$$

$$\hat{S} = a + bY + cF + dE \dots\dots\dots(29) = \text{Savings function} \\ \text{(behavioral)}$$

$$\hat{M} = \alpha + \beta Y + rI \dots\dots\dots(30) = \text{Import function} \\ \text{(behavioral)}$$

$$E = \bar{E} \dots\dots\dots(31)$$

$$F = \bar{F} \dots\dots\dots(32)$$

} exogenously determined

$$S \leq \hat{S} \dots\dots\dots(33)$$

$$M \geq \hat{M} \dots\dots\dots(34)$$

} constraints

$$Y \leq \bar{Y} \dots\dots\dots(35)$$

<sup>37</sup>Y= GDP, M= Imports, C= Consumption, I= Gross Investment, E= Exports, S= Gross domestic savings, F= Foreign resource inflows; hat over symbol indicates ex ante magnitudes; and bar over symbol indicates that values are exogeneously determined and known.

The reduced form:

$$I - bY \leq a + (1 + c)\bar{F} + d\bar{E} \dots\dots\dots(33')$$

$$I + \frac{\beta}{r}Y \leq -\frac{\alpha}{r} + \frac{1}{r}\bar{F} + \frac{1}{r}\bar{E}$$

$$\leq -\frac{\alpha}{r} + \frac{1}{r}\bar{M} \dots\dots\dots(34'): \bar{M} = \bar{F} + \bar{E}$$

$$Y \leq \bar{Y} \dots\dots\dots(35)$$

where

$$I \geq 0 \dots\dots\dots(36)$$

$$Y \geq 0 \dots\dots\dots(37)$$

From the reduced form, three distinct cases emerge<sup>38</sup>:

Case I: The savings constraint

$$I - bY = a + (1 + c)\bar{F} + d\bar{E} \dots\dots\dots(33')$$

$$Y = \bar{Y} \dots\dots\dots(35)$$

Case II: The hybrid constraint

$$\begin{pmatrix} 1 & -b \\ 1 & \frac{\beta}{r} \end{pmatrix} \begin{pmatrix} I \\ Y \end{pmatrix} = \begin{pmatrix} \tilde{k}_1 \\ \tilde{k}_2 \end{pmatrix} \dots\dots\dots(33' \text{ and } 34')$$

$$\text{where } \tilde{k}_1 = a + (1 + c)\bar{F} + d\bar{E}$$

$$\tilde{k}_2 = -\frac{\alpha}{r} + \frac{1}{r}\bar{M}$$

Case III: The trade constraint

$$\begin{aligned} I + \frac{\beta}{r}Y &= -\frac{\alpha}{r} + \frac{1}{r}\bar{F} + \frac{1}{r}\bar{E} \\ &= -\frac{\alpha}{r} + \frac{1}{r}\bar{M} \dots\dots\dots(34') \end{aligned}$$

<sup>38</sup>

Weisskopf uses Chenery's two-gap model in a manner that could be econometrically tested to identify the binding constraint upon the economy. See Weisskopf, Journal of International Economics (JIE), Feb. 1972.

$$Y = \bar{Y} \dots\dots\dots(35)$$

Our claim is that the two-gap model based on national magnitudes, as is usually done, is likely to be less meaningful.

We introduce two major modifications into the Chenery-Weisskopf model:

- 1°- The model is regionally disaggregated;
- 2°- Objective of the model is changed; alternating the growth rate of a region, we are interested in evaluating its impact on the binding constraint; in doing so, some meaningful light may be thrown on the regional disparities.

The reduced form of the regionally disaggregated model is given by:

$$I^i - bY^i = a + (1 + c)F^i + dE^i \dots\dots\dots(36)$$

$$I^i + \frac{\beta}{r} Y^i = -\frac{\alpha}{r} + \frac{1}{r} M^i \dots\dots\dots(37)$$

$$Y^i = \bar{Y}^i \dots\dots\dots(38)$$

where  $i =$  region;

$$(i = 1, 2, \dots\dots n)$$

Solving three variants (case I, case II and case III) of the simultaneous-equation two-gap model (regionally disaggregated), we get three types of investment function, characterizing the three types of constraint (the savings, the hybrid [saving-trade-mixed] and the trade constraint).

By estimating these three investment functions and applying the consistency test based upon our a priori expectations about the signs and



magnitudes of the relevant coefficients, the valid investment function, representing the binding constraint is expected to be identified.

We claim that, from the point of view of planning, the regionally disaggregated model is more meaningful and operational. The empirical results of the above models are discussed in Chapter 7.

Chapter 4

The emergence of Bangladesh: A political-economic background

As Hodson puts it, " the transfer of power in India from British hands to the two successor states (-India and Pakistan-) was the end of a story, the preface of which was the annexation of the Punjab by Mahmood of Ghazni in A.D. 1018, and which began in earnest with the defeat of Prithiviraj by Mahommed Ghori in 1192, followed by the conquest of the Ganges Valley and Bengal."<sup>1</sup> Was it really an end of the story?

Less than a quarter of a century after the transfer of power in 1947, the East Wing of Pakistan broke away and assumed the name "The People's Republic of Bangladesh". Thus, the Great Emergence of Bangladesh<sup>2</sup> is indeed the beginning of the end. Historically, the fall of Bengal was as dramatic as the emergence of Bangladesh.

At the time that the well-organized Turkish Army led by Mohammed Ghori was overrunning the plain of the Punjab, Lakhsmān Sen, the ruler of independent Bengal, was nervously awaiting the imminent thrust to the eastern part of India. In 1198, with an incredibly small size of army, General Muhammad Khilji made a surprise night attack on the palace of Lakhsmān Sen, situated at the capital of Bengal, Nūdiāh, while the Prince was at his dinner.

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<sup>1</sup>H.V. Hodson, The Great Divide. (London: Hutchison & Co., 1969), p. 9.

<sup>2</sup>Bangladesh refers to East Bengal which constitutes more than three-fourth of the undivided Bengal; the remaining part, West Bengal, is now a province of India. Bengal refers to Bangladesh plus West Bengal.

Leaving the dinner unfinished, Sen 'slipped away by a back door' of the palace. With him also slipped away the control and power of the Bengalis over Bengal for nearly eight hundred years until the evening of December 16, 1971 when the Dacca Race Track heralded the emergence of Bangladesh by witnessing the historic ceremonial surrender of 90,000 West-Pakistani soldiers and civilians to Lt. General J.S. Aurora, the joint commander of Indian troops and the Bangladesh 'MUKTI BAHINI' (the freedom-fighters). Thus, the greater part of Bengal has once again come back to the Bengalis after centuries of subjugation and exploitation by aliens. To understand the Great Emergence, one must go back and trace as objectively as possible the events responsible for effecting such an historic incident.

#### Bengal and the Aliens

Bengal was economically fleeced by every alien who ruled over it. The Muslim General, Muhammad Khilji, "destroyed Nudiah [the capital of Bengal] securing much accumulated treasure ..." <sup>3</sup> and since then Bengal never escaped from the rule of alien muslims "for any considerable time until they were superseded in the eighteenth century by the British". <sup>4</sup> It was the wealth and prosperity of Bengal that once earned the name, "the golden" Bengal (Sonar Bangla): it was its richness that always beckoned the foreign invaders. From a travel document of a fourteenth century Moroccan traveller-historian, Ibn Battúta, the golden past of Bengal unfolds:

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<sup>3</sup>Vincent A. Smith, The Oxford History of India. (London: Oxford University Press; 3rd edition; edited by P. Spear, 1967), p. 236.

<sup>4</sup>Ibid.

I set out again, and we spent forty-three nights at sea, arriving eventually at the land of Bangala. This is a vast country, abounding in rice, and nowhere in the world have I seen any land where prices are lower than there ... I have seen fat fowls sold there at the rate of eight for a single dirham, and a fat ram sold for two dirhams. I saw too a piece of fine cotton cloth, of excellent quality, thirty cubits long, sold for two dinars, and a beautiful slave-girl for a single gold dinar, that is, two and a half gold dinars in Moroccan money.<sup>5</sup>

Other contemporary documents and literature demonstrate that Bengal was a relatively rich area in ancient India.<sup>6</sup> At the end of eighteenth century, Sir John Shore, Indian Governor General, reported: "I can indeed with Truth inform you that prosperity reigns in this part of India."<sup>7</sup> Even as late as 1916, J.C. Jack of the British Indian Civil Service and (temporarily) of the Royal Field Artillery noted:

The life of the cultivator in Eastern Bengal is in many ways a very happy life. Nature is bountiful to him, the soil of his little farm yields in such abundance that he is able to<sup>8</sup> meet all his desires without excessive work.

<sup>5</sup>IBN BATTUTA, Travels in Asia and Africa, 1325-1354, Translated and Selected by H.A.R. Gibbs. (London: Routledge and Kegan Paul Ltd., 1929; 4th impression, 1947), Chap. IX, p. 267.

<sup>6</sup>François Bernier, Travels in the Moghul Empire, Translated A. Constance, 2nd ed., revised by V.A. Smith. (London, 1916), pp. 437-440.

<sup>7</sup>Holden Furber (Ed.), The Private Record of an Indian Governor-Generalship: The Correspondence of Sir John Shore, Governor General, with Henry Dundas, President of the Board of Control, 1793-1798. (Harvard University Press, 1933), p. 72.

<sup>8</sup>J.C. Jack, The Economic Life of a Bengal District. (London: Oxford University Press, 1916; Second impression, 1927), p. 38.

### Divide and Quit

After the Second World War, the British, unlike the French in Indochina, decided to quit India with the semblance of honour. To the vast majority (Hindus) in India, the prospect of independence meant the prospect of ruling their own India after nearly a thousand years' of subjugation by alien forces - - - eight hundred years by the alien Muslims and two hundred years by the British. But in the history of India there was never a Hindu Raj in the sense the Muslims, and the British had.<sup>9</sup> Yet the Hindus of India led by Nehru and Ghandi became united under the Congress banner and decided to rule all India in the sense of establishing a Hindu Raj. The Muslims of India led by Jinnah resolved to see that the Hindu Raj was not imposed on the Muslim minority. Hunter once described, in some other connection, the feelings and attitudes of Muslims towards Hindus in India in 1871:

... an ancient conquering race cannot easily divest itself of the tradition of its nobler days. The Bengal Muhammadans refused a system (imposed by the British) which gave them no advantages over the people whom they had so long ruled...<sup>10</sup>

Recently Hodson has made similar observations:

<sup>9</sup> Asoka was emperor of India long before the Muslims Raj came into existence, but during his reign he became a Buddhist and was greatly responsible for the spread of Buddhism in India, China and Southeast Asia. He is well-known as the Buddhist Emperor of India; strictly speaking, "The complete political unity of India under the control of a paramount power, wielding unquestioned authority, is a thing of yesterday, barely a century old". For details, see V.A. Smith, The Early History of India From 600 B.C. to the Muhammadan Conquest. (Oxford: At the Clarendon Press, 4th Edition; revised by S.M. Edwards, 1924; 4th ed., 1957), chapter 1.

<sup>10</sup> W.W. Hunter, op. cit., pp. 133-134. See also Adalut Khan, Iqd-i-Manzum (The Selections from the Bustan). (Calcutta: Baptist Mission Press, 1866; 3rd ed., 1881), The Preface. Mr. Khan, a Muslim Bengali, pointed out that Indian Muslims were more attached to the Persian language than to the English.

In their folk-memory, the Muslims of India had been rulers, not subjects. A few men living in 1947 could as infants have known the last Moghul Court. For Muslims to roll back history by removing the European invader could not mean a restoration of Hindu rule but rather a revival of their own.<sup>11</sup>

The distribution of Muslims in India was strangely lop-sided. In the North-Western Part of India and the Eastern Part of India, the Muslims were in majority; in other parts of India, Muslims were in minority. The Muslims of Bengal (descendants of Turks, Pathans, Moghuls, and local converts) were the ruling race in Bengal since 1192 with a varying degree of power and control. Prior to 1338, though Bengal was ruled by Muslims, the ruler was the Muslim Emperor of India enthroned at Delhi. While Muhammed-bin-Tugluq was the Emperor, Fakhrud-Di-in, the representative of the Emperor at Bengal, revolted against Tugluq's tyranny. "As a result", Smith notes, "in 1338, a definite separation of the Muslim provincial government took place."<sup>12</sup> Since then Bengal was virtually independent and ruled by the Muslims until the British won the battle of Pallasey in the eighteenth century.

In 1947, the Muslim leaders of Bengal, S.H. Suhrawardy and A.K. Fazlul Haque, demanded "independence of Bengal" from the British. The demand was rejected. Given the choice between joining India and Pakistan, Bengal, of course, decided to join Pakistan. The Bengali Muslim leaders figured out

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<sup>11</sup> H.V. Hodson, The Great Divide. (London: Hutchison, 1969), p. 355. In a private correspondence with the present author, Lord Mountbatten of Burma commented upon this book: 'it is the only authentic history of the transfer of power that I know of ... because none of my papers have been made available before.' (The letter dated March 17, 1970).

<sup>12</sup> A. Smith, The Oxford History of India (3rd ed., edited by P. Spear; At the Clarendon Press, Oxford, 1967), p. 271.

that the Muslims, in the absence of independent Bengal, would benefit by remaining with a Pakistan formed out of the Muslim majority area in India. Thus, on March 23, 1940 the Bengal Chief Minister, A.K. Fazlul Haq<sup>13</sup> (during the British regime) moved the famous Pakistan Resolution in the historic session of the All India Muslim League held in Lahore. The resolution reads:

No constitutional plan would be workable in this country or acceptable to the Muslims unless it is designed on the following basic principle, namely, that geographically contiguous units are demarcated into regions . . .

in which the Muslims are numerically in majority, . . . the north-western and eastern zones of India should be grouped to constitute independent states in which the constituted units shall be autonomous and sovereign. (emphasis added)

It is clear from the resolution that Muslims were not sure about the kind of Pakistan they would get if indeed, they got a Pakistan at all. Hence, Bengali Muslims incorporated relevant points in the resolution to safeguard their interests if and when Pakistan emerged. Thus, it is partly wrong to say that the policy of West Pakistan alone led to the cessation of East Pakistan.

As noted earlier, Bengal, until it was conquered by the British in the eighteenth century, was ruled by the Muslims uninterruptedly since 1192; it was, therefore, quite natural that the Muslims of Bengal would demand its independence on the eve of the British departure; thus, the demand for complete independence by the Muslim Bengalis was neither novel nor

<sup>13</sup> He was well known as Sher-e-Bangla (the Bengal Tiger) in Bengal, for his undaunted courage for fighting against the British imperialism.



unnatural. The exploitation and oppression of East Bengal by West Pakistan simply ignited the explosive mixture that was there.<sup>14</sup>

"Adversaries make strange bedfellows" and it was precisely the threat of Hindu-domination rather than love for Islam and brotherhood that united the two far-flung parts of India -- East and West-Pakistan -- one being separated by the other by more than thousand miles of Indian territory.

East Bengal soon realized that it had fallen from the frying pan into the fire. Leaders from Eastern part started demanding a greater degree of autonomy. When the West-Pakistan civilian élites failed to control the growing movement of greater autonomy in East-Bengal, the role was given over to the Military which almost fully (95%) consists of West Pakistanis. In 1958, General Ayub Khan took over power and soon ousted the Bengali Military President of Pakistan, Iskendar Mirza. Then the military dictatorship prevailed for eleven years in Pakistan generating a discontent and resentment in both wings, particularly in respect of 'corruption and misuse' of national resources.<sup>15</sup> The resentment against the regime was so great as to force General Ayub Khan to resign and hand over the power to another General, Yahya Khan, who cooled off the sentiment by promising, for the first time in nearly twenty four years, a general election on one-man-one-vote basis.

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<sup>14</sup>It would not be out of place to think that the West Pakistan's élite, being aware of the long historical background of Bengal, knew that it was a matter of time when East Bengal would break away; as such, there economic and political policies reflected the age-old maxim: "Make hay while the sun shines".

<sup>15</sup>Gauhar, Son of the President Ayub Khan, was said to have become a Millionaire - Industrialist overnight by just leaving the rank of Captain in the Army and joining the Gandhara Industry in Pakistan.

The elections (December-January 1970-71) resulted in an over-turn of all the rosy calculations of the 'Power Elite' entrenched in West Pakistan. Sheikh Mujibur Rahman, whose Six-Points Programme virtually meant independence of East Pakistan in practice, led his party, the Awami League, to capture 167 of East Pakistan's 169 seats out of a National Assembly total of 313 - - - an absolute majority in the contemplated National Assembly. The party also won 288 out of the 300 seats in the Provincial (East Pakistan) Assembly.

Thus, having the absolute majority both in the Provincial Assembly as well as the National Assembly, Sheikh Mujibur Rahman, leader of the East Pakistan Awami ("People's") League, emerged as the strongest man in Pakistan; his program for a reduction in centralized power and for maximum local autonomy for East Pakistan posed a serious threat to the well-entrenched 'power élites' of Pakistan, who were all from West Pakistan.<sup>16</sup>

As soon as the results were over, all the differences between West Pakistani leaders, élites (Military and Civil) disappeared and they insisted that Mujibur Rahman should compromise on his six points.<sup>17</sup> Yahya Khan, without consulting Mujib, postponed the General Assembly scheduled to be held on March 5, 1971, sine die. This step clearly demonstrated the

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<sup>16</sup>Sheik Mujibur Rahman and his Party, the Awami League, won a land-slide victory in Bangladesh's first general election in early March 1973

<sup>17</sup>For the Awami League's six points, see Appendix C.

unwillingness of the military to hand over power to Mujib. This sparked unrest in East Pakistan and, as expected, under the name of law and order, Martial law was clamped down, further creating pessimism in East Pakistani minds.

On March 25, General Khan ordered the army "to do the job". The inhuman, indiscriminate killing, burning, looting, and raping that followed was one of the worst cases of genocide ever known in human history; three million dead, 10 million displaced, most of them (8 million) fled to India. To India, this meant a "demographic aggression" - - - an aggression that could introduce political instability in India, particularly in West Bengal which already earned the reputation of the most volatile province in India.

With 29 military divisions against Pakistan's 10, a million men to 400,000, a greater command of the sea, more and better-equipped tanks and twice as many military aircraft, India waited for Pakistan's weakness to reveal itself. Signing a Peace (defence) Treaty with U.S.S.R., and timing the war in early December of 1971 when winter and snow temporarily isolated China and the Indo-Pak sub-continent, India, with active co-operation of fifty thousand Bangladesh freedom-fighters struck East Pakistan. The General War broke out; within two weeks, the Pakistan Army in East Pakistan, as noted earlier, unconditionally surrendered. This gave birth to a new independent state, Bangladesh - - - the nation of Bengalis - - - which was formerly the eastern wing of Pakistan. Bangladesh soon joined the Comity of Nations as the Second largest Muslim Nation, and the eighth largest nation in the world. For the Bengalis, the achievement is great, the delight undisguised.

So far the discussion on the Great Emergence concentrated basically

on non-economic factors. We now turn towards economic ones.

### Development policy of Pakistan

In 1947, the Great Partition of India was accompanied by mass migration and bloodshed; nearly one million people were killed in the communal riot, 7 million Muslim refugees<sup>18</sup> came to Pakistan and 6 million Hindus and Sikhs went to India.<sup>19</sup>

Mr. Jinnah, the founder of Pakistan, was in favour of the partition of India, but was vehemently opposed to the partition of Bengal and the Punjab; on the other hand, Lord Mountbatten, the last viceroy of India, was initially opposed to the partition but later agreed only if, among other things, Bengal and Punjab were also partitioned. The deadlock was tight. Lord Mountbatten of Burma has attributed the partition to Jinnah's intransigence:

No one was more anxious to avoid partition than myself and no one tried harder. I could neither persuade nor force Jinnah to accept undivided India...<sup>20</sup>

Whatever the reasons of the partition, its economic consequences were great and far-reaching. For Pakistan, the population transfer resulted

<sup>18</sup> Including the present author himself.

<sup>19</sup> For an eye-witness account of India's communal riot (between Muslims and Hindus, and Muslims and Sikhs), see Pendrel Moon, Divide and Quit. (London: Chatto and Windus Ltd., 1961). See also Michael Fearson and Diana Tonsich, "The Partition of India and Pakistan: The Emergence of Bangladesh", in Thomas E. Mackey (Ed.), The Problem of Partition: Peril to World Peace. (Chicago: Rand McNally, 1972), pp. 133-173.

<sup>20</sup> From a private letter (dated September 4, 1972) of Lord Mountbatten written to the present author.

"in an inflow of cultivators and artisans and outflow of merchants, industrialists, and professionals".<sup>21</sup> East Pakistan and West Pakistan were hinterlands of the port-cities, Calcutta and Bombay, of India respectively; an industrial complex, though small, grew around these port-cities. The partition paralysed the industries in India by depriving her of raw materials from Pakistan. Many observers in 1947 felt that Pakistan was "an economic wreck". Yet, Pakistan survived the economic collapse and, in less than two decades, earned the reputation of being "one of the most remarkable examples of state and nation building in the post-war world."<sup>22</sup>

The development policy of Pakistan can conveniently be analyzed in the light of development plans formulated by the government of Pakistan. For analytical convenience, the development period, 1947 to 1970, is divided as follows:

- a. the Pre-Plan Period, 1947 to 1955;
- b. the First Five Year Plan, 1955-56 to 1959-60;
- c. the Second Five Year Plan, 1960-61 to 1964-65; and
- d. the Third Five Year Plan, 1965-66 to 1969-70.
- e. the Fourth Five Year Plan, 1970-71 to 1974-75<sup>23</sup>

From 1947 to 1953, there was no serious efforts to develop a well-defined development plan. This was a transitional period, characterized by serious dislocation and disruption of normal lives in Pakistan. In 1953, a

<sup>21</sup>Gustav Papanek, D.M. Schydrowsky and J.J. Stern, Decision Making for Economic Development. (Boston: Houghton Mifflin Company, 1971), p. 18.

<sup>22</sup>The Times (London), February 26, 1966.

<sup>23</sup>The plan was launched in July 1970; on the 23rd of March 1970, the military crackdown upon the breakaway East Pakistan began, throwing the entire economy out of gear.

Planning Board (later named Planning Commission) was created. This was the first serious attempt to promote development in Pakistan and by 1955 the Board produced the Draft First Five Year Plan, 1955-60.

The government of Pakistan played a dominant role in the development policies and their implementations. This is because at the time of the Partition, there were some efficient Muslim civil service officers experienced in the British Indian administration; they joined Pakistan and it was, as expected, upon them the major responsibility of development and construction was laid.

Available evidence suggests that, over 1947-1959, Pakistan's national income managed to "barely" exceed the population growth rate of approximately 2.3 per cent per annum.<sup>24</sup>

Until 1958, Pakistan experienced frequent changes in government. This instability was reflected in Pakistan's frequent changes in development policies and priorities, for during this period chaos and pessimism were sweeping the country and the economic viability of Pakistan was put to serious test.

In October 1958, Pakistan witnessed the military coup d'état by General Ayub Khan. This new regime, despite its autocratic and ruthless rules,

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<sup>24</sup>Gustav Papanek, Pakistan's Development: Social Goals and Private Incentives. (Cambridge, Mass.: Harvard University Press, 1967), p. 5.

brought, among other things, much-needed political stability and made economic development its fundamental goal; in concrete terms, the Planning Commission got a status-lift: the President himself became the chairman of the Commission in 1961 and pulled the commission up to a dignified Division in the President's Secretariat. The Deputy Chairman became the executive head of the Commission with the status of a central minister.

The political instability virtually wrecked the First Five Year Plan,<sup>25</sup> the new stability now enabled the government to maintain long-needed continuity and consistency of the development programs. The result was impressive. The Second Five Year Plan, in terms of attaining the national targets,<sup>26</sup> was a success.

Among other goals, the removal of disparity in per capita income between East and West Pakistan received the utmost attention of the government. The concern was reflected in General Ayub's 1962 constitution (Article 145, clause 3) and the disparity-removal became a constitutional obligation. Both the Second Plans and the Third Plans explicitly incorporated this objective.

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<sup>25</sup>One should, however, note that some infra-structure was in fact built during this period and in that sense the plan was not really a total failure. Total investment during the period of the First Plan was only Rs 9.7 billion (i.e. 10 per cent less than the plan target). The increase of national income could not reach the target of 5 per cent per year.

<sup>26</sup>Planning Commission, Government of Pakistan, The Final Evaluation of the Second Plan, 1960-65. (Islamabad, Dec. 1966).

And it is here that the government of Pakistan failed miserably. The major source of political instability prior to 1958 was the denial of the General Election in Pakistan by the government in power. This meant that the people of East Pakistan, who were the majority in all Pakistan, were outside the political and economic decision-making process. The West-Pakistani dominated government did favour the economic growth of West Pakistan, while they largely neglected it in East Pakistan.

From October 1958 to March 1969, General Ayub Khan ruled with an iron hand; the autocratic policy of the regime generated tremendous unrest in both territorial wings. In March 1969, Ayub stepped down and handed over the presidency to another General, Yahya Khan, who presided over the dismemberment of Pakistan. There then followed the most repressive military crackdown on the breakaway East Pakistan.

The following chapter provides an analysis of the causes and consequences of regional disparities between the two wings of Pakistan - - - the disparity that tore the country apart.



Chapter 5

Regional disparities and development process:

The case of Pakistan

### Introduction

It is now well recognized that a development process generates regional disparities. Perroux's<sup>1</sup> theory of 'pôle de croissance', Myrdal's<sup>2</sup> thesis of "Backwash and Spread" effects, and Hirschman's<sup>3</sup> concern with 'dualism and polarization effects', underscore the existence and persistence of such regional disparities. The major point these theories make is the 'inevitability' of the emergence of 'growing points' or 'growth poles' (pôle de croissance) as development gets under way. Hirschman claims that the existence of regional disparities is a "condition of growth itself."<sup>4</sup>

Recently, on the basis of 19th and 20th century Italian, Brazilian, French, Swedish, German, American, and Canadian experience, Williamson has attempted to establish the hypothesis: "increasing regional inequality is generated during the early development stages, while mature growth ...

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<sup>1</sup>F. Perroux, "Note sur la notion de 'pôle de croissance'", Matériaux pour une analyse de la croissance économique, Cahiers de l'Institut de Science Economique Appliquée, Série D, No. 8, 1955.

<sup>2</sup>Gunnar Myrdal, Economic Theory and Underdeveloped Regions. (London: Methuen & Co., 1957), chapter 3.

<sup>3</sup>Albert O. Hirschman, The Strategy of Economic Development. (New Haven: Yale University Press, 1958), chapter 10.

<sup>4</sup>Ibid., p. 184.

(produces) regional convergence or a reduction in differentials."<sup>5</sup> Calculating  $V_w$  (a weighted coefficient of variation which measures the dispersion of the regional income per capita levels relative to the national average while each regional deviation is weighted by its share in the population)<sup>6</sup> for sixteen countries since the mid-late 1940's, Williamson provides an interesting table (see Table 5.1).

Table 5.1 shows that India experiences a rise in  $V_w$  ('regional divergence'); Italy, a stability; Brazil and Spain, a decline (regional 'convergence').

The purpose of this chapter is to analyze the disparity trend in Pakistan, particularly in the Williamsonian sense.

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<sup>5</sup>Jeffery G. Williamson, "Regional Inequality and the Process of National Development: A Description of the Patterns", Economic Development and Cultural Change, Vol. XII, No. 4, Part II, July 1965, p. 44.

For a criticism of the methodology adopted by Williamson, see Benjamin Higgins, Regional Disparities and National Welfare (Harris and Partners Lecture Series, II, York University, March 5, 1970), pp. 22-23.

<sup>6</sup>In symbol

$$V_w = \frac{\sqrt{\sum_i (Y_i - \bar{Y})^2 \frac{f_i}{n}}}{\bar{Y}}$$

- $f_i$  = population of the  $i$ th region  
 $n$  = national population  
 $Y_i$  = p.c. Income of the  $i$ th region  
 $\bar{Y}$  = national income per capita

Table 5.1  
 Secular changes in  $V_w$  during the postwar period

Income Class	$V_w$ rising	$V_w$ stable	$V_w$ falling
I		Australia U.K.	Canada U.S. Sweden
II			Finland West Germany Netherlands Norway
III			
IV		Italy	Spain Brazil
V	Japan Yugoslavia		
VI			
VII	India		

Source: J.G. Williamson, "Regional Inequality and the Process of National Development," Economic Development & Cultural Change, July Pakistan 1965, p.17

The 'Power élite'

Economic exploitation must be accompanied by political domination; Pakistan provides a classic example. At the initial stage, the 'power élite' of Pakistan comprised persons on the top echelons in the civil service,

industrialists and landlords.

Almost all belonging to this power élite came from West Pakistan. Tables 5.2 and 5.3 compare the role of Bengalis in the civil service under the 19th and the 20th century.

In 1893, Muslims from Bengal captured 127 seats, occupying the fourth position among other provinces in India (Table 5.2). Religion aside, Bengal captured the highest number of civil service seats in India and Burma taken together. This preponderance of Bengalis in the cream strata of Indian administration underlines the rich and long historical and cultural heritage of Bengal --- a background that produced an impressive array of civil service officers. Long ago, a reputed Indian philosopher, Gokhale, made a comment: "What Bengal thinks today, India thinks tomorrow."

Now we examine the list of civil service officers in 1965-70 in Pakistan. Table 5.3 speaks for itself: there was none from East Bengal until 1968; in 1969, only one managed to get into the 'core' of 10 (Table 5.3). Needless to say, West Pakistanis, mostly the Punjabis, occupied virtually all the sensitive areas of the decision-making process in Pakistan.

With General Ayub Khan's coup d'état in 1958, the 'power élite', mainly consisting of landlords, businessmen and civil service officers, was broadened to include the military élite. In Pakistan army, East Pakistanis who constitute the majority of the total population were virtually left out. K.B. Sayeed recently pointed out:

Table 5.2

Civil list of the provinces including Burma

October 1893

Province	Numbers		Total	Percentages	
	Muslim	Hindu		Muslim	Hindus
(1) The Punjab	162	312	474	34.2	65.8
(2) Sindh	114	206	320	35.6	64.4
(3) Bengal	127	1190	1317	9.6	90.4
(4) Northwestern and the Awadh	439	660	1099	39.9	60.1
(5) Central Province	225	496	721	31.2	68.8
(6) Bombay	62	938	1000	6.2	93.8
(7) Madras	38	590	628	6.5	93.95
(8) Assam	16	199	215	7.5	92.5
(9) Burma	18	425	443	4.1	95.9

Source: Hafez Malik, "Sir Sayyid Ahmad Khan's Contribution to the Development of Muslim Nationalism in India", Modern Asian Studies, Vol. 4, No. 2, p. 146.

The Pakistan army has been almost entirely recruited from four districts of northern Punjab (Rawalpindi, Chambellpur, Jhelum and Gujrat) and two districts of the Frontier province (Peshawas and Kohat). Sixty per cent of the Army is Punjabi and 35 per cent is Pathan.<sup>7</sup>

The remaining five per cent constituted Baluchis, Sindhis (all from West Pakistan) and East Pakistanis. It is hard not to think that the West-Pakistani dominated government deliberately kept East Pakistanis out of the army barrack.

When the civil élite is joined by the military élite, the combination is deadly. To monopolize the combination, came another significant development: "the emergence of interlocking business and family relationships between the civil service, the military and the business groups."<sup>8</sup> The result was the emergence of the Twelve Big Houses that controlled 80 per cent of the total wealth of Pakistan.<sup>9</sup> Table 5.4 provides a summary of social and business backgrounds of the "Twelve Big Houses".

Thus, in 1958, the emergence of the military regime unified the mutually 'struggling' industrial, agrarian and military élites, all entrenched in West Pakistan.<sup>10</sup> This powerful coalition turned out to be disastrous for

<sup>7</sup>K.B. Sayeed, "The Breakdown of Pakistan's Political System", International Journal, Vol. XXVII, No. 3, Summer 1972.

<sup>8</sup>Ibid., p. 392.

<sup>9</sup> Newsweek gives the number of Big Houses as 22. According to this source, they "owned and controlled 66 per cent of Pakistan's industry, some 80 per cent of its banking and insurance assets and vast tracts of the country's best farmland". Newsweek, January 10, 1972, p. 26.

<sup>10</sup>A. MacEwan, Development Alternatives in Pakistan. (Harvard Ph.D. Thesis, 1968; unpublished), p. 13.

Table 5.3

## Background of civil service officers in influential positions 1965-70

Year	West Pakistan	Urdu- speaking Indian provinces	East Pakistan	Others	Positions held
1965	9 Punjab	4	0	1	foreign affairs; agriculture and works; cabinet; establishment division; home & Kashmir; economic affairs; communications; industries & natural resources; defence; secretary to president; finance; investment promotion bureau; WAFDA; information & broadcasting
1966	9 Punjab	3	0	1	foreign affairs; agriculture & works; defence; home & Kashmir; economic affairs; communications; secretary to president; cabinet; industries & natural resources; finance; investment promotion; WAFDA; information & broadcasting
1967	8 Punjab 1 Frontier	3	0	0	secretary to president; communications cabinet; foreign affairs; industries & natural resources; deputy chairman, planning commission; agriculture & works; economic affairs; investment promotion; planning division; finance; information & broadcasting
1968	7 Punjab 1 Frontier	2	0	0	foreign affairs; agriculture & works; deputy chairman, planning commission; cabinet; industries & natural resources; planning division; finance; information & broadcasting; economic affairs; defence
1969	7 Punjab 1 Frontier	2	1	0	foreign affairs; agriculture & works; deputy chairman, planning commission; cabinet; economic affairs; industries & natural resources; planning division; finance; communications; information & broadcasting
1970	5 Punjab 1 Frontier 1 Sind	0	2	0	chairman and managing director, Steel Mills Corp.; deputy chairman, planning commission; defence; cabinet; planning division; industries & natural resources; finance; communications; agriculture & works

Source: Graduation lists of the civil service of Pakistan for the years 1965 through 1970.  
 Quoted from: K.E. Sayeed, "The Breakdown of Pakistan's Political System", International Journal, vol. XVII, No. 3, Summer 1972, p. 391.



Table 5.4

Summary of social and business background of the

'Power Elite'<sup>a/</sup>: twelve big houses

Name	Community	Family Origin	Business Headquarters Location, Pre-1947
1. Dawood....	Memon	Kathiawar (Bantva)	Bombay
2. Habib.....	Khoja Isnasheri	Bombay	Bombay
3. Adamjee...	Memon	Kathiawar (Jetpur)	Calcutta
4. Crescent..	Punjabi Sheikh	Western Punjab (Chiniot)	Delhi
5. Saigol....	Punjabi Sheikh	Western Punjab (Chakwal)	Calcutta
6. Valika....	Dawoodi Bohra	Bombay	Bombay
7. Eyesons...	(None)	Madras	Madras
8. Bawany....	Memon	Kathiawar (Jetpur)	Rangoon
9. Amin.....	Punjabi Sheikh	Western Punjab	Calcutta
10. Wazirali..	(None, Syed)	Western Punjab (Lahore)	Lahore
11. Fancy.....	Khoja Ismaili	Kathiawar	East Africa
12. Colony....	Punjabi Sheikh	Western Punjab (Chiniot)	Lahore

Source: Hana Papanek, "Pakistan's Big Businessmen...", Economic Development and Cultural Change, Vol. 21, No. 1, October 1972, p. 27.

<sup>a/</sup>"The power élite is composed of men whose positions enable them to transcend the ordinary environments of ordinary men and women; they are in positions to make decisions having major consequences . . . they are in command of the major hierarchies and organizations . . . they occupy the strategic command posts of the social structure, in which are now centered the effective means of the power and the wealth and the celebrity which they enjoy": C. Wright Mills, The Power Elite. (New York: Oxford University Press, 1956), pp. 3-4.

East Pakistanis. The set of development policies adopted by the military regime had serious regional biases favoring West Pakistan at the expense of East.

It is notable that, on the average, 61 per cent of total central expenditure of Pakistan over more than a decade and a half went to the defence. (see Appendix E). This is quite high for a less developed country like Pakistan.

It can be seen from Table 5.5 that Pakistan's level of defence expenditure were in fact one of the highest among Southeast Asian countries. Except for South Korea, India, and Indonesia, Pakistan's armed forces were the largest in Southeast Asia.

Turning from Defence to Development, the intensity of regional disparity increases many fold.

Since the inception of Pakistan, East Pakistani economists and intellectuals insisted on treating the two wings of Pakistan --- East and West --- as two separate and distinct economic units.

In 1954, at the Conference of East Pakistani economists on the First Plan, it was recorded:

For purposes of development planning, particularly for the creation of employment opportunities, Pakistan should be conceived of as consisting of two economic units.<sup>11</sup>

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<sup>11</sup> Planning Commission, Reports of the Advisory Panels for the Fourth Five Year Plan, 1970-75 (volume 1), July 1970, p. 92.

Table 5.5  
Basic data on armed forces of New Nations, 1965

Country	Population (million)	Total <sup>a/</sup> Armed Forces	Total Officers	Per cent Army	Level of expenditure
<u>South &amp; South East Asia:</u>					
Pakistan	86.8	260,000	13,000	90	Very high
South Vietnam	13.8	205,000	.....	96	Very high
South Korea	23.8	650,000	.....	..	Very high
Afghanistan	13.2	90,000	.....	100	Very high
India	402.6	550,000	.....	88	High
Indonesia	90.0	350,000	15,000	88	High
Burma	20.5	149,000	5,000	94	High
Nepal	9.0	45,000	.....	100	High
Malaya	6.7	8,000	.....	98	High
Philippines	24.7	21,500	.....	97	Moderate
Ceylon	9.6	8,881	548	61	Moderate
Thailand	21.9	134,000	.....	80	Moderate
Cambodia	4.9	28,000	2,000	97	Moderate

a/ Includes regular army, navy and air force personnel who are on active duty and does not include different types of auxiliary reserves, civilian defense forces, or special frontier guards and national police units, which are very large in some countries. Includes military police units.

Source: Janowitz, Morris, The Military in the Political Development of New Nations: An Essay in Comparative Analysis. (Chicago: Univ. of Chicago Press, 1964; 2nd Impression, 1965), pp. 20-21.

As usual, West-Pakistani-dominated planning authorities turned deaf ears to such proposals. The First Plan (1955-60), however, noted: "because there is little or no movement of people between the two wings, it is necessary that economic opportunities should move to the people rather than the people to economic opportunities".

A close study of the pre-plan (1948-49 through 1954-55) and Plan periods (the First Plan, 1955-60; the Second Plan, 1959-65; and the Third Plan, 1965-70) clearly reveals the case of regional disparities in Pakistan as a history of systematic and deliberate policies, political and economic, adopted by the West-Pakistani dominated government to subordinate the interests of East Wing to those of the West.

It should be noted that the interwing socio-cultural and political differences (in some cases, diametrically opposite), reinforced by the interwing spatial discontinuity, makes Pakistan's problem of regional disparity unique; besides, Pakistan --- unlike Brazil, Italy and many others --- finds interwing transmission of development impulses hard to achieve. That is, the "spread effect" of development efforts between the two wings is weak. Further, in a very few countries in the world does a country experiencing regional disparities have its lagging region contain the majority of the population, as is the case in Pakistan, East Pakistan, the backward region, contains over 55 per cent of the total population.

### Entrepreneurship and Disparity

One of the major reasons for the inter-wing divergent economic disparities in Pakistan has been the lop-sided development of entrepreneurial supply.

It is well known that the growth of industrial entrepreneurship in any region (or country) depends, among other things, upon the social infra-structure, the conducive political climate, the high professional morality, and the growth of financial and management institutions. In short, a favourable "socioeconomic milieu" is a sine qua non for the rise of entrepreneurship.<sup>12</sup>

For the attainment of development-momentum, an LDC economy requires a set of indigenous industrial entrepreneurs.

It is frequently observed that, at the time of the partition, West Pakistan was fortunate to get a set of immigrants from India, who were essentially industrial entrepreneurs. On the other hand, a large number of 'Hindu' entrepreneurs migrated to India from East Pakistan, draining away most of the technical skills.

As a result, entrepreneurs in West Pakistan utilized "resources" more efficiently than East Pakistan, gaining a substantial lead from the very beginning at the regional race of development. Then the 'chain' started

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<sup>12</sup> Richard Cantillon and Jean-Baptiste Say of 18th century were the first to stress the role of entrepreneurs. Later on development economists such as J. Schumpeter, E. Hagen, and B. Higgins did put heavy emphasis on it.

Since the advanced region could utilize capital more profitably, planners would allocate more capital there; more capital the region got, more it became advanced. Thus, the rich became richer and the poor, poorer. As far as Pakistan is concerned, this is a truth, but not the whole truth.

Muslims in India, during the British period, were basically landlords, soldiers, peasants and some government employees. Very few of them became industrialists. Three major non-moslem communities - - - the MARWARIS, the PARSIS and the GUJRATIS - - - were controlling the nerve-centre of banking and modern industry in India.

Many of them, along with their capital, moved to India from Pakistan; being non-moslems, they were not feeling secure there. This big transfer of human population affected the 'industrial entrepreneurial structure' of India and Pakistan. However, the structural disturbance mainly went against Pakistan. From India, a few Moslem traders came to Pakistan.

Papanek points out:

None [of them] had a large investment in industry before 1947 and all derived their income primarily from trade. What evidence exists does not suggest that these groups had high status in the past; on the contrary, they were traders and stood midway in the social hierarchy.<sup>13</sup>

However, in this respect, West Pakistan had a slight advantage over East Pakistan. Traditionally, Bengalis attached "low" value to the

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<sup>13</sup>Gustav F. Papanek, "The Development of Entrepreneurship", in Peter Kilby (Ed.), Entrepreneurship and Economic Development. (New York: The Free Press, 1971), p. 326.

persons engaged in "trade".<sup>14</sup> Perhaps the prolonged exploitation of Bengalis by alien traders made them associate "trade" with "trachery", "intrigue", and "black-mailing".

However, the evidence suggests that some Bengalis made abortive attempts in the early 19th century to emerge as successful entrepreneurs.

Nafziger points out:

The lack of indigenous entrepreneurship in Bengal ... stems in part from the discrimination and duplicity of the British in the nineteenth century and the low esteem placed on business occupations. In the early nineteenth century, participation of Bengalis in activities competitive with the British, such as international trade, resulted in the subsequent exclusion of Bengalis from modern business.<sup>15</sup>

Strictly speaking, neither West Pakistan nor East had any substantial amount of "entrepreneurial resources" in 1947. As Papanek puts it:

Pakistan ... had little industry, even for an underdeveloped country, at independence in 1947 ...

Yet by 1959, industry's contribution to a much larger national income was over 6 per cent (...)

<sup>14</sup> Concerning the causes of Bengalis' antipathy towards business, see Blair B. King, "Obstacles to Entrepreneurship in India: The Case of Bengal", Paper Presented to the Congress of Orientalists (University of Michigan, Ann Arbor, Michigan, August 1967).

<sup>15</sup> E. Wayne Nafziger, "Indian Entrepreneurship: A Survey", in Peter Kilby (Ed.), Entrepreneurship and Economic Development. (New York: The Free Press, 1971), p. 301. Legend has it that when any enterprising Bengali youth wanted to acquire some knowledge and information about foreign markets, he was told by the British East Indian Company that "Ginger-trader (petty trader) should not poke nose into the shipping affair (AADAR-BAPARIR JAHAJER KHONJ NEBAR DARKAR KI)".

(...) [as compared with 1 per cent in 1959]. Industrial assets had increased ninefold and value-added more than tenfold.<sup>16</sup>

While rapid industrial development was under way in Pakistan, Bengali Muslims from East Pakistan remain underrepresented. West Pakistan planners gave various reasons for this underrepresentation, one popular being the inexperience of East Pakistanis in trade and commerce.

But this is a weak argument. As noted above, Muslims, both in East and West Pakistan, were traditionally farmers, soldiers, artisans, landlords and government employees. To a significant extent, neither region had any significant advantage over the other as far as "entrepreneurial supply" was concerned.

The main reason for the underrepresentation by the East was unequal distribution of economic opportunities, which came on a large scale after the independence, between the two-wings. The Government of Pakistan, largely staffed by West Pakistanis, is mainly responsible for such a lopsided distribution.

It is now well-recognized that the government plays an increasingly larger role in providing strategic "development inputs". For example, a government finances infrastructure and education, helping form "a major part of the physical and human capital stock" in a country.

In case of Pakistan, all evidences suggest that East Pakistan got

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<sup>16</sup>Papanek, op. cit., pp. 319-320.



step-motherly treatment from the government; for obvious reasons, West Pakistan enjoyed the maximum advantage.

Over a period of 18 years (1947-1965), Pakistan, in addition to substantial grants, received from major donor countries nearly 12 billion rupees in the form of project loans. Number of these projects - - - most of them were tied - - - stood at 179. The distribution of these projects between two wings, between economic groups, and between the private, public and semi-public sectors, as shown in Table 5.6, reveals an interesting pattern that explains, to a significant extent, the entrepreneurial lead of the West-Wing over the East.

Table 5.6 depicts quite clearly the lop-sided interwing distribution of projects by the government of Pakistan.

Out of 179 projects, 41 projects went to the private sector in West Pakistan; the private sector in East Pakistan got only 9. Aside the projects that were given under the general head "Pakistan" of which 80 per cent went to West Pakistan, we see that, in manufacturing industry, East Pakistan got only 6 projects out of total 63 projects; West Pakistan captured 22.

The deliberate policy of the government of Pakistan to boost up the private sector in the West Wing largely succeeded. But, unfortunately, East Pakistan's private sector was almost completely neglected. Not for nothing.

Table 5.6  
Distribution of foreign projects (loans)<sup>a/</sup> in Pakistan  
1947-1965

	Agriculture	Manufacturing	Transport & Utilities Communication	Commerce	Others	Total
<b>PAKISTAN<sup>b/</sup></b>						
Government	1	6	21	7	11	12
Semi-government	4	5	3	1	-	-
Private	-	24	5	5	-	1
Subtotal	5	35	29	13	11	13
<b>EAST PAKISTAN (East Wing)</b>						
Provincial government	3	-	6	3	-	2
Semi-government	3	5	-	2	-	-
Private	-	1	-	-	-	1
Subtotal	6	6	6	5	-	3
<b>WEST PAKISTAN (West Wing)</b>						
Provincial government	4	2	3	3	1	2
Semi-government	-	11	6	2	-	-
Private	-	9	-	2	-	2
Subtotal	4	22	9	7	1	4
TOTAL	15	63	44	25	12	20
						179

Source: Government of Pakistan, State Bank, External Debt Servicing Liability (Karachi, June 1965), pp. 43-56.  
a/ Nearly worth of Rs 12 billion.

b/ Projects which could not be identified wing-wise are recorded here. The split between East and West is usually assumed to be on a 20:80 basis.

East Pakistan was made virtually a captive market for West Pakistan's manufacturing products. A large amount of profit generated was re-invested in West Pakistan; neither did the government allow to grow any competition from within East Pakistan, nor did it permit it to buy manufactured goods from the cheapest source on the international market. It is a small that surprise any private sector could not develop in East Pakistan. The Planning Commission of Pakistan conceded:

Prices of similar goods have generally been higher in East Pakistan than in West Pakistan, the difference in prices sometimes far exceeding the cost of transport and distribution between the provinces.<sup>17</sup>

Had there been a geographical contiguity between East and West Pakistan, some of the adverse effects would have perhaps been neutralized by the "spread-effect". Unfortunately, the physical separation between the wings reduced the 'spread-effect' to zero in East Wing, thereby preventing a healthy growth of appropriate 'socio-cultural milieu' conducive to the growth of entrepreneurial ability there.

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<sup>17</sup>Planning Commission, Government of Pakistan, The Second Five Year Plan, 1965-70. (Islamabad, June 1960), p. 59.

### Development strategies

Pakistan's development strategies were mainly based on accelerating the development of West Pakistan through, among other things, the creation of a favourable climate, so necessary for developing a sound domestic private enterprise and attracting foreign private funds. At the same time, policies, industrial and commercial, were adopted to ward off the domestic entrepreneurs from East Pakistan.

It is clear from Table 5.7 that, during the Pre-Plan period, 80 per cent of the development expenditure was made in the West Wing; in the First Plan period, West Pakistan's share was still 74 per cent. This initial quantum-thrust in West Pakistan, combined with the influx of Indian entrepreneurs there, tipped the balance in favour of this region. The government trade policies, particularly the policy of OGL (Open General Licensing) simply discriminated against East Pakistanis; besides, the Licensing Authority was located in Karachi; naturally, Karachites and other West Pakistanis had greater access and, therefore, greater personal contacts with the authorities concerned. East Pakistanis, being away from Karachi by a thousand miles, were deprived of this privilege. Personal contacts breed favouritism, nepotism, and bribery. The location of decision-making bodies greatly explained the inflows of entrepreneurs from India and other countries into West Pakistan.

A recent study of the distribution of licenses by area show that, over the decade 1953 to 1963, 68 per cent of the value licensed went to West Pakistan and only 32 per cent to East Pakistan. Very few of those licences that were allocated to East Pakistan went to Bengalis; Beharis and other Urdu-speaking people who found close cultural affinity with the West Pakistanis got most of them.

Table 5.7  
Revenue and development expenditure in East and West Pakistan

Period	Revenue Expenditure	Development Plan Expenditure		Outside Plan Expenditure		Total Development expenditure (3+4+5)	Total Expenditure	Development Expenditure in Regions as per cent of All Pakistan Total
		Total	Public	Private	Indus Basin Programme			
1	2	3	4	5	6	7	8	
EAST PAKISTAN								
1950/51-1954/55	171	100	70	30	-	100	271	20%
1955/56-1959/60	254	270	197	73	-	270	524	26%
1960/61-1964/65	434	925	625	300	45	970	1,404	32%
1965/66-1969/70	648	1,656	1,106	550	-	1,656	2,141	36%
WEST PAKISTAN								
1950/51-1954/55	720	400	200	200	-	400	1,129	80%
1955/56-1959/60	898	757	464	293	-	757	1,655	74%
1960/61-1964/65	1,284	1,840	770	1,070	20	2,071	3,355	68%
1965/66-1969/70	2,223	2,610	1,010	1,600	-	2,970	5,195	64%

Notes: (a) Revenue Expenditure in East Pakistan is the expenditure of East Pakistan Government excluding debt service plus 15% Central Govt. expenditure on civil administration and 12% of its defence expenditure. The rest of Central Govt. expenditures and the expenditure of W.P. Govt. is shown as Revenue Expenditure in W. Pakistan. All transfer payments of Cent. Govt. i.e., debt services, grant-in-aid to provinces, and expenditure on foreign affairs have been excluded.

(b) Public sector development expenditure of the Provincial Govt. plus that of Central Govt. on projects located in the Province, mainly based on Planning Commission estimates. Private development expenditure as estimated by Planning Commission.

(c) 1 crore = 10 million

Source: Planning Commission, Govt. of Pakistan, Reports of the Advisory Panels for the Fourth Five Year Plan, 1970-75. (Islamabad, July 1970), vol. 1, p. 25.

Table 5.8 illustrates the trend of the interwing regional disparity in Pakistan: Columns (3) and (4) show that the interwing disparity is on the increase.

Williamsonian disparity index for Pakistan

For assessing and analyzing the regional disparity trend in Pakistan, Williamson's formula is applied to construct the disparity index<sup>18</sup> for Pakistan for the period 1949-50 through 1969-70. Column 5 of Table 5.9 shows the index values and presents a picture of 'regional divergence'.

Between the period 1949 and 1958, the interwing regional disparities, as can be seen in column 5 of Table 5.9, were significant, though any definite trend could not be discerned.

From 1960-61 through 1969-70, a definite pattern did emerge: the divergent disparity (Table 5.9). During the highly successful Second Plan and the moderately successful Third Plan periods, the Williamsonian disparity index ( $V_w$ ) reveals a persistently increasing trend. This is clearly disturbing when the explicit objectives of both the Second and Third Plans were to narrow down the interwing disparity; in 1962, General Ayub's constitution made the disparity removal a constitutional obligation: Article 145, clause (3) of the constitution calls for the plan formulations "to ensure that disparities between the Provinces, and between different areas as within a

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<sup>18</sup>The index ( $V_w$ ) is defined "a weighted coefficient of variation which measures the dispersion of the regional income per capita relative to the national average while each regional deviation is weighted by its share in the national population." Williamson, op. cit., p. 11.

Table 5.8

Per capita GDP in East and West Pakistan at 1959-60 constant prices

		(1)	(2)	$3=(2)\div(1)$	(4)
		Per Capita GDP East	Per Capita GDP West	West-East Disparity Ratio	Index of Disparity
1959-60	..	269	355	1.32	100
1960-61	..	277	363	1.31	97
1961-62	..	286	376	1.31	197
1962-63	..	277	393	1.42	111
1963-64	..	299	408	1.36	113
1964-65	..	293	426	1.45	141
1965-66	..	295	427	1.45	141
1966-67	..	290	448	1.54	169
1967-68	..	307	468	1.52	163
1968-69	..	312	490	1.57	178
1969-70	..	314	504	1.61	191
Growth over the decade		17%	42%	--	--
Growth in Third Plan Period	..	7%	18%		

Source: Planning Commission, Govt. of Pakistan, Reports of the Advisory Panels for the Fourth Five Year Plan, 1970-75. (Islamabad, July 1970), vol. 1, p. 22.

Table 5.9  
Williamsonian disparity index for Pakistan 1949-50 to 1969-70

	(1)	(2)	(3)	(4)	(5)	
Year	East Pakistan pc Income (Rs) Y <sub>1</sub>	West Pakistan pc Income (Rs) Y <sub>2</sub>	East Pakistan population (in million) f <sub>1</sub>	West Pakistan population (in million) f <sub>2</sub>	Williamsonian dispar- ity Index V <sub>w</sub> = $\frac{\sqrt{\sum (Y_i - \bar{Y})^2 (f_i/n)}}{\bar{Y}}$	
PRE PLAN	1949-50	288	351	42.90	35.88	0.1635
	1950-51	298	367	43.89	36.71	0.1045
	1951-52	295	347	44.90	37.55	0.0812
	1952-53	297	340	45.93	38.41	0.0676
	1953-54	295	365	46.90	39.30	0.1777
	1954-55	294	365	48.07	40.19	0.1085
FIR ST PLAN	1955-56	272	365	49.18	41.11	0.1475
	1956-57	294	367	50.31	42.06	0.1112
	1957-58	281	374	51.47	43.02	0.1461
	1958-59	269	371	52.65	44.01	0.1544
	1959-60	277	367	53.85	45.03	0.1405
S ECP PLAN	1960-61	286	375	55.25	46.20	0.1398
	1961-62	294	387	56.69	47.40	0.1421
	1962-63	285	405	58.16	48.63	0.1833
	1963-64	308	420	59.67	49.89	0.1776
	1964-65	303	440	61.22	51.19	0.2086
T HIR PLAN	1965-66	309	447	62.87	52.57	0.2168
	1966-67	305	471	64.57	53.99	0.2513
	1967-68	322	491	66.31	55.45	0.2638
	1968-69	326	514	68.09	56.95	0.2954
	1969-70	331	533	69.93	58.49	0.3086

Note: Columns 1 to 4 are taken from Planning Commission, Govt. of Pakistan, Reports of the Advisory Panels for the Fourth Five Year Plan, 1970-75. (Islamabad, July 1970), vol. 1, pp. 135-36; for the disparity coefficient, see J.G. Williamson, "Regional Inequality and the Process of National Development: A Description of the Patterns", Economic Development and Cultural Change, July 1965, p. 11.



Province, in relation to income per capita are removed and that the resources of Pakistan (including resources in foreign exchange) are used and allocated in such a manner as to achieve that object in the shortest possible time."

Thus, the government policies, economic and political, should have been designed to fulfill the solemn constitutional commitment, a national responsibility. Not only did the disparity fail to disappear, it in fact got wider and wider. The fact is that the government policies were never so designed as to translate the disparity removal plan into reality. That was the tragedy.

Table 5.10 shows the converging disparity trend of the United States, West Germany, and Brazil; a stable trend for Italy; and a divergent trend for Pakistan. It is clear that Pakistan's sincere and concrete attempts to solve the problem of disparity could perhaps have brought about the stable, if not convergent, pattern of the disparity and, thereby, could have forestalled the tragic disintegration.

Table 5.10  
Williamsonian disparity index for Five Nations

	Pakistan	Brazil <sup>a/</sup>	Italy <sup>b/</sup>	W.Germany <sup>c/</sup>	U.S. <sup>d/</sup> (by regions)	U.S. <sup>d*/</sup> (by states)
1949-50	0.164	0.713	..	..	..	0.212
<u>Pre-Plan</u>						
1950-51	0.104	0.732	..	0.221	0.193	0.218
1951-52	0.081	0.725	0.363	0.218	0.194	0.213
1952-53	0.068	0.781	0.384	0.213	0.189	0.209
1953-54	0.178	0.703	0.323	0.202	0.191	0.212
1954-55	0.108	0.711	0.331	0.197	0.182	0.208
<u>Pre-Plan Average:</u>	<u>0.109</u>					
1955-56	0.148	0.692	0.346	0.196	0.182	0.207
1956-57	0.111	0.690	0.348	0.191	0.184	0.211
1957-58	0.146	0.665	0.344	..	0.184	0.208
1958-59	0.154	0.635	0.348	..	0.171	0.201
1959-60	0.141	0.663	0.356	..	0.172	0.196
<u>First Plan Average:</u>	<u>0.140</u>					
1960-61	0.140	..	0.372	..	0.176	0.195
1961-62	0.142	..	..	..	0.167	0.192
1962-63	0.183	..	..	..	..	..
1963-64	0.178	..	..	..	..	..
1964-65	0.209	..	..	..	..	..
<u>Second Plan Average:</u>	<u>0.170</u>					
1965-66	0.218	..	..	..	..	..
1966-67	0.251	..	..	..	..	..
1967-68	0.264	..	..	..	..	..
1968-69	0.295	..	..	..	..	..
1969-70	0.309	..	..	..	..	..
<u>Third Plan Average:</u>	<u>0.267</u>					

Source: Table 5.9 and Williamson, op. cit.

Note: For a/, b/, c/, d/, d\*/ see Williamson, op. cit., pp.25-27.

Chapter 6

East and West Pakistan: A cluster analysis

The preceding chapter gives the impression that the interwing regional disparities in Pakistan increasingly widened since the military coup d'état in 1958. There we talked about two regions of Pakistan. Often one wonders whether these two regions --- East and West Pakistan --- which are separated from each other by more than a thousand miles of Indian territory, could properly be grouped to form a nation. Recently it has been pointed out:

In many ways East and West Pakistan have never been one country. Even at its strongest, the bond between East and West Pakistan was somewhat tenuous. They are physically more than 1,000 miles apart, the people speak different languages, have different cultures and different economies.<sup>1</sup>

There is much truth in the above statement and the purpose of the chapter is to establish the hypothesis: East and West Pakistan cannot be clustered together to form a group.

For this purpose, the Wroclaw Taxonomic Method has been used<sup>2</sup>.

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<sup>1</sup>The Permanent Mission of India to the United Nations (compiled), The Issue: Rule by Ballot, The Answer: Reign of Terror, A Grim Chronicle of the 72 million People of East Bengal. (New York, May 3, 1971), p. 6. (Original source: A paper received for the Rippon Society by G.F. Papanek, S.A. Marglin and J.L. Auspitz).

<sup>2</sup>For the details of the method, see the Appendix B.

This is a method of 'cluster analysis': the 'best' partition of  $n$  objects into  $g$  groups.<sup>3</sup> As M.R. Rao puts it:

Cluster analysis involves the problem of optimal partitioning of a given set of entities into a number of mutually exclusive and exhaustive clusters... the criterion for optimality depends heavily upon the application in which it is to be used.<sup>4</sup>

The criterion applied for assessing a 'cluster analysis' usually "operates such that the clusters which are formed are homogeneous 'within' a cluster (elements in a cluster are similar) and heterogeneous 'between' clusters (elements from different clusters are not alike)."<sup>5</sup>

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<sup>3</sup>For the philosophical problem of "an ultimate beginning" to the process of classification, see I.G. Good, "Categorization of Classification", Mathematics and Computer Science in Biology and Medicine. (London: HMSO, 1965); for problems of cluster analysis in the Behavioral and Life Sciences, see G. Ball, "Data Analysis in the Social Sciences", American Federation of Information Processing Societies Conference Proceedings. (Washington: Spartan Books, 1965), vol. 27, part I, pp. 533-560; for the purpose of discussing the relative merits of the various criteria for optimal partitioning in Cluster Analysis, see R.G. Sokal and P.H.A. Sneath, Principles of Numerical Taxonomy. (San Francisco: W.H. Freeman & Company, 1963).

<sup>4</sup>M.R. Rao, "Cluster Analysis and Mathematical Programming", Journal of American Statistical Association, Sept. 1971, pp. 622-626.

<sup>5</sup>H. Solomon and J.J. Fortier, "Clustering Procedures", in P.R. Krishnaiah (Ed.), Multivariate Analysis, Proceedings of an International Symposium held in Dayton, Ohio, June 14-19, 1965. (New York: Academic Press, 1966), p. 493.

### Cluster analysis of LDCs

The modern development literature divides the world into two broad categories:

- a. the developed countries (DCs); and
- b. the less developed countries (LDCs).

This classification is usually based on the basis of per capita real income which is now widely, though not generally, treated as the index of development.<sup>6</sup>

Calculating from the available statistics for 96 countries, Bhagwati has recently shown that countries with per capita GNP below the world mean (\$200 per year) may be classified as LDCs and those above are DCs.<sup>7</sup>

It is interesting to the keen development observers to note that more than ninety per cent of the LDCs so defined cluster themselves between and around the tropics of cancer and capricorn on our planet. It would be an interesting research to relate geographical distribution of resources, climate and human enterprise to 'development'. Here we shall not go into that field.

Since per capita (pc) real income is only one of the many other indicators of development, clustering on the basis of one indicator alone is

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<sup>6</sup>For the view that the per capita real income is inadequate as a basis of classification, see J. Viner, "The Economics of Underdevelopment", in A.N. Agarwala and S.P. Singh (Eds.), The Economics of Underdevelopment. (New York: Oxford University, 4th print, 1966), pp. 1-31.

<sup>7</sup>J. Bhagwati, The Economics of Underdeveloped Countries. (New York: McGraw-Hill, 1966), pp. 14-15.

obviously inadequate and may often be misleading. According to per capita income criterion, Kuwait and the United States should belong to one class. So will Nigeria and India. But we know that Kuwait is an oil-rich sparsely-populated underdeveloped country and, therefore, cannot be grouped with the United States.

On the other hand, India with her record of one of the first known civilizations on this planet dating back to four/five millennium B.C. cannot be included with Nigeria which lacks a "minimum cultural base", though the per capita income in the two countries may be roughly equal.

In this respect, Professor Higgins' experience in Indonesia is of particular importance:

The Balinese village of Ubud has a population of perhaps 5,000 people, but it is known as an art centre even in that particularly artistic region of Bali. It has an art school and gallery, a school of music and dance, and several exquisite temple ...

Is this, then, an underdeveloped country? This lovely island where people can provide themselves with food, clothing, and shelter with about twenty hours' work a week, and devote the rest of their time to their religion and their arts?<sup>8</sup>

Contrasting this is Galbraith's experience in Bhutan:

Once more . . . I visited Bhutan, a lovely pastoral country of high mountains, rich forests, clear streams and --- it is commonly (...)

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<sup>8</sup>Higgins, op. cit., 8.

(...) supposed --- a modestly declining population. It is indubitably underdeveloped. It has no industry, airport, railroad, post offices, television, department store, diplomacy, bureaucracy or settled capital. The thought occurred to me that the world should build a fence around it and protect it from development. But I quickly recovered my sense of balance.<sup>9</sup>

The concept of 'development' has been itself developed through a process of refinement over a long period of time. Yet surprisingly enough there does not seem to exist anywhere in the development literature a clear general definition of this concept. The accounts given are usually the reflections of the authors' concern, i.e. that 'development' is what authors think it to be. It is hard to choose among the two alternative ways of living, say, the satisfaction derived from 'navel-watching' and that from 'TV-watching' when one is associated with one or the other.

Professor Higgins has rightly pointed out that a country declares itself underdeveloped when it applies to one or more countries for 'material' assistance, whatever the reason.<sup>10</sup>

#### The need for cluster analysis

There is a growing and alarming tendency among development economists to treat LDCs as a class ignoring both the stages and levels of 'development' of LDCs. This is clearly disturbing. The natural outcome of such a

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<sup>9</sup>J.K. Galbraith, "Underdevelopment: An Approach to Classification", in D. Kirvine (Ed.), Fiscal and Monetary Problems in Developing States. (New York: Frederic A. Praeger, 1967), p. 21, no. 6.

<sup>10</sup>Higgins, op. cit.



tendency has been to offer some free-swinging set of policy prescriptions for the less developed world.

### Galbraith classification

Recently Galbraith has attempted to classify LDCs into three classes on the basis of "the obstacle or combination of obstacles" which turns out to be the 'effective' barrier to development. These three classes are presented below with the major barrier in parentheses.

Model I : The Sub-Sahara African Model

(Lack of a minimum cultural base)

examples: Ghana, Nigeria, Congo, etc...

Model II : The Latin-American Model

(The presence of non-functional elite power groups who are constantly in competition with each other)

examples: Brazil, Chile, etc...

Model III: The South Asian Model

### The Model III

Galbraith notes: "For purposes of identification, I have associated Model III with South Asia. The clearest proto-types are, indeed, India and Pakistan, although it has application to the United Arab Republic, in limited measure to Indonesia..."<sup>11</sup>

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<sup>11</sup>Galbraith, op. cit., p. 30.

Here, according to Galbraith, the effective barrier to development is neither the absence of minimum cultural base nor the presence of non-functional elite power groups. It is 'capital shortage' which is the binding constraint on 'development'.

Galbraith's classification suffers from the following inadequacies:

- (a) non-quantifiable criteria used in the classification (except the Model III);
- (b) small countries with "monocultural economy" which can form a group by themselves have been ignored.

On the whole, the classification does provide insights into the countries concerned and would at least prevent economists from treating all countries as a "class".

#### South Asian LDCs and Pakistan

In the process of establishing our hypothesis, the following steps are followed:

- (I) The Galbrathian Model III is extended by the application of the Wroclaw Taxonomic Method (W.T.M.) in the sense of meaningfully classifying South Asian LDCs into some homogeneous groups.
- (II) By virtue of the same technique, East Pakistan (now Bangladesh) is shown to be a distinct region. To group it with West Pakistan was unwise. Yet the policy of the Pakistan government was to treat Pakistan as "one economy"; as

noted above, as early as the launching of the First Five Year Plan in 1955, East Pakistani economists insisted that the two wings be treated as two separate economies. The dismemberment of Pakistan can be attributed, to a great extent, to the misleading policy of treating the two wings as one class (economy)

### Method

We selected 17 South Asian countries and six development indices, namely per capita (pc) GNP, per capita (pc) Energy Consumption, Doctors per 10,000, Hospital beds per 1,000, population growth rate, and Phones per 1,000. These indices of Economic, Health, and Cultural development, and the Demographic index were chosen because of the availability of data for all the countries concerned. See Table 6.1. Also notice that we have two other South Asian countries in the Table 6.1 --- Hongkong and South Korea. These two countries will be used to test the effectiveness of the Wroclaw Taxonomic Method.

The application of Wroclaw Taxonomic Method to 17 LDCs in Asia resulted in six clusters (See Optimal Graph 6.I, accompanied by Tables 6.2, 6.3, 6.4):<sup>12</sup>

Group I : Philippines, Iran, Turkey, Taiwan and Malaya.

Group II : Thailand, Ceylon and India.

Group III: Indonesia, Laos.

Group IV : Pakistan (Formerly W. Pakistan), Burma and Afghanistan.

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<sup>12</sup>For the details of Wroclaw Taxonomy, see Appendix B.

Table 6.1

Characteristics of the points (COUNTRIES) : Composite Index of Development

Points (countries)	Index of Economic Development		Index of Health Development		Demographic Index	Index of Cultural Development
	p.c. GNP (in 1964 US \$)	p.c. Energy Cons (in kilogram of coal equivalents)	Doctors per 10,000	Hospital beds per 10,000		
(1) Afghanistan	\$ 66	27	0.50	1.74	2.0%	0.60
(2) Burma	60	52	1.00	9.73	2.10	0.80
(3) Cambodia	118	51	0.40	7.59	2.20	0.90
(4) Ceylon	147	112	2.30	34.10	2.60	4.40
(5) Taiwan	219	726	4.90	9.55	3.00	17.50
(6) Pakistan (formerly West Pak.)	32	66	0.14	0.49	2.30	1.50
(7) Bangladesh (formerly East Pak.)	24	27	0.11	0.15	1.80	0.30
(8) Philippines	151	236	10.60	13.74	3.50	6.00
(9) Singapore	544	637	7.30	40.18	2.50	54.30
(10) Thailand	125	175	1.50	9.20	3.10	3.00
(11) Turkey	267	422	4.10	17.38	2.50	11.50
(12) India	86	176	3.50	5.86	2.40	2.00
(13) Indonesia	91	99	0.40	6.88	2.40	1.50
(14) Iran	232	451	3.20	11.13	3.10	8.40
(15) Laos	67	41	0.40	6.07	2.50	0.90
(16) Malaya	269	424	2.10	39.34	3.00	14.80
(17) Nepal	65	10	0.20	1.44	1.90	0.40
(18) Hong Kong	533	787	4.80	35.81	2.30	92.30
(19) South Korea	139	567	4.50	8.00	2.60	11.50

PRIMARY SOURCES: L.L. Bean, M.R. Khan, A.R. Rukunuddin, Population Projections for Pakistan, 1960-2000. Karachi: Pakistan Institute of Development Economics, January 1968, pp. 20-23; p. 14, p. 13; R. Dorfman, E.S. Mason, S.A. Marglin, Conflict in East Pakistan: Background and Prospects. Revised April 9, 1971; Memo.; U.N. Statistical Yearbook, U.N. Demographic Yearbook, UNESCO Statistical Yearbook, FAO Production Yearbook.

OPTIMAL GRAPH 6.1 (W.T.M.)

Composite  
OPTIMAL GRAPH 6.1: Index of Economic  
SIX INDICES  
SEVENTEEN SOUTH ASIAN COUNTRIES  
(C.M.D. = 3.40)

( Only the length & direction of the arrows are relevant; the graphic arrangement is arbitrary)

1 = 1.0000

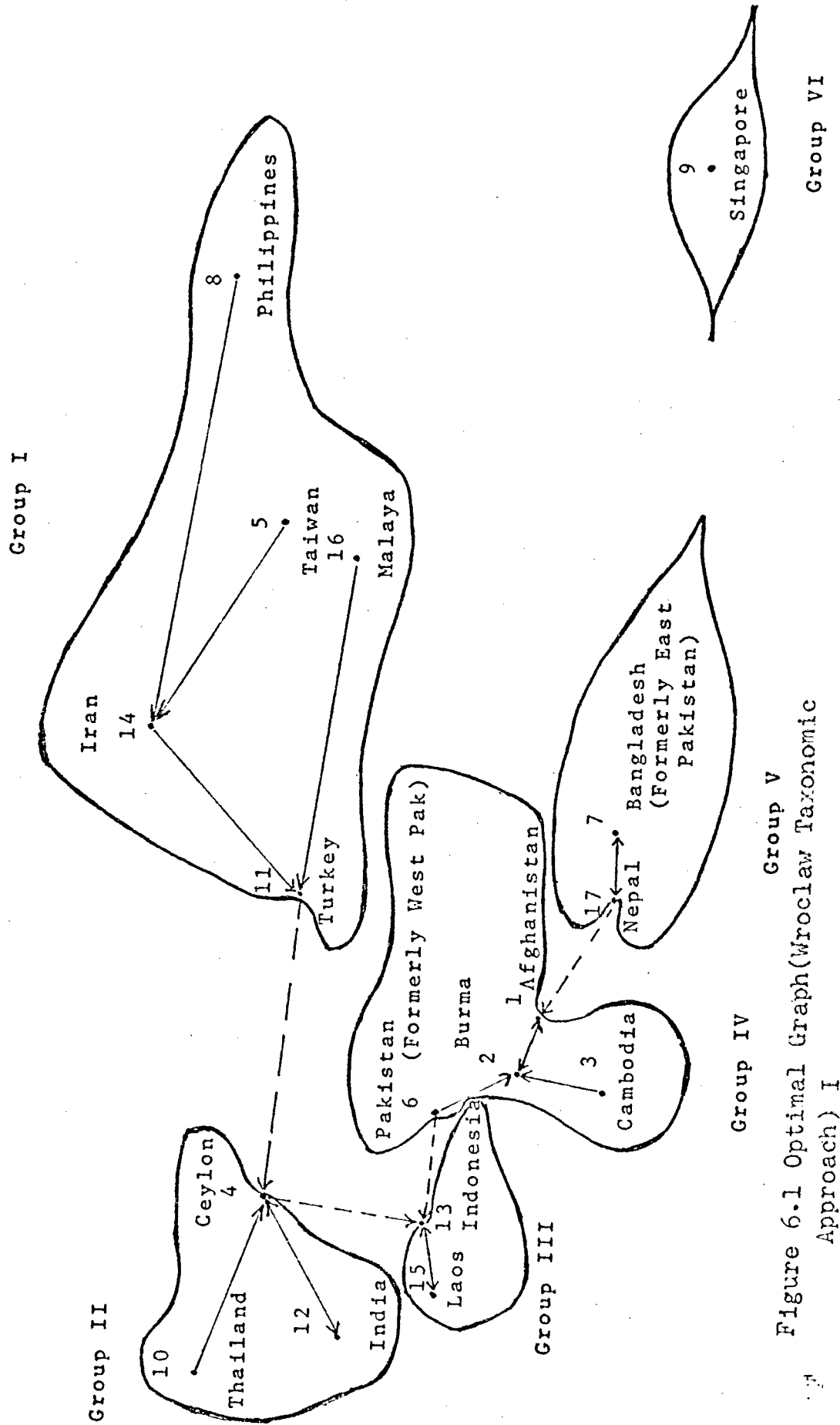


Figure 6.1 Optimal Graph (Wroclaw Taxonomic Approach) I

Table 6.2

## Taxonomic Method Index of Economic Development

## Variables included:

- 1- pc GNP (in US \$) : per capita GNP  
 2- pc EC : per capita Energy Consumption  
 3- Docs : Doctors per 10,000  
 4- Hosp Beds : Hospital beds per 10,000  
 5- Population growth rate: (%)  
 6- Phones : (phones per 1000)

Countries	Pattern <sup>1</sup>	Measure <sup>2</sup>	Rank
1. Afghanistan	8.40	0.81	12
2. Burma	8.22	0.79	10
3. Cambodia	8.02	0.77	9
4. Ceylon	7.10	0.68	6
5. Taiwan	5.02	0.48	2
6. Pakistan (formerly West Pakistan)	8.26	0.80	11
7. Bangladesh (formerly East Pakistan)	9.10	0.88	14
8. Philippines	5.80	0.56	5
9. Singapore	2.49	0.24	1
10. Thailand	7.14	0.69	7
11. Turkey	5.60	0.54	4
12. India	7.48	0.72	8
13. Indonesia	8.01	0.77	9
14. Iran	5.81	0.56	5
15. Laos	8.18	0.79	10
16. Malaya	5.15	0.50	3
17. Nepal	8.84	0.85	13

1. No country has the highest value for all indicators composing a particular index. A hypothetical (ideal) country is created, comprising the highest (or best) value of all indicators within a particular index. A ranking of differences from this hypothetical (ideal) country is called the pattern of development (pattern).

2. 'Measure' is another way of ranking countries for a particular index or group of indicators. The 'ideal' (hypothetical) country is designated as '0', and a simulated percentage distribution from the 'ideal' is generated. For showing 'relative development', the 'measure of development' (measure) is a convenient way for the range is limited between 0.00 and 1.00.

Table 6.3  
Models of each country  
(C.M.D.= 3.40)

COUNTRIES	M			E			S		
	PRIMARY	D	SECONDARY	O	SECONDARY	L	TERTIARY	(THIRD)	
(1) Afghanistan	Burma	0.305869	Zero	Zero	0.305869	Zero	Zero	0.305869	
(2) Burma	Afghanistan	0.305869	Zero	Zero	0.305869	Zero	Zero	0.305869	
(3) Cambodia	Burma	0.556378	Afghanistan	Indonesia	0.613032	Zero	Zero	0.613032	
(4) Ceylon	India	1.008952	Indonesia	Indonesia	1.051962	Laos	Laos	1.167911	
(5) Taiwan	Iran	1.579526	Turkey	Turkey	1.913690	Malaya	Malaya	2.753904	
(6) Pakistan	Burma	0.581098	Indonesia	Indonesia	0.715631	Cambodia	Cambodia	0.735139	
(7) Bangladesh	Nepal	0.416048	Afghanistan	Afghanistan	1.143488	Cambodia	Cambodia	1.143488	
(8) Philippines	Iran	3.010205	Taiwan	Taiwan	3.360139	Thailand	Thailand	3.380595	
(9) Singapore	(Falls Beyond C.M.D.)								
(10) Thailand	Ceylon	4.465255	Turkey	Turkey	4.658857	Taiwan	Taiwan	4.689149	
(11) Turkey	Iran	1.204194	Laos	Laos	1.585192	Indonesia	Indonesia	1.639296	
(12) India	Iran	1.477971	Taiwan	Taiwan	1.913690	Ceylon	Ceylon	1.997092	
(13) Indonesia	Ceylon	1.008952	Indonesia	Indonesia	1.155526	Laos	Laos	1.236913	
(14) Iran	Laos	0.399447	Cambodia	Cambodia	0.702372	Pakistan	Pakistan	0.715631	
(15) Laos	Turkey	1.479871	Taiwan	Taiwan	1.579526	Thailand	Thailand	1.694046	
(16) Malaya	Indonesia	0.399447	Pakistan	Pakistan	0.750022	Cambodia	Cambodia	0.929614	
(17) Nepal	Turkey	2.189646	Iran	Iran	2.365487	Taiwan	Taiwan	2.753904	
	Bangladesh	0.416048	Afghanistan	Afghanistan	0.926001	Taiwan	Taiwan	0.926001	

Table 6.4

Taxonomic Method  
Index of Economic Development  
[Critical model distance (C.M.D.) = 3.407]

Countries	Composite Distance	Primary Models	Secondary Models	Tertiary Models
(1) Afghanistan ←	0.305869 →	(2) Burma	(4) --- 1.051962 → (13)	
(2) Burma ←	0.305869 →	(1) Afghanistan		
(3) Cambodia ←	0.556378 →	(2) Burma	(6) --- 0.715631 → (13)	
(4) Ceylon ←	1.008952 →	(12) India		
(5) Taiwan ←	1.579526 →	(14) Iran		
(6) Pakistan ←	0.581098 →	(2) Burma		
(7) Bangladesh ←	0.416048 →	(17) Nepal		
(8) Philippines ←	3.010205 →	(14) Iran		
(9) Singapore ←	4.465255 →	(falls above C.M.D.)		
(10) Thailand ←	1.204194 →	(4) Ceylon		
(11) Turkey ←	1.479871 →	(14) Iran	(11) -----→	1.952002 --- (4)
(12) India ←	1.008952 →	(4) Ceylon		
(13) Indonesia ←	0.399447 →	(15) Laos		
(14) Iran ←	1.479871 →	(11) Turkey		
(15) Laos ←	0.399447 →	(13) Indonesia		
(16) Malaya ←	2.189646 →	(11) Turkey		
(17) Nepal ←	0.416048 →	(7) Bangladesh		



Group V : Nepal, Bangladesh (formerly East Pakistan).

Group VI : Singapore.

The results look good.<sup>13</sup> The relatively successful regions (from a development point of view) have clustered into the Group I. Singapore, which is a highly urbanized and a very special country, finds herself alone in the Group VI (Optimal Graph 6.I).

Thailand, Ceylon and India, both historically, culturally and economically have long-established ties among each other and have rightly found themselves in the Group IV.

Some question may be raised as to the reasons for grouping Indonesia and Laos together. The recent failures of Indonesia to attain a target growth rate may perhaps be one reason why they should be together.

The most interesting group is group V. Notice Bangladesh and Pakistan belong to different groups though, until December 16, 1971, they were treated as belonging to one country.

Bangladesh (formerly East Pakistan) and West Pakistan have hardly anything in common. The former is separated from the latter by more than 1000 miles of Indian territory. Except for religion (Islam), the two regions differ, among other things, in language, diet, culture and climate. In effect, differences are fundamentals.

That the two regions of the same country had to separate is a small surprise to those who have studied closely the differences and

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<sup>13</sup>The results are suggestive but not conclusive.

similarities between East and West Pakistan.

Further, the grouping of Nepal with Bangladesh is very reasonable. Nepal is a neighbour of Bangladesh and, historically, the settlers in Bengal came more from the North of India (Nepal, Bhutan) than from the North-West. The level of poverty and development is almost the same between the two countries. See Table 6.2. Nepal and Bangladesh have ranked lowest in Column 3. Notice that Pakistan and Burma (both enjoy the military dictatorship) are ranked almost at the same level.

Further, Pakistan and Afghanistan have been placed in the same class. This is indeed what it should be: "An examination of the historical, cultural attributes of Afghanistan and Pakistan indicate that ... (they) share a common culture..."<sup>14</sup>

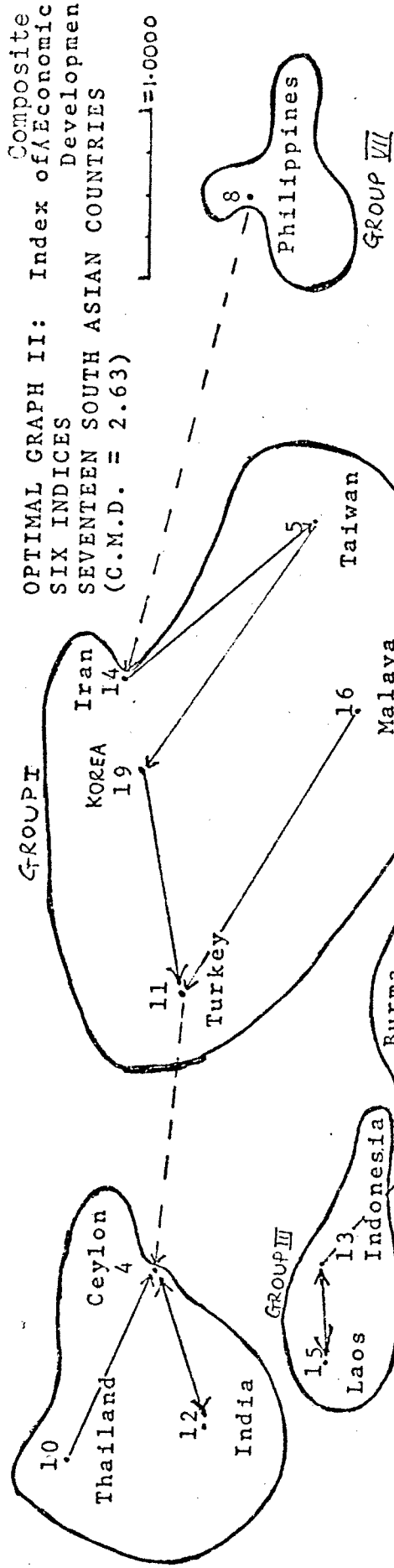
The second optimal graph (6.2) is based upon 19 South Asian countries. The purpose of applying the Wroclaw Taxonomic Method first on 17 countries and then on 19 countries was to see how these two new countries fit in the previous groupings.

We took two odd countries --- Korea (South) and Hongkong. We find that Hongkong has been placed in Group VI and Korea in Group I. Both Singapore and Hongkong are intensively urbanized and have many similar characteristics. Similarly, Korea, Malaya, Taiwan have shown a record of commendable development performance. Thus, both countries are well placed,

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<sup>14</sup> AFSR, vol. 1, No. 2, Spring 1972.

Group II OPTIMAL GRAPH 6.2 (W.T.M.)



(Note: Only the length & direction of the arrows are relevant; the graphic arrangement is arbitrary)

Figure 6.2 Optimal Graph (Wroclaw Taxonomic Approach) II

confirming the effectiveness of the Wroclaw Taxonomic Method.

The planners and authorities of Pakistan failed to recognize that the two regions (East and West) were in fact two distinct dissimilar units. Consequently, their common policies to both regions were ineffective and were mainly responsible for generating and perpetuating disparities between the two wings. The result was growing economic and social discontent which culminated in political revolution dividing Pakistan into two independent countries: Pakistan (formerly West Pakistan) and Bangladesh (formerly East Pakistan).

Chapter 7

The Two-Gap Model: An empirical analysis of Pakistan

This chapter contains the empirical results obtained from applying separately the conventional (Chenery-Weisskopf) two-gap model and our regionally disaggregated two-gap models on Pakistan for the period 1949-50 through 1964-65. The results are compared to show the effectiveness of our approach.

Before we display and analyze the findings, some discussions regarding data, period of observation and variables are in order.

#### Data

The reliability and availability of data of a less developed country have usually been one of the major problems faced by development economists. Even in a developed country often one runs into similar problems. As for Pakistan, the story is pretty much the same.

In 1964, the National Income Commission of Pakistan, appointed by the President Ayub Khan, noted:

Economic statistics of Pakistan do not meet the minimum requirements of a national account system which places rigorous demands on the quality of the basic data and on the manner in which these data are collected.<sup>1</sup>

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<sup>1</sup>Government of Pakistan, National Income Commission, Interim Report of the National Income Commission (Islamabad, 1964), p. 64.

Despite the usual shortcomings, the role of Central Statistical Office (CSO) of Pakistan and the Planning Commission in making many useful data available must be appreciated.

Our principal sources of data are: the major publications of the Planning Commission (including all the three five-year plans), the Ministry of Finance (Pakistan Economic Survey, 1969-70 and various other issues), the Ministry of Commerce (eg. Report of the Working Group on Import Policy), the Central Statistical Office (viz. Monthly Statistical Bulletin), and the State Bank of Pakistan (viz. Report on Currency and Finance).

Other sources include: UN, Statistical Year Book; UN, IMF, International Financial Statistics; Mahbubul Haq, The Strategy of Economic Planning: A Case Study of Pakistan (Dacca: Oxford Univ. Press, 1963).

#### Period of observation

Practical considerations have necessarily had a large influence on the selection of the period of observation. The period 1949-50 through 1964-65, was selected because the regional breakdown of all the relevant economic aggregates could not be found beyond that range.

Considering other major economic studies on Pakistan, our sample size of 16 should be considered a success. The advantages of the larger sample size in the regression analysis are well known; for instance, the larger the sample size, greater the range of variations of the explanatory variables and thus greater the "confidence" with which the regression coefficient can be used for projection.

### Variables expressed in per capita terms

Econometricians do recognize that any meaningful econometric analysis does require some kind of "stability" in the relationships between economic variables. One of the standard ways of getting such stable relationships is to transform the relevant variables in per capita figures, wherever possible.

In their celebrated econometric study, Houthakker and Taylor noted:

This is necessary [use of per capita figures] ... because per capita relationships are likely to be more meaningful and stable than relationships between aggregates.<sup>2</sup>

The need and significance of the use of per capita figures in case of Pakistan are greatly increased, considering the fact that about 55 per cent of the entire population lives in East Pakistan which covers only about 15 per cent of the total area of Pakistan; the remaining 45 per cent live in West Pakistan. Besides, there exists difference in the population growth rate between East (2.8%) and West (2.5%) Pakistan.

### Variables used

For the purpose of our empirical study, variables used are: Gross Domestic Product (Y), Total Imports (M), Gross Investment (I), Total Exports (E), Gross Domestic Savings (S), and Net Foreign Capital Inflows, defined as

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<sup>2</sup>H.S. Houthakker and L.D. Taylor, Consumer Demand in the United States, 1929-70 (Cambridge, Mass.: Harvard Univ. Press, 1966), p. 34.



the trade deficit (F). The superscripts E and W are used to indicate East and West Pakistan respectively.

Now we turn to the estimation of models.

The conventional (Chenery-Weisskopf) two-gap model

The general framework of two-gap analysis underlines the significance of identifying the constraint which is in fact binding; and the effectiveness of the role of foreign aid depends critically upon such identification.

The model encompasses the following three variants<sup>3</sup> (see Chapter 3 for details):

Case I: the savings constraint

$$I - bY = a + (1 + c) \bar{F} + d\bar{E} \dots\dots\dots(33')$$

$$Y = \bar{Y} \dots\dots\dots(35)$$

Case II: the hybrid constraint

$$I - bY = a + (1 + c) \bar{F} + d\bar{E} \dots\dots\dots(33')$$

$$I + \frac{\beta}{r} Y = -\frac{\alpha}{r} + \frac{1}{r} \bar{M} \dots\dots\dots(34)$$

Case III: the trade constraint

$$I + \frac{\beta}{r} Y = -\frac{\alpha}{r} + \frac{1}{r} \bar{M} \dots\dots\dots(34)$$

$$Y = \bar{Y} \dots\dots\dots(35)$$

<sup>3</sup>The bar (-) notation indicates that the variables concerned are exogeneous.

Solving these three separate simultaneous-equation models, we get the following three separate investment functions:

$$\text{Case I: } I = a + b\bar{Y} + d\bar{E} + (1 + c)\bar{F} \dots\dots\dots(36)$$

$$\text{Case II: } I = \lambda + v\bar{E} + n\bar{F} \dots\dots\dots(37)$$

$$\text{Case III: } I = -\frac{\alpha}{r} - \frac{\beta}{r}\bar{Y} + \frac{1}{r}\bar{M} \dots\dots\dots(38)$$

$$\text{where } \lambda = \frac{\alpha\beta - b\alpha}{\beta + br} \dots\dots\dots(39)$$

$$n = \frac{(1 + c)\beta + b}{\beta + br} \dots\dots\dots(40)$$

$$v = \frac{d\beta + b}{\beta + br} \dots\dots\dots(41)$$

Using time-series data of Pakistan for the period 1949-50 to 1964-65, the coefficients of the investment function in each case have been estimated by the multiple linear regression method.

Then we subjected these coefficients to the Weisskopf consistency Test (slightly modified) to see whether they conform to our a priori expectations about them. The following consistency test is set up to identify the binding constraint:

Case I The Savings constraint	Case II The hybrid constraint	Case III The Trade constraint	Remarks
OK	NO	NO	Case IA } Case IB } The Savings constraint
OK	OK	NO	
NO	OK	NO	Case II The Hybrid constraint
NO	NO	OK	Case IIIA } Case IIIB } The Trade constraint
NO	OK	OK	

Notice that in case of all three cases having OK's or NO's, the model fails to identify the binding constraint. It is expected that such cases are highly unlikely.

'OK' in the Consistency Table indicates that all the relevant coefficients are consistent (with respect to our a priori expectations) and significant at or above .50 level; in a case where all the coefficients are consistent and at least one or more are significant, we would give OK, indicating the fact that it is acceptable though the evidence is weak.

'NO' indicates that at least one of the relevant coefficients is inconsistent.

Table 7.1A summarizes the results obtained from the application of the three variants of the conventional two-gap model to the case of Pakistan for the period 1949-50 to 1964-65. Table 7.1A is condensed from Tables 7.1B, 7.1C and 7.1D and the consistency test table is added to it.

Case I (Table 7.1A, Case I or 7.1B, Case I)

Notice that the regression coefficient of per capita export earnings is negative while our a priori expectation about the sign of the coefficient is positive. Hence, the coefficient is inconsistent; besides the coefficient is not significant at .50 level. Therefore our conclusion is 'NO' and the implication is that, for Pakistan, the savings constraint cannot be considered to be a binding one.

Table 7.1A

Pakistan (1949-50 to 1964-65)

CASE	Dependent Variable	Constant	pcY	pcM	pcE	pcF	$\bar{R}^2$	D-W	CONSISTENCY TESTS (for binding constraint)			REMARKS	
									Savings Constraint	Hybrid Constraint	Trade Constraint		
									$\frac{\partial I}{\partial Y} > 0$	$\frac{\partial I}{\partial E} > 0$	$\frac{\partial I}{\partial F} > 0$	$\frac{\partial I}{\partial M} > 0$	
I. $pcI = \psi (pcY, pcE, pcF)$	pcI	-152.34 (-8.68)z/	0.62 (8.65)z/	..	-0.05 (-0.199)z/	0.21 (1.04)z/	0.96	2.31	a*	z°	g*	..	..
II. $pcI = \phi (pcE, pcF)$	pcI	-6.28 (-0.51)z/	..	..	1.13 (1.98)d/	1.72 (6.35)a/	0.72	1.57	..	..	d*	a*	..
III. $pcI = \lambda (pcY, pcM)$	pcI	-182.45 (-9.53)z/	0.74 (9.50)z/	-0.18 (-0.87)z/	..	..	0.96	2.31	..	..	..	..	a° g°

Note 1: Table 7.1A summarizes the results of Tables 7.1B, 7.1C and 7.1D that follow.

Note 2: t-values are reported in parantheses.

Note 3: a, b, c, d, e, f, g represent that the relevant coefficients are significant at .01, .02, .05, .10, .20, .25, .50 level of significance respectively; z indicates that the coefficient is not significant at .50 level.

Note 4: Star (\*) superscript indicates that the relevant coefficient is consistent with the a priori permissible range of value as reported on the corresponding column head; zero (0) superscript indicates that the coefficient is not consistent.

Note 5: pcI = per capita Investment; pcY= per capita GDP; pcE= per capita Exports; pcF= per capita Foreign resource inflow; and pcM= per capita Imports.

Note 6: For date see Appendix A.

Table 7.1B: Case I

CONVENTIONAL TWO-GAP MODEL ESTIMATED FOR PAKISTAN(1949-50 TO 1964-65)  
CASE I PC I=H(PC Y, PC E, PC F)PAK SAVINGS CONSTRAINT

LINEAR MULTIPLE REGRESSION

NO. OF VARIABLES= 4 NO. OF OBS.= 16

SUM OF Y 561.6491697706

VARIABLE NO. 30 73 77 78

SUMS 16.000000000 4787.4025033888 301.3302474521 185.8123430509

REGRESSION COEFF. -152.3362343380 .6215434624 -.0519831738 .2115806383

STANDARD ERRORS 17.5423006076 .0718830245 .2612417480 .2039282064

STUDENTS T -8.6839370585 8.6465958610 -.1989849410 1.0375251273

ERROR VAR.= .1453074E+02 S.E.E.= .3811921E+01 C.O.V.(PER CENT)= 10.85536 R2= .966606 RB2= .958258

ANALYSIS OF RESIDUALS

SUM OF SQUARED RESIDUALS 174.3688556751

(U(T) - U(T-1))\*2 372.1782228923

DURBIN-WATSON STATISTIC 2.1344306095 NOBS= 16

R2 FROM RESIDUALS .9666062967

30 = Constant; 73 = pcY(P); 77 = pcE(P); 78 = pcF(P).

Table 7.1C: Case II

CONVENTIONAL TWO-GAP MODEL ESTIMATED FOR PAKISTAN(1949-50 TO 1964-65)  
CASE II PC I=H(PC E, PC F) PAK HYBRID CONSTRAINT

LINEAR MULTIPLE REGRESSION

NO. OF VARIABLES= 3 NO. OF OBS.= 16

SUM OF Y 561.8491697706

VARIABLE NO. 30 77 78

SUMS 16.0000000000 301.3302474521 185.8123430509

REGRESSION COEFF. -6.2809323327 1.1345333504 1.7247232699

STANDARD ERRORS 12.2282223330 .5742951176 .2704865740

STUDENTS T -.5136423072 1.9755232382 6.3763729356

ERROR VAR.= .9697996E+02 S.E.E.= .9847840E+01 C.O.V.(PER CENT)= 28.04408 R2= .758553 R82= .721408

ANALYSIS OF RESIDUALS

SUM OF SQUARED RESIDUALS 1269.7394278277

(U(T) - U(T-1))\*2 1981.4591755017

DURBIN-WATSON STATISTIC 1.5716643200 NOBS= 16

R2 FROM RESIDUALS .7585534513

30 = Constant; 77 = pcE(P); 78 = pcF(P).

Table 7.1D: Case III

CONVENTIONAL TWO-GAP MODEL ESTIMATED FOR PAKISTAN(1949-50 TO 1964-65)  
CASE III PC I-H(PC Y,PC M) PAK TRADE CONSTRAINT

LINEAR MULTIPLE REGRESSION

NO. OF VARIABLES= 3 NO. OF OBS.= 16

SUM OF Y 561.8491697706

VARIABLE NO. 30 73 76

SUMS 16.000000000 4787.4025033888 394.0275993974

REGRESSION COEFF. -182.4504026187 .7416323002 -.1762229827

STANDARD ERRORS 19.1428326290 .0780895764 .2024622810

STUDENTS T -9.5310033968 9.4971996786 -.8703990777

ERROR VAR.= .1473797E+02 S.E.E.= .3839006E+01 C.O.V.(PER CENT)= 10.93249 R2= .963308 RB2= .957663

ANALYSIS OF RESIDUALS

SUM OF SQUARED RESIDUALS 191.5935648886

(U(T) - U(T-1))^2 443.0253983690

DURBIN-WATSON STATISTIC 2.3123187808 NOBS= 16

R2 FROM RESIDUALS .9633075606

30 = Constant; 73 = pcY(P); 76 = pcM(P).

Case III (Table 7.1A, Case III or Table 7.1D, Case III)

The situation is worse here. Both the coefficients of the investment function are inconsistent: the coefficient of per capita GDP (pcY) is expected to be negative, while it is found to be positive; then again while the coefficient of per capita imports (pcM) is expected to be positive, it turns out to be negative. Here also our conclusion is 'NO', implying that the trade constraint cannot be considered as a binding one.

Case II (Table 7.1A, Case II or Table 7.1C, Case II)

As we turn our eyes to Case II, it looks deceptively good. The coefficient of per capita export earnings (pcE) is 1.13 and significant at .10 level. Our a priori expectation is positive and hence the coefficient is consistent as well as significant; the coefficient of per capita net foreign resource inflows (pcF) is 1.72 and significant at .01 level, indicating that the coefficient is consistent with our a priori expectation. One is almost tempted to accept it as a meaningful case.

However, we reject this case as a basis for formulating a sound policy decision. The point is elaborated below.

Reasons for rejecting Case II as a basis for formulating policy decisionsSituation (Pakistan; Table 7.1A)

Case I : NO

Case II : OK

Case III: NO



Investment functions: (all variables are expressed in per capita figures)

Case	Function	A priori expectation about coefficients
Case I	$I = a + b\bar{Y} + d\bar{E} + (1 + c)\bar{F}$	$b \geq 0 \quad 1 + c \leq 1 \quad d \geq 0$ $c \leq 0$
Case II	$I = \lambda + v\bar{E} + n\bar{F}$	$n > 0 \quad v > 0$
Case III	$I = -\frac{x}{r} - \frac{\beta}{r}\bar{Y} + \frac{1}{r}\bar{M}$	$\hat{b} = -\frac{\beta}{r} < 0 \quad \frac{1}{r} > 1$ $\beta > 0 \quad r > 0$ $r > 0$

Note:  $b$  = Marginal Propensity to save out of GDP(Y)

$c$  = Marginal response of saving to net foreign capital inflow (F)

$d$  = Marginal response of saving to export earnings (E)

$\beta$  = The marginal import content of GDP (Y)

$r$  = The marginal import content of gross investment (I)

$n = [(1 + c)\beta + b] / (\beta + br)$  ;  $v = (d\beta + b) / (\beta + br)$

#### The Weisskopf experience

In his experimentation with 44 less developed countries, Weisskopf observes that the results are "consistent with Case II in almost every country".<sup>4</sup> (emphasis added)

<sup>4</sup>Weisskopf, op. cit., (Restat), p. 74.

Faced with this situation, he argues: "this would not be surprising, in view of the lack of precision characterizing the a priori expectations about the values of the coefficients consistent with Case II".<sup>5</sup>

This 'lack of precision' is clear when one examines more carefully the coefficients of the Investment function in Case II. These coefficients, as noted earlier, are:

$$v(\text{the coeff. of } \bar{E}) = \frac{d\beta + b}{\beta + br} : v = \Psi(d, b, \beta, r)$$

$$n(\text{the coeff. of } \bar{F}) = \frac{(1+c)\beta + b}{\beta + br} : n = \Psi(c, b, \beta, r)$$

Given the following a priori expectations about the original parameters:

$$b \geq 0; c \leq 0; d \geq 0; \beta > 0; \text{ and } r > 0.$$

All that can be said categorically is that  $n$  and  $v$  must be positive. The "cut-off value dividing the consistent from the inconsistent range was therefore set at zero".<sup>6</sup>

It is a small surprise that Weiskopf, regarding the test for the Case II, would come to this conclusion:

Closer examination of the test for Case II reveals that it is in fact a relatively weak test: the permissible range defined for  $n = \partial I / \partial \bar{F}$  and  $v = \partial I / \partial \bar{E}$  .. is  $> 0$ ; yet for plausible values of the original parameters ( $b, c, d, \beta$  and  $r$ ),  $n$  and  $v$  could easily assume substantial positive values...

<sup>5</sup>Ibid.

<sup>6</sup>Ibid.

... This suggests that for many countries the cut-off value might appropriately be much higher than zero, in which case the frequency of results consistent with Case II would be diminished.<sup>7</sup>

In other words, the appropriate cut-off value for the coefficients in Case II cannot be determined (and hence the weakness of the test) unless the plausible values of the original parameters could be estimated. That is, unless both Investment functions in Case I and Case III are meaningfully estimated, Case II becomes a hopeless case.

#### Our experience

Our experience involving Pakistan is very close to that of Weisskopf.

In all the three situations involving Pakistan, East Pakistan, and West Pakistan (Tables 7.1A, 7.2A, and 7.3A) the results are found to be consistent with Case II, further confirming the Weisskopf finding; 'the test in this case may be relatively weak.'

In order to find the 'appropriate' cut-off value of the coefficients,  $n$  and  $v$ , we, as noted earlier, must know the plausible values of  $b$ ,  $c$ ,  $d$ ,  $\beta$  and  $r$ .

Table 7.1A shows that, in case of Pakistan,  $d$ , the coefficient of  $\bar{E}$  (Case I) is both inconsistent and not significant (at .50 level);  $\frac{1}{r}$ , the coefficient of  $\bar{M}$  (Case III) is inconsistent; and  $-\frac{\beta}{r}$ , the coefficient of  $\bar{Y}$

<sup>7</sup>Weisskopf, op. cit., (JIE), p. 34.

(Case III) is inconsistent.

In the absence of plausible (estimated) values of  $d$ ,  $\beta$  and  $r$ , no 'appropriate' cut-off value of the coefficients  $n$  and  $v$  in Case II dividing the consistent from the inconsistent range could be determined, leaving room for the results to be inconsistent with Case II.

Conclusions about Case II (Table 7.1A)

In the context of Weisskopf's experience with 44 countries and our experience involving Pakistan and its two regions, we find the consistency test for Case II is indeed 'relatively weak'.

Since the three variants of the two-gap model as applied to Pakistan failed to yield the plausible values of the relevant parameters to help determine the appropriate 'cut-off' value for the coefficients of  $n$  and  $v$  in Case II, the hybrid constraint case is rejected as a basis for formulating sound policy decisions.

Thus, the conventional two-gap model in case of Pakistan and, by implication, other countries suffering from divergent regional disparities, is not well-suited for making sound policy decisions.

THE REGIONALLY DISAGGREGATED TWO-GAP MODELS

Pakistan is divided into two regions - - - East and West Pakistan. Theoretical considerations, as discussed in Chapter 3, strongly justify the regional disaggregation of the two-gap model in case of Pakistan - - - a country whose two regions are separated by over 1,000 miles of foreign territory and a 3,000 mile sea voyage.

The empirical results obtained from the application of the regionally disaggregated models on East and West Pakistan for the period 1949-50 to 1964-65 are given in Tables 7.2A and 7.3A.

East Pakistan

Table 7.2A involves the estimation of three types of investment functions, each type representing the form of constraint which is in fact binding upon the regional economy of East Pakistan.

Case III (Table 7.2A)

Let us first consider Case III (the trade constraint case). The coefficient of  $pcY^E$  is positive while it is expected to be negative; then again the coefficient of  $pcM^E$  is less than unity while it is supposed to exceed it. Thus both the coefficients are inconsistent, implying that the trade constraint is not relevant.

Notice that the trade constraint is also not relevant in case of West Pakistan (Table 7.3A, Case III) where, for the same reasons mentioned above, the coefficients are inconsistent.

Table 7.2A

East Pakistan (1949-50 to 1964-65)

CONSISTENCY TESTS

(For the binding constraint)  
 Savings Hybrid Trade  
 Constraint Constraint Constraint  
 $\frac{\partial L^E}{\partial Y^E} \geq 0$   $\frac{\partial L^E}{\partial E^E} \geq 0$   $\frac{\partial L^E}{\partial F^E} < 1$   $\frac{\partial L^E}{\partial E^E} > 0$   $\frac{\partial L^E}{\partial F^E} > 0$   $\frac{\partial L^E}{\partial Y^E} < 0$   $\frac{\partial L^E}{\partial E^E} > 0$   $\frac{\partial L^E}{\partial F^E} > 0$   $\frac{\partial L^E}{\partial Y^E} < 0$   $\frac{\partial L^E}{\partial E^E} > 0$   $\frac{\partial L^E}{\partial F^E} > 0$

CASE	Dependent variable	Constant	pcY <sup>E</sup>	pcM <sup>E</sup>	pcE <sup>E</sup>	pcF <sup>E</sup>	R <sup>2</sup>	D-W	a*	f*	d*	c*	a*	REMARKS
I. $pcI^E$ $\psi(pcY^E, pcE^E, pcF^E)$	$pcI^E$	-104.17 (-3.40)z/	0.43 (3.41)z/	..	0.47 (1.21)z/	0.54 (2.12)z/	0.81	1.50	a*	f*	d*	..	..	.. Strong Savings Constr.
II. $pcI^E$ $\phi(pcE^E, pcF^E)$	$pcI^E$	-2.42 (-0.26)z/	..	..	1.07 (2.30)z/	1.20 (5.28)z/	0.65	0.81	..	..	..	c*	a*	..
III. $pcI^E$ $g(pcY^E, pcM^E)$	$pcI^E$	-110.75 (-3.82)z/	0.46 (3.82)z/	0.62 (1.97)z/	..	..	0.81	1.84	..	..	..	..	a <sup>o</sup>	f <sup>o</sup>

Note 1: Table 7.2A summarizes the results of Tables 7.2B, 7.2C and 7.2D that follow.

Note 2: t-values are reported in parantheses.

Note 3: a, b, c, d, e, f, g represent that the relevant coefficients are significant at .01, .02, .05, .10, .20, .25, .50 level of significance respectively; z indicates that the coefficient is not significant at .50 level.

Note 4: Star (\*) superscript indicates that the relevant coefficient is consistent with the a priori permissible range of values as reported on the corresponding column head; zero (o) superscript indicates that the coefficient is not consistent.

Note 5: pcI= per capita Investment; pcY= per capita GDP; pcE= per capita Exports; pcF= per capita Foreign resource inflows; and pcM= per capita Imports.

Note 6: For data see Appendix A.

Table 7.2B: Case I

AHMAD REGIONALLY DISAGGREGATED TWO-GAP MODEL (1949-50 TO 1964-65)  
CASE I PC I=H(PC Y, PC E, PC F) EAST SAVINGS CONSTRAINT

LINEAR MULTIPLE REGRESSION

NO. OF VARIABLES= 4 NO. OF OBS.= 16

SUM OF Y 324.8685112689

VARIABLE NO. 30 58 70

SUMS 16.000000000 4249.8965026042 313.0584563585 22.6670379890

REGRESSION COEFF. -104.1710266110 .4310164703 .4713537214 .5412387335

STANDARD ERRORS 30.6554793323 .1264615367 .3900149166 .2556422660

STUDENTS T -3.3981209519 3.4082811376 1.2085530612 2.1171723360

ERROR VAR.= .2751048E+02 S.E.E.= .5245044E+01 C.O.V.(PER CENT)= 25.83220 R2= .845677 RB2= .807097

ANALYSIS OF RESIDUALS

SUM OF SQUARED RESIDUALS 330.1257870927

(U(T) - U(T-1))^2 495.7881849077

DURBIN-WATSON STATISTIC 1.5018159874 NOBS= 16

R2 FROM RESIDUALS .8456772167

30 = Constant; 58 = PcY(East); 68 = pcE(East); 70 = pcF(East).

Table 7.2C: Case II

AHMAD REGIONALLY DISAGGREGATED TWO-GAP MODEL (1949-50 TO 1964-65)  
CASE II PC I=H(PC E, PC F) EAST HYBRID CONSTRAINT

LINEAR MULTIPLE REGRESSION

NO. OF VARIABLES= 3 NO. OF OBS.= 16

SUM OF Y 324.8685112689

VARIABLE NO. 30 68 70

SUMS 16.0000000000 313.0584563585 22.6670379890

REGRESSION COEFF. -2.4243893605 1.0749496888 1.1971855699

STANDARD ERRORS 9.3933624733 .4683554256 .2267935220

STUDENTS T -.2580959975 2.2951579721 5.2787467610

ERROR VAR.= .4997677E+02 S.E.E.= .7069425E+01 C.O.V.(PER CENT)= 34.81741 R2= .696288 RB2= .649563

ANALYSIS OF RESIDUALS

SUM OF SQUARED RESIDUALS 649.6980116277

(U(T) - U(T-1))\*2 523.698727728

DURBIN-WATSON STATISTIC .8060649154 NOBS= 16

R2 FROM RESIDUALS .6962878716

30 = Constant; 68 = pcE(East); 70 = pcF(East).



Table 7.2D: Case III

ARWAD REGIONALLY DISAGGREGATED TWO-GAP MODEL (1949-50 TO 1964-65)  
CASE III PC I-H (PC Y, PC M) EAST TRADE CONSTRAINT

LINEAR MULTIPLE REGRESSION

NO. OF VARIABLES=	3	NO. OF OBS.=	16
SUM OF Y	324.8685112689		
VARIABLE NO.	30	58	64
SUMS	16.0000000000	4249.8965026042	221.8091484324
REGRESSION COEFF.	-110.7482845101	.4609946578	.6206303060
STANDARD ERRORS	29.0176156213	.1208284423	.3156847743
STUDENTS T	-3.8165880324	3.8152826356	1.9659811195

ERROR VAR.= .2703163E+02 S.E.E.= .5199195E+01 C.O.V. (PER CENT)= 25.60640 R2= .835727 RB2= .810454

ANALYSIS OF RESIDUALS

SUM OF SQUARED RESIDUALS	351.4111970241
(U(T) - U(T-1))*2	647.0745761224
CURBIN-WATSON STATISTIC	1.8413601547
R2 FROM RESIDUALS	.8357269982
	NOBS= 16

30 = Constant; 58 = pcY(East); 64 = pcM(East).

Thus, it is interesting to note that the trade constraint is not binding either in the national model (Table 7.1A) or in the regional models (Tables 7.2A and 7.3A).

Surprisingly, almost all the two-gap empirical analysis of Pakistan have explicitly or implicitly considered the trade constraint as the binding one. The most notable studies are: Chenery and Strout<sup>8</sup> and Chenery and MacEwan<sup>9</sup>.

#### Cases I and II (Table 7.2A)

The results show that both Case I (the savings constraint) and Case II (the hybrid constraint) are valid. According to our criteria of consistency (as outlined above), East Pakistan belongs to Case I<sub>B</sub>, representing the fact that the savings constraint is in fact binding.

#### Reasons for selecting Case I (and rejecting Case II) for East Pakistan (Table 7.2A)

(i) The adjusted multiple correlation coefficient ( $\bar{R}^2$ ) for Case I is 0.81; for case II, 0.65. That is, while for Case I, 81 per cent of the variance of the dependent variable (per capita Investment<sup>E</sup>) is accounted for by the explanatory variables, for Case II it is only 65 per cent.

(ii) The Durbin-Watson (DW) statistic for Case I is 1.502; for Case II, 0.806. With 16 observations and a regression involving three

<sup>8</sup>Chenery and Strout, op. cit.

<sup>9</sup>Chenery and MacEwan, op. cit.

independent variables and a constant term (Case I), Durbin and Watson give a probability of 5 per cent for a value of D-W between 0.86 ( $d_L$ ) and 1.73 ( $d_u$ ).<sup>10</sup>

Thus, for Case I, the existence of 'positive' serial correlation of residuals cannot be proved, though it cannot be denied. We might take the benefit of doubt in favour of the non-existence of the positive serial correlation.

With the same observation range and a regression involving two independent variables and a constant term (Case II), values of  $d_L$  and  $d_u$  are 0.98 and 1.54 respectively. Hence, it is clear that, in Case II, there exists a clear case of positive serial correlation of residuals.

(iii) Case II, as compared to Case I, involves a test which is 'relatively weak'. (See the earlier arguments for rejecting Case II in case of Pakistan).

#### West Pakistan

As noted earlier, Case III is not valid for West Pakistan. The choice lies between Case I and Case II. The pick is rather difficult (Table 7.3A).

For both the cases, D-W statistic is 1.4, falling in the 'inconclusive range'; all the relevant coefficients in both cases are consistent.

In Case I, the coefficient of per capita export earnings ( $pcE^W$ ) is

<sup>10</sup> $d_L$  = Lower limit of D-W;  $d_u$  = Upper limit of D-W.

Table 7.3A

West Pakistan (1949-50 to 1964-65)

Dependent variable	Constant	pcY <sup>W</sup>	pcM <sup>W</sup>	pcE <sup>W</sup>	pcF <sup>W</sup>	R <sup>2</sup>	D-W	CONSISTENCY TESTS (For the binding constraint)				REMARKS	
								Savings Constraint	Hybrid Constraint	Trade Constraint	Savings Constr.		
I. $\frac{pcI^W}{\bar{Y}}(pcY^W, pcE^W, pcF^W)$	-144.84 (-8.00)z/(9.169)z	0.54 (9.169)z	..	0.20 (0.68)z	0.33 (1.86)z	0.93	1.37	a*	z*	d*	..	..	Weak Savings Constr.
II. $\frac{pcI^W}{\bar{Y}}(pcE^W, pcF^W)$	8.22 (0.43)z	..	..	0.59 (0.76)z	1.43 (3.94)z	0.48	1.40	..	..	g*	a*	..	..
III. $\frac{pcI^W}{\bar{Y}}(pcY^W, pcM^W)$	-158.35 (-6.22)z	0.62 (6.27)z	0.001 (0.004)z	..	..	0.92	1.07	..	..	..	..	a <sup>o</sup>	z <sup>o</sup>

Note 1: Table 7.3A summarizes the results of Tables 7.3B, 7.3C and 7.3D that follow.

Note 2: t-values are reported in parantheses.

Note 3: a, b, c, d, e, f, g represent that the relevant coefficients are significant at .01, .02, .05, .10, .20, .25, .50 level of significance respectively; z indicates that the coefficient is not significant at .50 level.

Note 4: Star (\*) superscript indicates that the relevant coefficient is consistent with the a priori permissible range of values as reported on the corresponding column head; zero (o) superscript indicates that the coefficient is not consistent.

Note 5: pcI= per capita Investment; pcY= per capita GDP; pcE= per capita Exports; pcF= per capita Foreign resource Inflows; and pcM= per capita Imports.

Note 6: For data see appendix A.

Table 7.3B: Case I

AHMAD REGIONALLY DISAGGREGATED TWO-GAP MODEL (1949-50 TO 1964-65)  
CASE I PC I=HIPC Y, PC E, PC F) WEST SAVINGS CONSTRAINT

LINEAR MULTIPLE-REGRESSION

NO. OF VARIABLES= 4 NO. OF OBS.= 16

SUM OF Y 845.2712298429

VARIABLE NO. 30

59

71

SUMS 16.0000000000 5430.2411100870 287.3029918290 380.9337886954

REGRESSION COEFF. -144.8429372123 .5487123392 .1956523346 .3331456176

STANDARD ERRORS 18.0994454493 .0598405372 .2871805989 .1793329120

STUDENTS T -8.0026172303 9.1695757639 .6812867420 1.8576936815

ERROR VAR.= .5144819E+02 S.E.E.= .7172739E+01 C.O.V.(PER CENT)= 13.57716 R2= .943368 R82= .929209

ANALYSIS OF RESIDUALS

SUM OF SQUARED RESIDUALS 617.3782683788

(U(T) - U(T-1))\*\*2 847.9532374637

DURBIN-WATSON STATISTIC 1.3734743850 NOBS= 16

R2 FROM RESIDUALS .9433675278

30 = Constant; 59 = pcY(West); 69 = pcE(West); 71 = pcF(West).

Table 7.3C: Case II

ARMA REGIONALLY DISAGGREGATED TWO-GAP MODEL (1949-50 TO 1964-65)  
CASE II PC I=H(PC E, PC F) WEST HYBRID CONSTRAINT

LINEAR MULTIPLE REGRESSION

NC. OF VARIABLES= 3 NO. OF OBS.= 16

SUM OF Y 845.2712288429

VARIABLE NO. 30 69 71

SUMS 16.000000000 287.3029918290 380.9337886954

REGRESSION COEFF. 8.2161387093 .5887806219 1.4297880434

STANDARD ERRORS 19.0235290624 .7719835547 .3632899478

STUDENTS T .4318935019 .7626654463 3.9356664066

ERRCR VAR.= .3802461E+03 S.E.E.= .1949990E+02 C.O.V.(PER CENT)= 36.91104 R2= .546557 R82= .476797

ANALYSIS OF RESIDUALS

SUM OF SQUARED RESIDUALS 4943.1996082058

(U(T) - U(T-1))\*\*2 6898.2221341315

DURBIN-WATSON STATISTIC 1.3954973865 NOBS= 16

R2 FROM RESIDUALS .5465573885

30 = Constant; 69 = pcE(West); 71 = pcF(West).

Table 7.3D: Case III

AHMAD REGIONALLY DISAGGREGATED TWO-GAP MODEL (1949-50 TO 1964-65)  
CASE III PC I=H(PC Y, PC M) . WEST TRADE CONSTRAINT

LINEAR MULTIPLE REGRESSION

NO. OF VARIABLES= 3 NO. OF OBS.= 16

SUM OF Y 845.2712298429

VARIABLE NO. 30

59

65

SUMS 16.000000000 5430.2411100870 599.9936254907

REGRESSION COEFF. -158.3476346154 .6220982763 .0011495939

STANDARD ERRORS 25.4525698939 .0991671604 .2676047481

STUDENTS T -6.2212827732 6.2732286949 .0042958652

ERROR VAR.= .6118395E+02 S.E.E.= .7822017E+01 C.O.V.(PER CENT)= 14.80617 R2= .927038 RB2= .915813

ANALYSIS OF RESIDUALS

SUM OF SQUARED RESIDUALS 795.3913565531

(U(T) - U(T-1))\*\*2 848.5685302323

CURBIN-WATSON STATISTIC 1.0668566150 NOBS= 16

R2 FROM RESIDUALS .9270382824

30 = Constant; 59 = pcY(West); 65 = pcM(West).

not significant at .50 level, indicating some imperfections in the investment function; in Case II, the coefficient of the intercept is not significant at .50 level, implying, among other things, the need for suppressing the constant term for meaningful specification.

However, the balance is tipped in favour of Case I, when one compares  $\bar{R}^2$  between Case I and Case II. For the former,  $\bar{R}^2$  is 0.93; for the latter, 0.48. Besides, the consistency test determining the appropriateness of the sign and magnitude of the relevant coefficients is 'relatively weak' for Case II.

Thus, the (weak) savings constraint is the binding constraint in case of West Pakistan.

It is significant that both East and West Pakistan confront the binding (dominant) savings constraint, contradicting the results of previous studies that found the trade constraint for Pakistan a binding one.

#### ALTERING THE TARGET GROWTH RATE IN EAST PAKISTAN

Having established the plausible investment function for East Pakistan within the regionally disaggregated two-gap framework, we proceed to test the impact of the savings gap of East Pakistan.

It is notable that all the planning documents of Pakistan and the 1962-constitution of Pakistan explicitly announced, among other things, the objective of reducing the disparity in per capita income between East and West Pakistan.



Let us assume that the planners of Pakistan decided to let GDP (East Pakistan) grow at the same rate as in West Pakistan. Recent studies<sup>11</sup> show that Pakistan achieved an annual (compound) growth rate of 2.5 per cent (at 1959-66 prices) over the period 1949-50 to 1959-60. The regional growth rate gave a different picture: East Pakistan's GDP grew at 1.9 per cent; West Pakistan's GDP, 3.1 per cent.

We assumed that East Pakistan's GDP grew at 3.1 per cent starting from the base year, 1949-50.

Utilizing the compound growth rate formula

$$\text{blown-up } pcY^E = pcY_{1949-50}^E (1 + 0.031)^{n=15} \quad (n = 0, 1, \dots, 15)$$

$$\text{where } pcY_{1949-50}^E = \text{Rs } 253.85$$

we obtained "blown-up"  $pcY^E$  for the period 1949-50 to 1964-65 (Table 7.4, col. 7).

Our purpose is to show that, were the authorities in Pakistan serious enough in implementing the above objective, what would have been the policy implications in terms of the allocation of investment resources.

Consider carefully the plausible investment function of East Pakistan (Table 7.2A, Case I), characterizing the operation of the binding savings constraint. The Investment function is given below.

$$pcI^E = -104.17 + 0.43 pcY^E + 0.47 pcE^E + 0.54 pcF^E \dots \dots \dots (1)$$

(-3.40) (3.41) (1.21) (2.12)

$$\bar{R}^2 = 0.81 \quad D-W = 1.502$$

(t-statistic in parantheses)

<sup>11</sup>For instance, UN, UNCTAD, Trade Prospects and Capital Needs of Developing Countries, TD/34/Rev.1 (New York, 1968), Table 1, p. 357.

Table 7.4  
A comparison of observed and policy savings gap for East Pakistan  
(1949-1965)

YEAR	pcI*E (Rs) (2)	pcI <sup>o</sup> E (3)	pcI**E (4)	pcS <sup>o</sup> E (5)	pcY <sup>o</sup> E (6)	pcY**E (7)	Observed Savings Gap (8)=(3)-(5)	Policy <sup>a</sup> / Savings Gap (9)=(4)-(5)
1949-50	Rs.16.25	Rs. 9.21	Rs.42.77	Rs. 1.63	Rs.253.85	Rs.253.85	Rs. 7.58	Rs. 4.14
1950-51	15.02	8.20	41.63	16.86	257.23	255.56	-8.66	24.77
-52	12.11	11.36	40.48	21.38	255.90	257.31	-10.02	19.10
-53	18.08	14.37	42.77	12.19	265.62	259.08	2.18	30.58
-54	17.44	15.96	43.68	13.62	264.21	260.84	2.34	30.06
1954-55	11.41	14.77	40.00	23.72	262.74	262.63	-8.95	16.28
1955-56	5.51	12.81	41.98	25.01	246.64	264.41	-12.20	16.97
-57	17.90	11.93	46.37	12.32	263.96	264.73	-0.39	34.05
-58	14.88	16.13	45.65	13.21	251.55	259.62	2.92	32.44
-59	8.40	13.87	49.68	11.97	240.50	269.93	1.90	37.71
1959-60	14.49	17.46	50.34	19.31	255.71	271.77	-1.85	31.03
1960-61	28.37	24.52	55.04	20.07	277.00	272.83	4.45	34.08
-62	33.23	34.63	56.48	32.56	285.99	273.89	2.07	23.92
-63	29.88	31.26	57.22	25.02	276.99	274.46	6.24	32.20
-64	41.60	40.56	60.00	29.26	298.99	276.00	11.30	30.74
1964-65	40.28	47.84	61.69	35.54	292.99	277.14	12.30	26.15

Note: \*\* blown-up estimated data; \* estimated data; <sup>o</sup> Observed data. Superscript E refers to East Pakistan.  
<sup>a</sup>/Policy trade-gap cannot be estimated because the trade constrained investment function could not be meaningfully estimated (Table 7.2A, Case III).

Comparing the coefficients of  $pcY^E$ ,  $pcE^E$  and  $pcF^E$ , one could easily see that the sensitivity of per capita investment ( $pcI^E$ ) in East Pakistan to a change in per capita foreign resource inflows ( $pcF^E$ ) into East Pakistan is relatively large (strong). This Investment function suggests that every extra (additional) dollar made available in the form of per capita foreign resource inflows leads to an extra per capita investment of 54 cents. On the other hand, for every extra dollar earned through per capita exports, per capita investment is increased by 47 cents. The relatively poor performance is shown by per capita Gross Domestic product: out of extra dollar (rupee) increase in per capita GDP in East Pakistan, 43 cents (paisa) go to per capita investment there.

Assuming that the exogeneously determined values of per capita export earnings and per capita foreign resource inflows remained the same, the actual time-series data of per capita GDP ( $pcY^E$ ) were replaced by the 'blown-up' per capita GDP ( $pcY^{**E}$ , Table 7.4, Col. 7).

Using the equation (1), the investment function of East Pakistan, the blown-up per capita investment ( $pcI^{**E}$ ) series were derived (see Table 7.4, Col. 4). Given the observed per capita savings ( $pcS^{OE}$ ), we get the policy (per capita) savings gap. Table 7.4 illustrates the findings.

Comparing the observed (per capita) savings gap (which in fact reflects the actual per capita resource inflows/outflows) with the policy (per capita) savings gap, we are led to conclude that per capita foreign resource inflows into East Pakistan should have consistently been much

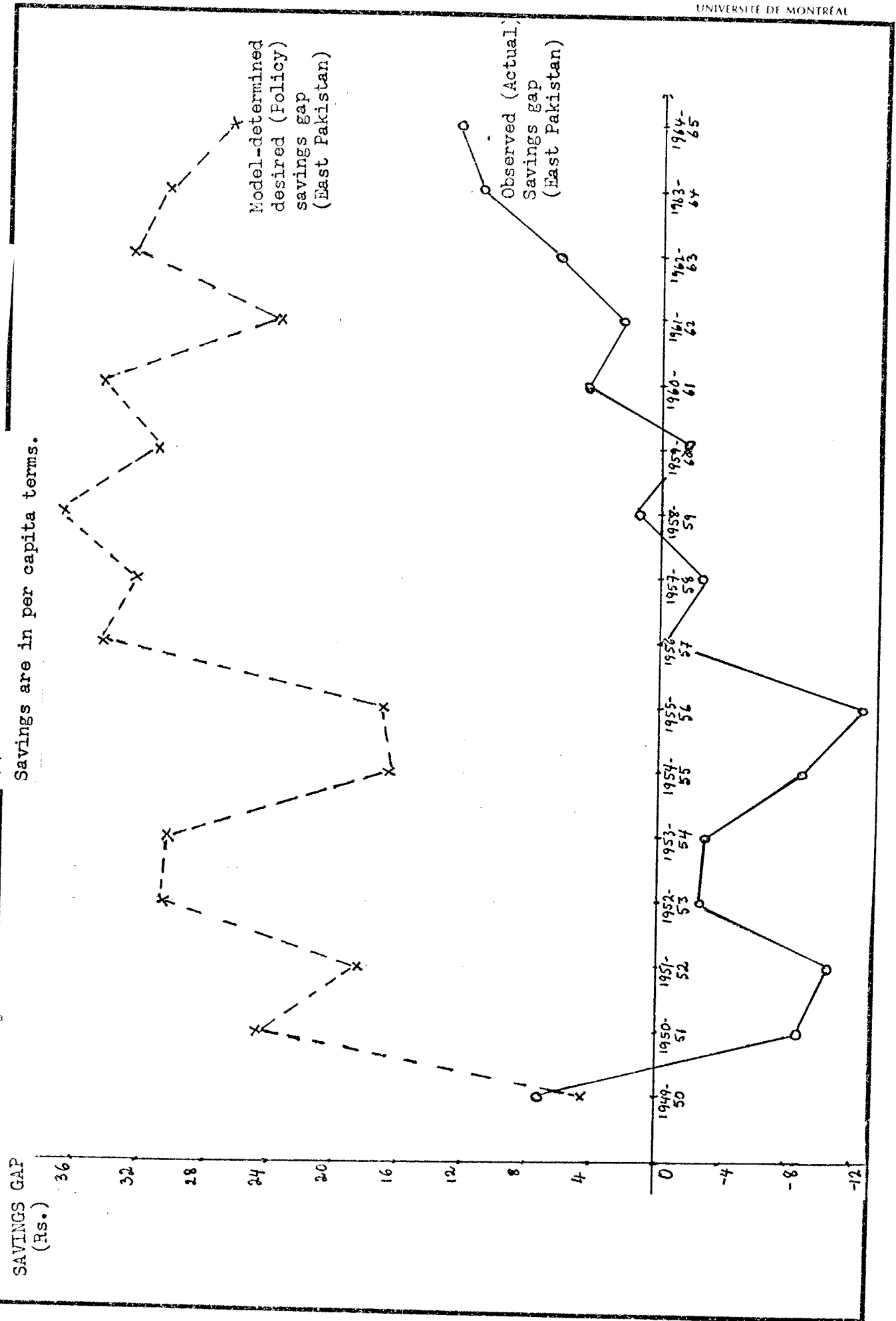
higher than what was allocated there. Figure 7.1 shows the gap between the observed per capita savings and the policy per capita savings in East Pakistan over the period 1949-50 through 1964-65.

Along with other evidences found in Chapters 4 and 5, our empirical results contained in this chapter do strongly suggest that West-Pakistani-dominated military government of Pakistan - - - partly deliberately, and partly due to inadequate attention paid to the real potential of East Pakistan - - - did not allow East Pakistan to realize its full potentialities.

Finally, the results do show the danger involved in using the conventional two-gap model in cases like Pakistan where regional economic disparities dominate the scene and the benefits derived from the regional disaggregation of the model in the sense of achieving the appropriate regional allocation of investment consistent with the set of national objectives.

Figure 7.1: GRAPHICAL REPRESENTATION OF OBSERVED AND DESIRED SAVINGS GAP OF EAST WING OF PAKISTAN (1949-50 to 1964-65)

Savings are in per capita terms.



Chapter 8

Summary and Conclusions

In this final chapter, as we draw the loose strands together, a clear meaningful picture of the two-gap analysis in the context of a less developed country with persistent and divergent regional disparities begins to emerge - - - a picture that is otherwise hazy, if not confusing.

### The Two-Gap Model

Among development economists, professional planners, and governments of less developed countries, the two-gap model of Harrod-Domar family has indeed become pretty familiar; thanks to Chenery and his associates for popularizing the concept.

The significance of the two-gap model owes its origin to the "structural rigidities" that characterize the LDCs. These rigidities, within the two-gap analytical framework, imply that the growth rate of an LDC economy is in general constrained by either the Savings Gap (i.e. the inability of an economy to generate and mobilize adequate domestic savings to meet the required level of investment necessary to attain the target growth rate) or the Trade Gap (i.e. the inability of an economy to convert domestic savings into adequate level of foreign exchange in order to import "strategic" goods and services that are indispensable for development but could not be made available or produced economically at home), whichever is the dominant (larger). The target growth rate cannot be achieved if the dominant gap

remains unfilled by external resource inflows.

A critical survey of the existing standard literature on the two-gap model, as presented in Chapter 2, clearly reveals the weaknesses of the underlying assumptions and various operational limitations of the approach. The Rosenstein-Rodan model (May 1961) uses the Harrod-Domar equations to measure the amount of foreign aid requirements; the Fei-Paauw model (August 1964) adapts the Rosenstein-Rodan model by assuming that per capita saving is a constant fraction of the increase in per capita income. Both models assume that the savings constraint is the only relevant constraint upon the economy, ignoring completely the trade constraint.

The McKinnon model (June 1964), however, incorporates both the constraints (saving as well as trade) with heavy emphasis on the trade constraint; this model is conspicuous by the absence of behavioral equations and empirical counterpart. The major contribution of the model lies in the explicit recognition of the fact that foreign capital enters as a distinct and separate input into the domestic production function of an economy<sup>1</sup>. Subsequently, Chenery and Strout (Sept. 1966), in their classic synthesis, developed the theme on the assumption that the productivity and allocation of this distinct input (foreign resource inflows) provide "one of the central problems for a modern theory of development".<sup>2</sup>

While both McKinnon, as well as Chenery-Strout studies do emphasize that at any period only one of the two constraints is likely to be

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<sup>1</sup> McKinnon, op. cit., p. 339.

<sup>2</sup> Chenery and Strout, op. cit., p. 679.



dominant and that the effectiveness of foreign aid depends critically on that constraint which is in fact binding, none of them have shown how to determine the one that is actually binding.

#### The Weisskopf Test

Using the Chenery-Strout model, Weisskopf developed an econometric technique to classify countries by dominant constraint;<sup>3</sup> he accepted the conventional two-gap framework.

#### The approach of the study

This study questions the validity and usefulness of the conventional two-gap model for the less developed countries with persistent, divergent regional disparities (Chapter 3). It argues that the conventional two-gap model, if applied as it is, may lead to inconclusive results.

The Chenery-Strout-Weisskopf model is modified as follows:

- a. the model is regionally disaggregated;
- and
- b. the objective of the model is altered in that the focus is shifted to the alteration of the regional target growth rate in attaining national objectives.

When such modifications are introduced, the model is applied to Pakistan; and the empirical results, as will be discussed later, confirm our hypothesis that the conventional two-gap model is non-operational in the case when an LDC is faced with persistent divergent regional disparities and that the regionally disaggregated two-gap model serves the purpose better.

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<sup>3</sup>Weisskopf, op. cit., (Restat).

### Pakistan

Pakistan was selected for the case study because it confronted persistent regional disparities and was, at the same time, receiving substantial quantity of foreign aid. Furthermore, development strategies of Pakistan were greatly influenced by the conventional two-gap approach.<sup>4</sup> Several studies on Pakistan - - - for example, Chenery-Strout (1966), Chenery-MacEwan (1966) - - - also focused on the two-gap theoretical framework in formulating development policies for Pakistan.

Thus, Pakistan provided an interesting opportunity to examine critically the conventional two-gap framework. The interest was intensified by the disintegration of Pakistan on December 1971; the break-up came when the Fourth Five Year Plan (1970-75) hardly completed the first half of the first fiscal year of the plan. This happened despite the optimistic tone of the Fourth Plan:

Since 1959-60, the Second and Third Plans have made a profound impact on the economic situation in the country. During the period of 8 years up to 1967-68, the Gross National Product had increased by 55 per cent, agricultural production by 40 per cent and industrial production by 160 per cent. In current prices, per capita income increased from Rs. 318 in 1959-60 to Rs. 515 in 1967-68.<sup>5</sup>

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<sup>4</sup>Mahbubul Haq, "Annual Planning in Pakistan", Journal of Development Planning (UN, New York, 1970), vol. 2, Annexes, pp. 105-110.

<sup>5</sup>Government of Pakistan, Planning Commission, Socio-Economic Objectives of the Fourth Five-Year Plan (1970-75) (Islamabad, Nov. 1968), p. 1.

Although these national figures reflect optimism and hope, they conceal the regional realities. One of the crucial objectives of three implemented Five-Year Plans was to reduce the inter-regional disparity in "per capita income". This objective was also made a constitutional obligation in 1962. And it was in this respect that all the plans failed miserably.

The Williamsonian technique was applied to construct the disparity index of per capita GDP relating two regions of Pakistan - - - East and West Pakistan for the period 1949-50 through 1969-70 (Chapter 5, Table 5.9 and Table 5.10). The disparity index clearly showed a "divergent" trend - - - just the reverse of the announced objective of the planners and politicians.

The average disparity index over the pre-plan period (1950-55) stood at 0.109; the figure jumped to 0.140 at the end of the First Five-Year Plan (1955-60) and stood at 0.170 at the end of the Second Five-Year Plan which witnessed the peak flow of foreign resources into Pakistan; the disparity index continued its climb and the average index over the Third Plan period recorded 0.267.

As Hirschman claims, the regional disparity is a "condition of growth itself" but his thesis is based upon the assumption that "forward and/or backward linkages" would generate "spread effects" to propell the backward region to advance. However, he admits:

... in the geographical sense, growth is necessarily unbalanced ... in analyzing the process of unbalanced growth, we could always show that an advance at one point sets up pressures, tensions, and compulsions toward growth at subsequent points. But if all of these points fall within the same privileged growth space, the forces that make for transmission of growth from ... one region ... to another will be singularly weak.<sup>6</sup>

Geographically, the two regions - - - East and West Pakistan - - - are far-flung; over 1,000 miles of land of India and a 3,000 mile sea voyage separate the two wings. Then the two regions differed in many fundamental respects: West Pakistan lies wholly outside the tropics, having its climate "continental" in character; East Pakistan has a typically "tropical monsoon" climate. The total area of Pakistan is 365,329 square miles, out of which 55,126 square miles, or 15% is in East Pakistan and 310,403 (i.e. 85%) in West Pakistan; yet in the former 55% of the population live, while in the latter, only 45%.

With twice the density of Japan and Holland, East Pakistan got 75 million people sardined into a space slightly larger than Arkansas (U.S.) which has only 2 million. Thus, the regional disparities have far-reaching implications for Pakistan when the densely populated region is the one that is lagging behind.

Ralph Blumenthal beautifully captures the essence of non-economic differences between East and West Pakistan:

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<sup>6</sup>Albert O. Hirschman, The Strategy of Economic Development (New Haven: Yale University Press, 1958), p. 84.

Separated by 1,100 miles of Indian territory, West and East Pakistan are bound chiefly by their common religion - - - their 110 million people constitute the World's largest Moslem State.

But in other ways, the two sections are as different as the Roman Catholic countries of Spain and Poland.

The Bengalis of East Pakistan are a small dark people who are proud of their poets and scholars. Their life in the humid Ganges-Brahmaputra delta revolves around the monsoon-nourished rice crop. Their culture is akin to that of the Bengalis of neighboring India.

The Punjabi-dominated West Pakistanis, heavier and lighter-skinned, are considered to be more martial and stolid. Their culture is rather Middle Eastern and their Urdu language, a Persia-nized Arabic written right to left, is incomprehensible to the Bengalis who speak their own language.<sup>7</sup>

Given these sharp and fundamental economic and non-economic differences, the point arises whether it is reasonable to bundle these two regions into one economy. In other words, can they form a cluster? If they do, then the regional disparities are not alarming in the long-run because the "spread effects" are likely to make the disparity a "convergent" one. But if they do not, the danger is there that the disparity might be a "divergent one", sparking off a chain of reactions (social tensions) leading to the inviability of the economy.

Notice that by lumping the two regions together, the problem of population pressure (land-man ratio) in Pakistan can be made to appear less

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<sup>7</sup>The New York Times, March 27, 1971, p. 3.

crucial. According to 1961 census, Pakistan's population density is 256 per square mile. As a result, government planners of Pakistan, except paying the lip-service, did not attach due weight to the problem. Region-wise, East's density is 922 persons per square mile; West's, 138. Thus, treating the two regions as belonging to a "class" and applying a "common therapy" could be dangerous.

We selected six development indices (the choice of them is dictated by the availability of data for all the 17 entities taken) and 17 Southasian countries. These countries are Afghanistan, Burma, Cambodia, Ceylon, Taiwan, West Pakistan<sup>8</sup>, East Pakistan<sup>8</sup>, Philippines, Singapore, Thailand, Turkey, India, Indonesia, Iran, Laos, Malaysia and Nepal. The development indices are: (i) per capita GNP; (ii) per capita energy consumption; (iii) Doctors per 10,000; (iv) hospital beds per 10,000; (v) population growth rate; and (vi) phones per 1,000.

Using the Wroclaw Taxonomic Method, the cluster-analysis was applied to Pakistan; the "optimal graph" (Chap. 6, fig. 6.1) shows, as one might expect, that East and West Pakistan cannot be clustered into one group. The results clearly underscore the need for and significance of "regional dimension" in the development strategy of Pakistan.

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<sup>8</sup> We assumed that the two regions were two hypothetically independent countries as they actually became after the disintegration of Pakistan on December 16, 1971.

### The Major findings

The econometric estimation of the conventional two-gap model of Pakistan for the period 1949-50 to 1964-65 reveals that the policy implications regarding the inflow of foreign resources are weak. This is because the absence or presence of dominant and binding constraint could not be determined with reasonable precision (Chapter 7, Table 7.1A).

The estimation of regionally disaggregated two-gap models yields meaningful results in the sense that some strong policy decisions could be derived.

Tables 7.2A and 7.3A summarize the findings relating East and West Pakistan respectively.

The 'strong' savings constraint for East Pakistan and the 'weak' savings constraint for West Pakistan were found to be binding. Thus, the policy implications are strong and clear: If East and West Pakistan were to achieve their respective target growth rates, regional foreign resource inflows must be adequate enough to bridge their respective savings gap. This contradicts earlier findings of other studies that prescribe filling the 'trade gap' on a national level.

Using the regionally disaggregated model, the impact of altering the growth rate of per capita GDP upon foreign and resource inflows was examined. It is important to note that all the Five-Year plans of Pakistan explicitly incorporated the objective of removing regional disparities in income between East (the lagging region) and West Pakistan (the advanced region) as one of the major socio-economic national goals.

Allowing East Pakistan's GDP to grow at the same rate (3%) as West Pakistan, we calculated hypothetical time-series data for per capita GDP (East Pakistan) over the period 1949-50 to 1965.

Using this new time-series data in our plausible per capita investment function for East Pakistan, we calculated the desired per capita investment requirements. Given the observed per capita savings for East Pakistan, the time-path of desired savings gap is traced.

Figure 7.1 illustrates the gap between the desired (policy) savings gap designed to remove the regional disparities in income and the observed savings gap reflecting the actual inflow of foreign resources into East Pakistan.

It is clear that the policy savings gap is consistently higher than the observed savings gap throughout the selected time horizon.

It is thus a small surprise why regional disparities could not be removed even though this objective was given the status of a constitutional obligation. Unfortunately, failure to remove the promised disparity, among other things, contributed significantly to the social and political unrest in Pakistan, particularly in East Pakistan, culminating in the dismemberment of Pakistan.



General Conclusions and some proposalsGeneral Conclusions

Among the most important general conclusions from this study are:

1° A great caution must be used in applying the conventional two-gap model for formulating meaningful policy decisions. "Handle with care"-tag must be attached to such models for they relate 'national' savings/trade gaps which do not necessarily represent the regional 'gaps'.

2° It makes sense to disaggregate the conventional two-gap model regionally if the economy under study suffers from persistent regional disparities. It is quite conceivable that one region's development is constrained by the binding savings gap, while the other region by the binding trade gap; then it makes little sense to consider the economy as a whole constrained by either the savings or the trade gap.

3° Were West-Pakistani dominated government of Pakistan serious to reduce the regional disparities, it could have succeeded in doing so. Perhaps well-timed steps could have averted the disintegration of Pakistan accompanied by one of the worst genocides recorded in human history.

4° An awareness and understaiding of the "regional dimension" in development strategy is of crucial importance. The 'Cluster-analysis' provides an insight of the regional groupings and sets a basis for further research and analysis in meaningful directions.

On the basis of this study, the following proposals are suggested:

(i) For determining the level of foreign resource inflows (in the form of grants and concessionary loans) for an LDC economy that is experiencing persistent divergent regional disparities, it is strongly recommended the regionally disaggregated two-gap models be used.

(ii) A large proportion of foreign aid to less developed countries comes in the form of 'project aid' (when aid is linked to specific projects) which are, in general, location-bound. Hence "regional priorities" must be taken into consideration in examining the economic and technical feasibilities of the project. Recipient countries, due to political and other non-economic considerations, have, in general, "regional biases" and as such appropriate regional allocation of foreign resources is not effected. It is strongly recommended that donor countries should stress "regional allocation" of project aids consistent with the over-all national development strategies.

(iii) Since "Commodity Aid" which is generally given in general support of annual budgets and/or longer-term plans without reference to specific projects, it is relatively more flexible in terms of regional allocation. It is therefore strongly suggested that the proportion of commodity aid be increased so that a balanced regional development program can be undertaken where it is needed.

(iv) To avoid the social tension and political unrest of the kind Pakistan recently experienced, a greater understanding of the regional

dimension in overall development strategy on the part of donors as well as recipients brooks no delay. It is strongly suggested that, among other things, steps must be taken to reduce the growing regionally inequitable sharing of benefits accrued from development in order to diffuse the political time bomb which might explode to disintegrate a country.

Appendices

## Appendix A

## DATA ON EAST AND WEST PAKISTAN

(Rs million/at current price)

	Y(E)	Y(W)	I(E)	I(W)	M(E)	M(W)
1949-50	8853.57	8666.58	321.14	638.21	313.01	741.46
1950-51	9223.93	9134.06	294.12	727.13	370.10	953.44
1951-52	10191.63	9774.74	452.37	1028.92	676.78	1307.44
1952-53	10174.80	9307.44	550.44	1142.58	305.24	849.01
1953-54	9758.19	9828.93	589.50	1304.76	231.08	647.66
1954-55	9573.54	9755.46	538.18	1606.96	242.56	593.51
1955-56	9873.82	10761.08	512.82	1391.94	293.85	784.70
1956-57	11978.56	12267.20	541.20	1181.62	738.74	1367.43
1957-58	12375.42	1374.82	793.48	1577.40	703.62	1256.18
1958-59	11773.80	13512.90	678.90	1599.60	515.22	952.32
1959-60	13770.00	15190.00	940.00	2000.00	655.00	1836.00
1960-61	16084.50	17626.32	1424.11	3368.46	1065.71	2284.87
1961-62	16877.73	18552.70	2043.48	3994.32	908.79	2327.68
1962-63	17517.15	20354.28	1936.17	4721.15	1085.24	2982.00
1963-64	18857.94	21515.24	2557.94	5063.03	1573.87	3108.64
1964-65	19981.82	24293.00	3262.91	6016.71	1896.03	4090.61

## DATA ON EAST AND WEST PAKISTAN (contd.)

	(Rs million/at current price)					
	E(E)	E(W)	F(E)	F(W)	N(E)	N(W)
1949-50	511.38	352.84	264.23	231.71	42.90	35.88
1950-51	989.39	362.75	-310.46	-473.86	43.89	36.70
1951-52	964.17	676.78	-399.15	1161.97	44.90	37.54
1952-53	535.43	450.36	83.40	767.28	45.93	38.41
1953-54	506.97	426.01	86.46	675.96	46.99	39.29
1954-55	554.86	756.48	-325.94	591.24	48.07	40.19
1955-56	847.37	875.05	-488.40	626.78	49.18	41.11
1956-57	819.92	1028.28	-18.04	793.76	50.31	42.06
1957-58	944.53	540.14	143.40	956.00	51.46	43.03
1958-59	819.33	1248.99	93.00	632.40	52.64	44.02
1959-60	1080.00	922.00	-100.00	1290.00	53.85	45.03
1960-61	1323.21	912.27	258.55	1289.58	55.25	46.20
1961-62	1354.34	667.28	361.23	1739.51	56.69	47.40
1962-63	1330.19	522.92	519.72	1711.46	58.16	48.63
1963-64	1293.77	785.35	842.43	1970.25	59.67	49.89
1964-65	1412.55	778.69	1058.30	2819.53	61.22	51.19

**Sources:** Unpublished estimates provided by the International Division, Planning Commission, Islamabad, Pakistan; M. U. Haq, The Strategy of Economic Planning: A Case Study of Pakistan (Dacca: Oxford University, 1963); Central Statistical Office (CSO), Govt. of Pakistan, Bulletin, various issues; State Bank of Pakistan, Currency & Finance Report, various issues.

**Note 1:** Y = GDP; I = Investment; E = Exports; M = Import; F = Foreign aid; N = Population; E and W in brackets refer to East and West Pakistan respectively. N refers to population in millions.

**Note 2:** The figures shown for East and West Pakistan separately do not check exactly, when added together with those for all Pakistan. This is due to unavoidable differences in basic sources and method of estimation

**Note 3:** Figures for Exports and Imports for the period 1949-50 through 1959-60 do not include miscellaneous items which constitute very small proportion of total figures.

**Note 4:** Since relevant variables (except for 'population') for the period 1960-61 through 1964-65 according to some studies, appears to have been underestimated, a 5% margin of error have been allowed for.

Caution: "It has to be stressed. . . that because of lack of appropriate basic statistics, the CSO (Central Statistical Office, Pakistan) calculates the national accounts data by using a number of fixed coefficients which are often estimated by very crude methods. Consequently, the various national accounts aggregates might be affected by sizeable errors and may not describe the development over time of the Pakistan economy with the degree of accuracy necessary for economic policy purposes."  
OECD, National Accounts of Less-Developed Countries, 1959-1968 (Paris, June 1970),  
 p. 220.

## Appendix A (contd.)

## DATA (IN PER CAPITA FIGURES) FOR EAST AND WEST PAKISTAN

Note: Following figures have been obtained after converting the figures at current prices into figures at constant prices (1959-60) by using GNP-deflator.<sup>1</sup>

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<sup>1</sup>U.S. AID Mission to Pakistan, Statistical Fact Book (June 1966), Table 2.6.



24	1	9	1	16	-0	-0	0	PER CAPITA GDP(EAST PAKISTAN) IN RS, 1949-65,*	PC Y(E)
253.8461538462			257.2339940761				255.9020044543	265.6215980840	
264.2051500319			262.7418348242				246.6449776332	263.9634267541	
251.5546055188			240.5015197568				255.7103064067	276.9954751131	
285.9940024696			276.9944979367				298.9944695827	292.9924861156	
24	2	10	1	16	-0	-0	0	PER CAPITA GDP(WEST PAKISTAN) IN RS, 1949-65,	PC Y(W)
297.1014452754			304.6321525886				293.5535428876	290.5493361104	
318.2743700687			320.2289126648				321.5762588178	323.3475986686	
327.5621659307			330.0772376193				337.3306684433	363.0086580087	
375.9915611814			393.0084310097				407.9975947084	426.0011721039	
24	3	5	1	16	-0	-0	0	PER CAPITA INVESTMENT(EAST PAK) IN RS, 1949-65, PC	I(E)
9.2074592075			8.2023239918				11.3585746102	14.3696930111	
15.9608427325			14.7701268983				12.8100854006	11.9260584377	
16.1290322581			13.8677811550				17.4558960074	24.5248868778	
34.6269183277			31.2585969739				40.5563934976	47.8438418817	
24	4	10	1	16	-0	-0	0	PER CAPITA INVESTMENT(WEST PAK) IN RS, 1949-65, PC	I(W)
21.8784838350			24.2506811989				30.9003729355	35.6677948451	
42.2499303706			52.7494401592				41.5957188032	31.1459819306	
38.3453404601			39.0731485688				44.4148345547	69.3722943723	
80.9493670886			91.1577215710				96.0112246943	105.5088884548	

\*Read all per capita figures row-wise: they are arranged in sequence for the period 1949-50 through 1964-65.

24	7	9	1	16	-0	-0	0	PER CAPITA IMPORTS (EAST PAK), IN RS, 1949-65	PC M (E)
8.9743509744				10.3212576897				16.99333184855	7.9686479425
6.2566503511				6.6569586020				7.3403822692	16.2790697674
14.3023707734				10.5243161094				12.1634168988	18.3529411765
15.3995413653				17.5206327373				24.9539131892	27.8013721006
24	8	10	1	16	-0	-0	0	PER CAPITA IMPORTS (WEST PAK), IN RS, 1949-65	PC M (W)
25.4180602007				31.7983651226				39.2647842302	26.5035147097
20.9722575719				19.4824583230				23.4492824130	36.0437470281
30.5368347664				23.2621535666				40.7728181213	47.0562770563
47.1729957806				57.5776269792				58.9496893165	71.7327603047
24	13	9	1	16	-0	-0	0	PER CAPITA EXPORTS (EAST PAK), IN RS, 1949-65	PC E (E)
14.6620005620				27.5917065391				24.2093541203	13.97779222926
13.7263247495				15.2277928022				21.1671411143	18.0679785331
19.1993781576				16.7363221884				20.0557103064	22.7873303167
22.0493737873				21.4752407153				20.5128205128	20.71218555603
24	14	10	1	16	-0	-0	0	PER CAPITA EXPORTS (WEST PAK), IN RS, 1949-65	PC E (W)
15.7469342252				36.5940054496				24.5604688332	22.5982816975
16.3145838639				12.2169693954				18.0734614449	16.6191155492
10.0859865210				10.0863243980				16.9442593826	11.6883116883
11.4345951561				20.5223113305				21.5474042894	22.2699746044

24	15	1	16	-0	-0	0	PER CAPITA FOREIGN RESOURCES (EAST PAK)	PC F (E)	
7.57575	75758		-8.65800	86580		-10.02227	17149	2.17722	262138
2.34092	36008		-8.94528	81215		-12.20008	13339	-0.39753	52813
2.91488	53478		1.85969	60486		-1.85701	102136	4.45248	886878
6.12100	89963		8.39066	464924		13.35679	57097	15.51780	46390
24	16	10	1	16	-0	0	PER CAPITA FOREIGN RESOURCES (WEST PAK)	PC F (W)	
7.94314	38127		-15.60381	47139		34.89611	108151	23.95209	58084
21.88852	12522		19.40781	28888		18.73023	359523	20.92249	16786
23.23960	02789		15.44752	38528		28.64756	82878	26.55844	15584
35.25316	45570		33.04544	51984		37.36219	66330	49.44325	06349
24	47	72	1	16	-0	0	PER CAPITA GDP (PAK), RS, 1949-65	PC Y (P) *	
673.54658	54274		278.81871	19990		273.04706	45318	276.97415	22409
688.82707	46401		288.71910	26513		280.76198	91461	291.00357	25885
486.16784	4496		281.29526	17422		292.88025	86997	316.16559	88172
526.97665	48179		329.82488	49710		348.63088	71851	353.56285	02802

\*P in brackets stands for Pakistan.

24	48	72	1	16	-0	-0	0	PER CAPITA INVESTMENT (PAK), RS, 1949-65	PC I (P)
14.	9784209120		15.	5106092567		20.	2571567200	24.0692435381	
27.	9323133982		32.	0643553138		25.	9164913058	20.6777092129	
26.	2461636152		25.	3465756259		29.	7330097087	44.9482503696	
55.	7210106638		58.	5354433936		65.	8086893027	74.1037274264	
24	50	72	1	16	-0	-0	0	PER CAPITA IMPORTS (PAK), RS, 1949-65	PC M (P)
16.	4635694339		20.	1017495967		27.	1348859777	16.4097699787	
12.	9578117756		12.	4971674598		14.	6749363163	25.2787701635	
21.	6954175045		16.	3252638113		25.	1921521036	31.4243469690	
29.	8683831300		35.	7617754471		40.	4344651333	47.8071345966	
24	51	72	1	16	-0	-0	0	PER CAPITA EXPORTS (PAK), RS, 1949-65	PC E (P)
15.	1561309977		31.	6912768334		24.	3692382339	17.9037230258	
14.	9049605934		13.	8567867664		19.	7585557648	17.4082494316	
15.	0492115569		13.	6078419201		18.	6387540453	17.7328733366	
17.	7058314920		21.	0412960015		20.	9839357430	21.4215817098	
24	52	72	1	16	-0	-0	0	PER CAPITA FOREIGN INFLOWS, RS, 1949-65	PC F (P)
7.	7430820005		-11.	9121479092		10.	4318292091	12.0939056201	
11.	2424663885		3.	9655563109		1.	8828220179	9.3103821587	
12.	1706000635		8.	0695220360		12.	0347896440	14.5194677181	
19.	3870688827		19.	6179417548		24.	2880613363	30.9669958189	

Appendix B: The Wroclaw TaxonomyThe Wroclaw Taxonomy<sup>1</sup>

In 1952, a team of Polish mathematicians developed a statistical method of determining homogeneous units in an n-dimensional vector-space. This is known as the WROCLAW TAXONOMIC METHOD. For the simplicity of exposition, we shall assume 4-countries 3-variables situations. This can be extended to n-countries and n-variables situation.

The method

Let the matrix A denote 4 countries (points) with 3 variables.

In symbol

$$A = \begin{bmatrix} X_{11} & X_{12} & X_{13} \\ X_{21} & X_{22} & X_{23} \\ X_{31} & X_{32} & X_{33} \\ X_{41} & X_{42} & X_{43} \end{bmatrix} \dots\dots\dots (1)$$

That is, on three dimensional-space, any point (or vector) represents a country.

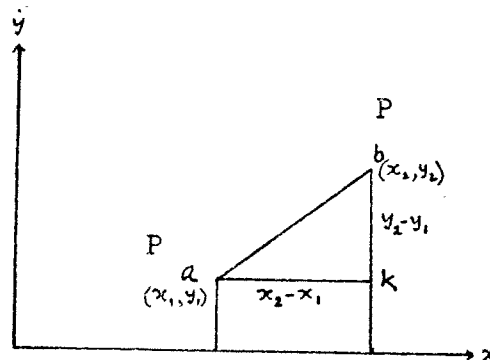
By following the usual standardization technique, D, the standardized matrix, is obtained:

<sup>1</sup>Frederich H. Harbison, Joan Maruhnic, Jane R. Resnick, Quantitative Analyses of Modernization and Development. (Princeton University, New Jersey, 1970).

$$D = \begin{bmatrix} D_{11} & D_{12} & D_{13} \\ D_{21} & D_{22} & D_{23} \\ D_{31} & D_{32} & D_{33} \\ D_{41} & D_{42} & D_{43} \end{bmatrix} \dots\dots\dots (2)$$

where  $D_{ij} = \frac{X_{ij} - \bar{X}_j}{\sigma_j}$   $(i = 1, 4)$   
 $(j = 1, 3)$   
 $\bar{X}_j =$  mean  
 $\sigma_j =$  Standard deviation

From the standardized matrix, a synthetic (composite) distance matrix, C, is derived by using simple distance formula.



$$\text{Since } (ab)^2 = (ak)^2 + (bk)^2$$

$$\therefore ab = \sqrt{(ak)^2 + (bk)^2}$$

Therefore, the distance between points  $P_a$  and  $P_b$  be derived as follow

$$C_{ab} = \sqrt{\sum_{k=1}^{m=3} (D_{ak} - D_{bk})^2} \quad (k = 1, 2, 3)$$

$$= \sqrt{(D_{a1} - D_{b1})^2 + (D_{a2} - D_{b2})^2 + (D_{a3} - D_{b3})^2}$$

$$\text{Note: } C_{ab} = C_{ba}$$

$$C_{aa} = 0$$

$$C_{ab} \leq C_{ak} + C_{kb}$$

The composite distance matrix is given below:

$$C = \begin{bmatrix} 0 & C_{12} & C_{13} & C_{14} \\ C_{21} & 0 & C_{23} & C_{24} \\ C_{31} & C_{32} & 0 & C_{34} \\ C_{41} & C_{42} & C_{43} & 0 \end{bmatrix} \dots\dots\dots (3)$$

From the matrix C, the following properties are derived:

#### The Model vs. the Shadow

Given a frame of reference (say, critical minimum distance, C.M.D.), the minimum distance,  $C_a$ , from the country under consideration to all other countries (in the row) can be obtained. This is the 'index of resemblance', i.e. the nearest point within a given frame of reference.

When  $C_a$  is the minimum distance between Point  $P_a$  and  $P_b$  in the row,  $P_b$  is called the "model" of  $P_a$  and  $P_a$  is the "shadow" of  $P_b$ . The assumption here is that there exists one and only one closest point in the row.

#### The Linkage Relation

The "shortest linear graph" is drawn to represent group of countries. The following steps are involved in establishing the "linkage" relationships;

1st Step: join each shadow with its Model (thus, we get the "first-order concentrations" first homogeneous groups).

2nd Step: join pairs of 'nodes' belonging to two different concentrations when the distances between them are the shortest. (This is the "Second-Order" concentrations). By using all nodes, we establish one single joint graph which is the shortest graph.<sup>2</sup>

The Critical Minimum (or Model) Distance (C.M.D.)

The researchers may arbitrarily (or, based on judgement and experience) develop a cut-off point. The C.M.D. could be obtained as follows

$$C^{(+)} = \bar{c} + 2\sigma_c$$

$$C^{(-)} = \bar{c} - 2\sigma_c$$

$$\text{where } \bar{c} = \frac{\sum c_{ij}}{N} \quad (\text{mean})$$

$$\sigma_c = \sqrt{\frac{\sum (c_{ij} - \bar{c})^2}{N}} \quad (\text{standard deviation})$$

By applying C.M.D., we get the number of subsets (subgraphs). Each element in the subset is connected by links and any distance between two elements exceeding C.M.D. separates the elements.

Thus, C.M.D. helps us partition the set of points (countries) into K parts and these subsets are called "TYPOLOGICAL GROUPS". Within each subset, elements can be treated as identical or 'almost identical', or similar.

Any node shorter than (-) C.M.D. is cancelled. Any node greater than (+) C.M.D. splits the group for the greater the value of (+) C.M.D., the lesser "the resemblance" between all possible pairs of points.

<sup>2</sup>

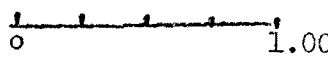
For the proof that the single joint graph is the shortest graph, see K. Florek et al., TAKSONOMIA WROCLAWSKA, Ponzan, 1952; also see Z. Hellwig, "Procedure of Evaluating High-level manpower Data and Typologies of Countries by Means of the Taxonomic Method", Working Paper for UNESCO, (1967, Unpublished).



The relevant findings of the MethodThe pattern

The pattern of development represents a composite synthetic distance of "each country within the matrix to the "ideal" country which is an hypothetical country based on the highest (or best) value of each variable included in the index."<sup>3</sup>

The measure

The measure of development represents a proximate scale of development  and is derived for each country in the matrix by "the pattern" of development divided by the C.M.D. (with respect to the ideal).

<sup>3</sup>Harbison et al., op. cit., Appendix II, p. 15. For further discussions relating cluster analysis, see R.N. Howard, "Classifying a Population into Homogeneous Groups", in J.R. Lawrence (Ed.), Operational Research and the Social Sciences. (London: Tavistock Publications, 1966); A.W.F. Edwards and L.L. Cavalli-Sforze, "A Method for Cluster Analysis" Biometrics, 21 (June 1965); N. Howard, "Least Squares Classification and Principal Component Analysis: A Comparison", in M. Dogan and S. Rokkan (Eds.), Quantitative Ecological Analysis in the Social Sciences (MIT, 1969).

Mujib's Six-Point Program

- 1- The character of the government shall be federal and parliamentary, in which election to the federal legislature and to the legislatures of the federating units shall be direct and on the basis of universal adult franchise. Representation in the federal legislature shall be on the basis of population.
- 2- The federal government shall be responsible only for defence and foreign affairs and, subject to the conditions provided in 3 below, currency.
- 3- There shall be two separate, freely convertible currencies for the two wings of the country, or alternatively a single currency, subject to the establishment of a federal reserve system in which there will be regional federal reserve banks which shall devise measures to prevent the transfer of resources and flight of capital from one region to another.
- 4- Fiscal policy shall be the responsibility of, and the power of taxation shall vest in, the federating units. The federal government shall be provided with requisite revenue resources for meeting the requirements of defence and foreign affairs, which revenue resources would be automatically appropriable by the federal government in the manner provided and on the basis of the ratio to be determined by the procedure laid down in the constitution. Such constitutional provisions would ensure that the federal government's revenue requirements are met consistently with the objective of ensuring control over fiscal policy by the governments of the federating units.

- 5- Constitutional provisions shall be made to enable separate accounts to be maintained of the foreign exchange earnings of each of the federating units, under the control of the respective governments of the federating units. The foreign exchange requirements of the federal government shall be met by the governments of the federating units on the basis of a ratio to be determined in accordance with the procedure laid down in the constitution. The regional governments shall have power under the constitution to negotiate foreign trade and aid within the framework of the foreign policy of the country, which shall be the responsibility of the federal government.
- 6- The government of the federating units shall be empowered to maintain a militia or para-military force in order to contribute effectively towards national security.

East Pakistani (Bengali) intellectuals' attitude  
towards foreign aid : A survey

For accelerating development in LDCs, the effective utilization of foreign aid, if and when accepted, is of crucial importance. It is now widely recognized that, among other things, amicable participation, deep commitment, and a reasonable degree of involvement must be ensured. Without these lubricants, the aid-machinery is likely to function inefficiently or may even come to an abrupt halt.

Although aid and development are often considered to have an input-output relationship, the presence and co-operation of "human elements" must not be ignored or overlooked. In the ultimate analysis, it is "people" (and not machinery) with whom we are concerned. This is nothing new. What is new is the continual ignoring of this home truth. The human component of the foreign aid program is inevitably less stressed.

For the failure of foreign aid to "deliver the goods", blame of varying degree is laid at the doors of the recipients --- ranging from the limited "absorptive capacity" of the economy to the "inefficiency and incompetence" of the recipient-governments. In this respect, the tone of some aid-donors' comments is rather shrill.

On the other hand, concerning the failure, some recipients shrug their shoulders for not having the right form of aid in the right amount at the right time for the right purposes. Perhaps no one should lift their eyebrows in surprise at this; there is some truth in it.

But still the question remains whether meeting with all such wishes of the recipients per se is sufficient to achieve the self-sustained growth --- an ability to take-off.

However, cases of frustrated take-offs remind us of the seriousness, complexity, and enormity of the problem. Without developing the argument here, it is enough to say that a strong question mark must be placed against the idea that the success of foreign aid program depends exclusively upon the appropriate timing, type, amount, and purposes of aid. Something more is required, and that is the willingness and effort of the people to improve themselves: Where there is a will, there is a way.

One good thing has happened. Over a period of two decades, foreign aid programs have given practical lessons to both donors and to recipients. The Pearson Report records:

... in reviewing the literature of development, past and present, we have been struck by the intellectual progress which has been made in donor and recipient countries alike in understanding the nature and importance of development.<sup>2</sup> (emphasis added)

An attempt is made in this chapter to show "the intellectual" awareness (progress) of the East Pakistani (Bengali) intellectuals with respect to the foreign aid program.<sup>3</sup>

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<sup>2</sup>The Pearson Report (Partners in Development, New York: Praeger, 1969), p. 233.

<sup>3</sup>For East Pakistanis' reaction to Fourth Five Year Plan, see M. Afsaruddin, Survey on People's Reaction to Fourth Plan Objectives and Analyses of Motivation of Economic Activity in East Pakistan. (Jan. 30, 1970; mimeographed, Dacca University, Dept. of Sociology).

The communication gap

Disinterested observers have pointed out that the "communication gap" between the donors and the recipients is a serious problem. Out of the foreign aid program a cold 'bureaucratic' relationship has emerged between the two parties; there is indeed a significant lack of warmth and understanding in the actual dealings of foreign aid programs. This has led to misunderstanding and distrust --- what we might call the problem of "confidence crisis". It is important that both donors and recipients help establish a close and friendly relationship between them.

While the 'confidence crisis' prevails in the LDCs, the academicians in the "development circle" are groping in darkness to find some kind of rationale for the offer and acceptance of foreign aid. Many institutions have mushroomed. Yet no clear-cut well-defined rationale has yet emerged.

Most of the literature on foreign aid reflects, explicitly or implicitly, the donors' view of what the recipients' views are, and/or what they should be. So far no serious attempt has been made to assess the actual reactions of the recipients. This is a serious limitation to any foreign aid program.

Recently, Rahman quite emphatically made the point:

One cannot, however, help feeling that the literature on foreign assistance in the context of economic development of less developed countries reflects primarily the donor's point of view with scant appreciation of the point of view of the recipients. This is not only unsatisfactory as a normative approach ..., even in the purely formal context of developing an equilibrium theory of foreign assistance, this is rather inadequate, ignoring as it does the possibility that the recipient nations may reject offers of foreign assistance if they find the terms (economic and political) opposed to their own social interests. A complete theory of foreign assistance must therefore look at the issues from the recipient side as well.<sup>4</sup>

Given the limited awareness of the public at large about foreign aid, we decided to take a survey of the attitude of the intellectuals of East Pakistan (now Bangladesh) towards foreign aid. Accordingly a questionnaire was prepared.<sup>5</sup>

For the purpose of interview, 100 professors, 100 advanced students and 100 government officials of varying rank were chosen randomly from Dacca University, Dacca College, Rajshahi University, and government departments at Dacca and Rajshahi.<sup>6</sup>

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<sup>4</sup>M.A. Rahman, "The Welfare Economics of Foreign Aid", Pakistan Development Review, Spring 1968, p. 7.

<sup>5</sup>A sample questionnaire is enclosed.

<sup>6</sup>Dacca and Rajshahi are considered intellectual seats of East Pakistan (Bangladesh); two major universities are located there. Chittagong is now on its way to reach their status. The total number of actual respondents stood at 190 --- 80 students, 60 professors and 50 government officials. Because of the political sensitivity, names of the respondents were not available.

The survey was designed not only to measure East Pakistani intellectuals' reactions towards foreign aid, but also to test their ability of ranking the choices as well. Ranking, either in an ordinal or cardinal sense, facilitates the proper distribution of weights among competing candidates.

### Results of the survey

#### Ranking of motives behind offering foreign aid

(See Part I, General, Section 1, item 1 in Appendix E')

The following motives were asked to be ranked:

- A. Charitable act.
- B. To subsidize the inefficient industries in the donor countries.
- C. To strengthen political ties where the alliance already exists; to prevent a neutral country from becoming a camp-follower of the opposite ideology; to allure it into its own camp.
- D. To expand investment opportunity and trade in the developing countries.
- E. To create and maintain an international image of prestige, power and affluence.
- F. To help develop the poor countries by narrowing the gap between the developed and the underdeveloped nations.

Table D.1 shows that the three groups --- Professors, Advanced Students and Government Officials --- attached the highest importance to the motive "C", while least value to the motive "A". These intellectuals must have noted that Pakistan's growing relation with China led to the considerable decline in foreign aid inflows, particularly from the United States, the largest donor, even though Pakistan's economic performance, by any standard, was remarkable during the period.

To cite a specific example, the prospect of connecting Dacca with



Table D.1  
Ranking of motives of donors underlying foreign aid (as judged by recipients)<sup>a/</sup>

Respondents	% response						Total (%)
	1	2	3	4	5	6	
<b>Professors</b>							
A	00.0	00.0	00.0	00.0	7.7	23.1	69.20
B	00.0	7.7	15.4	7.7	7.7	00.0	61.50
C	100.0	00.0	00.0	00.0	00.0	00.0	0.00
D	00.0	46.2	23.1	7.7	15.4	00.0	7.60
E	00.0	38.5	46.2	7.6	00.0	00.0	7.70
F	00.0	00.0	00.0	46.2	23.1	00.0	30.70
Other	00.0	00.0	00.0	00.0	00.0	00.0	0.00
<b>Students (Advanced)</b>							
A	00.0	00.0	00.0	5.6	16.7	27.8	49.90
B	00.0	16.7	16.9	22.2	33.3	00.0	10.90
C	75.8	5.7	5.6	00.0	11.1	00.0	1.80
D	11.1	11.0	61.1	11.2	00.0	00.0	5.60
E	5.6	55.6	5.7	27.8	00.0	00.0	5.30
F	5.6	11.1	11.0	33.3	22.2	5.6	11.20
Other	00.0	00.0	00.0	00.0	00.0	00.0	0.00
<b>Government Officials</b>							
A	00.0	00.0	00.0	00.0	10.0	20.0	70.00
B	10.0	20.1	20.0	00.0	10.2	10.1	29.60
C	60.0	00.0	10.1	10.0	00.0	00.0	19.99
D	19.1	50.1	9.05	8.0	8.15	5.5	0.00
E	00.2	19.8	50.1	30.0	00.0	00.0	0.00
F	10.2	10.0	10.3	40.2	20.1	00.0	18.47
Other	00.0	00.0	00.0	00.0	00.0	00.0	0.00

<sup>a/</sup> Note 1: A,B,C,D,E,F are the different motives to be ranked. 1,2,3,4,5,6 etc. are ranking in a decreasing order of importance. For details see Part-1 (general) Section 1 in the sample questionnaire attached in the Appendix. (D')

Canton (China) by an airlink coincided with Washington's decision to cancel the \$5 million Dacca-International-Airport Project in August 1965. It is hard not to think that political considerations did influence the decision of the United States. Notice that the motive "F" (Table D.1) was not ranked within the first three major motives of the donors, despite the fact that the announced objective of the donor has always been "F" (i.e. to help develop the poor countries by narrowing the gap between the developed and the under-developed nations).

#### Ranking of motives behind acceptance of foreign aid

The following motives were asked to be ranked:

- A. Any thing free or semi-free is welcome.
- B. To achieve a certain socio-politically desirable and economically feasible minimum growth rate of GNP which could not be attained without foreign aid.
- C. There exists a 'vicious circle' of poverty. Without aid, it is almost impossible to effect a breakthrough.
- D. In the context of modern international relations, it is very difficult to remain neutral. It is therefore wise for a country to make some bargain for its contribution to the world 'balance of power' - either by remaining neutral or by not remaining neutral.
- E. Given a certain stage of development and a socially desirable target growth rate, there exists an indispensable minimum level of imports. Since foreign exchange earnings fail to cover the entire requirements, foreign aid becomes a necessity.

The results are given in Table D.2. Notice that while Professors and Government Officials gave the motive "B" and Advanced Students "E" the first rank respectively, all of them gave least importance to the motive "D" which has political overtones.

Comparing Table D.1 and Table D.2, one finds that mainly economic

Table D.2

Ranking of motives of recipients underlying the acceptance of foreign aid\*

Respondents	Ranking					No Comment	% response Total (%)
	1	2	3	4	5		
<b>Professors</b>							
A	00.0	00.0	00.0	00.0	41.7	58.30	100
B	41.7	33.3	8.3	00.0	00.0	16.70	100
C	25.0	16.7	25.2	8.3	00.0	24.80	100
D	8.3	00.0	16.7	33.3	00.0	41.70	100
E	8.2	41.7	25.0	8.4	00.0	16.70	100
Other	00.0	00.0	00.0	00.0	00.0	0.00	100
<b>Students (Advanced)</b>							
A	16.7	00.0	5.6	16.7	27.8	33.20	100
B	22.2	55.5	16.7	5.6	00.0	0.00	100
C	22.3	33.3	22.1	5.7	5.5	10.10	100
D	00.0	00.0	11.1	55.6	16.7	38.90	100
E	38.9	11.1	33.3	5.6	11.1	0.00	100
Other	00.0	00.0	00.0	00.0	00.0	0.00	100
<b>Government Officials</b>							
A	00.0	00.0	10.2	20.2	40.1	29.50	100
B	40.2	20.1	30.0	00.0	00.0	9.70	100
C	30.1	10.2	30.1	00.0	10.2	19.60	100
D	00.0	20.2	00.0	50.1	00.0	29.80	100
E	20.5	40.1	20.1	10.0	00.0	0.40	100
Other	00.0	00.0	00.0	00.0	00.0	0.00	100

\* Note: A, B, C, D, E, are different motives to be ranked. 1, 2, 3, 4, and 5 are ranking in a decreasing order of importance. For details see Part-1 (general) Section 1 in the sample questionnaire. (Appendix D')

factors force the LDCs to accept foreign aid, while political considerations greatly influence the country-wise allocation of aid.

This strongly suggests the possibility of the existence of a 'communication gap' between the donors and the recipients. The Pearson Report concedes: "Often ... donor and recipient differ about the importance or political sensitivity of an act."<sup>7</sup>

#### Ranking of causes against accepting foreign aid

The following causes were given for ranking:

- A. It acts as a substitute for domestic savings and thus impairs the incentive and the ability to save.
- B. It precipitates the balance-of-payment crisis by creating the debt-servicing problem.
- C. Roughly 66% of total bilateral aid to the developing countries is in the form of tied aid. This form of aid distorts national priorities and prevents the optimal allocation of resources.
- D. It is usually given to create capacity and it is hardly available to maintain the existing capacity at its installed level. Thus there exists the 'excess capacity' which represents misallocation of resources.
- E. Directly or indirectly, the donors gain access to the economic and political decision-making process and thus influence the course of nation.

One can see in Table D.3 that the cause "E" received one of the top-ranks from all the three categories of the intellectuals; but the cause "C" got the top-rank from only Advanced Students and Government Officials and not from the Professors.

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<sup>7</sup>The Pearson Report, p. 236.

Table D.3  
Ranking of causes against accepting foreign aid\*

Respondents	1	2	3	4	5	No Comment	% response Total (%)
<b>Professors</b>							
A	8.3	8.2	50.0	00.0	8.3	25.20	100
B	8.1	33.3	00.0	25.1	8.2	24.50	100
C	33.3	16.7	16.3	00.0	8.2	25.50	100
D	00.0	16.5	8.3	16.5	25.0	33.70	100
E	33.1	8.3	00.0	25.0	8.3	25.30	100
Other	00.0	00.0	00.0	00.0	00.0	0.00	100
<b>Students (Advanced)</b>							
A	5.6	11.1	11.0	16.5	22.3	32.94	100
B	16.1	27.8	33.2	16.3	00.0	5.60	100
C	44.4	27.1	22.2	00.0	00.0	6.30	100
D	5.5	11.0	5.6	38.9	27.8	10.20	100
E	33.1	8.3	00.0	22.2	8.3	28.10	100
Other	00.0	00.0	00.0	00.0	00.0	0.00	100
<b>Government Officials</b>							
A	10.0	30.2	00.0	20.1	00.0	39.80	100
B	20.3	10.1	50.2	00.0	00.0	19.4	100
C	40.0	20.2	10.3	20.4	00.0	9.5	100
D	00.0	10.3	00.0	20.2	40.0	29.5	100
E	20.0	20.2	30.0	00.0	20.5	9.3	100
Other	00.0	00.0	00.0	00.0	00.0	0.0	100

\*Note: A, E, C, D, E are different causes underlying the rejection of foreign aid. 1, 2, 3, 4, 5 are ranking in a decreasing order of importance. For details, see Part-1 (general) Section 2 in the sample questionnaire attached in the Appendix(D.)

Ranking of the projects competing for a given amount of resources in the donor countries (as judged by the recipients)

Given the following projects, the intellectuals were asked to rank them, as if they were donors.

- A. Space research programme in the donor country.
- B. Foreign aid programme for the developing countries.
- C. Removal of internal poverty-pockets programme. (viz. Negro problem in the United States; Red Indian problem in Canada, etc.) in the donor country.
- D. Removal of water and air pollution in the donor country.

The purpose of this ranking was to see whether or not the recipients are aware of the donors' problems and if they are, whether they think there is a willing sacrifice on the part of donors to help develop the LDCs.

Table D.4 reveals the recipients' minds. Only 8 per cent of Professors voted for the project "C", while 50 per cent of Government Officials and 44 per cent of Students supported the Project as a top-priority one. As far as the Project "B" is concerned, 20 per cent of Government Officials, 5 per cent of Advanced Students and 25 per cent of Professors gave "B" the top-rank. This implies that the recipients do know that the donor is undergoing some real sacrifices.<sup>8</sup>

Tables D.5, D.6 and D.7 hold aloft the picture of East Pakistani intellectuals' reaction to the idea that foreign aid is necessary for development, and has in fact contributed positively to accelerate development.

<sup>8</sup> In a Louis Harris Poll taken for LIFE in 1969, "69 per cent nominated foreign aid as the prime candidate for federal spending cuts." Time, March 23, 1970, p. 24.

Table D.4

Ranking of the projects simultaneously competing for a given amount of resources\*

Respondents	% response				Total (%)
	1	2	3	4	
<b>Professors</b>					
A	00.0	00.0	16.7	41.7	41.60
B	25.2	16.7	41.8	8.3	8.00
C	8.2	25.0	00.0	00.0	66.80
D	8.3	41.7	25.3	8.2	16.50
<b>Students (Advanced)</b>					
A	5.6	00.0	11.1	83.3	0.00
B	5.5	16.7	66.7	11.1	0.00
C	44.4	50.2	5.6	00.0	0.00
D	44.3	33.3	16.7	5.6	0.00
<b>Government Officials</b>					
A	00.0	00.0	10.2	60.0	29.8
B	20.0	30.3	20.1	10.2	19.7
C	50.0	30.2	00.0	00.0	19.8
D	10.5	20.3	40.5	00.0	19.7

\*Note: A,B,C,D are different projects competing for a given amount of resources. 1,2,3,4 are rankings in a decreasing order of importance. For details see Part-1 Section 2 in the sample questionnaire. (Appendix D)

Table D5  
 Technical assistance can "raise both the capacity to absorb capital and  
 the maximum efforts" - Professor Benjamin Higgins

Respondents	% response			Total (5)
	Agree	Don't agree	No Comment	
Professors	53.8	30.8	15.40	100
Students (Advanced)	55.6	38.9	5.50	100
Government Officials	36.4	18.2	45.40	100



Table D.6  
 Is foreign aid indispensable for economic development in  
 Pakistan (now Bangladesh & Pakistan)?

Respondents	% response			Total (%)
	Yes	No	No Comment	
Professors	61.5	30.8	8.70	100
Students (Advanced)	61.1	27.8	11.10	100
Government Officials	81.8	00.0	18.20	100

Table D.7  
 Contribution of foreign aid to economic development of  
 Pakistan (now Bangladesh & Pakistan)

Respondents	% response				Total (%)	
	No	Very little	Small	Substantial		No Comment
Professors	-	15.4	38.5	38.4	7.70	100
Students (Advanced)	16.7	27.8	27.9	27.5	0.00	100
Government Officials	-	18.2	36.4	27.3	18.10	100

Table D.5 shows that the overwhelming majority of the intellectuals agree with Professor Higgins that technical assistance can "raise both the capacity to absorb capital and the maximum effort." This should dispel misgivings, if any, from the minds of both donors and recipients regarding the effectiveness of technical assistance. Tables D.6 and D.7 attempt to summarize the overall feelings of the recipients towards the role of foreign aid.

Earlier the respondents reacted somewhat unfavourably towards foreign aid, particularly with respect to the motives of donors countries underlying foreign aid and the possible effects of foreign aid (Table D.3); but, all told, they appear to believe that foreign aid is indispensable for economic development.

Table D.6 shows that nearly 82 per cent of Government Officials, 61 per cent of Advanced Students, and 62 per cent of Professors agreed with the indispensability of foreign aid. Table D.7 confirms the fact that foreign aid has contributed positively, though the opinion is divided on the relative magnitude of its contribution. This division of opinion appears to suggest the existence of some doubt about the relative contribution of foreign aid to development, though there is no doubt about its positive contribution.

If this survey results represent the typical feeling in the LDCs, there is strong case for substantial increase in foreign aid to the LDCs with appropriate terms and conditions. But unfortunately, the recent trend has been one of decline.

Section: I

1. Given the following objectives or motives behind giving foreign aid to the underdeveloped countries, how would you rank them in order of importance? (use 1,2,3 etc. and cross out if any objective is not relevant)

6	A. Charitable act
2	B. To subsidize the inefficient industries in the donor countries
1	C. To strengthen political ties where the alliance already exists to prevent a neutral country from becoming a camp-follower of the opposite ideology; to allure it into its own camp
3	D. To expand investment opportunity and trade in the developing countries
4	E. To create and maintain an international image of prestige, power and affluence
5	F. To help develop the poor countries by narrowing the gap between the developed and the underdeveloped nations.

2. Do you think there exists any other objectives(s) not covered in the ITEM 1? yes  no

A. If yes, mention it (them) with ranks:

.....  
.....  
.....  
.....  
.....  
.....

3. Given the following objectives behind accepting foreign aid by the developing countries, how would you rank them in order of importance? (use 1,2,3, etc. for ranking and cross out any objective which seems to you irrelevant).

- |   |   |
|---|---|
| X | A. Any thing free or semi-free is welcome.  |
| 2 | B. To achieve a certain socio-politically desirable and economically feasible minimum growth rate of GNP which could not be attained without foreign aid.   |
| 1 | C. There exists a 'vicious circle' of poverty. Without aid, it is almost impossible to effect a breakthrough.   |
| 4 | D. In the context of modern international relations, it is very difficult to remain neutral. It is therefore wise for a country to make some bargain for its contribution to the world 'balance of power' -either by remaining neutral or by not remaining neutral. |
| 3 | E. Given a certain stage of development and a socially desirable target growth rate, there exists an indispensable minimum level of imports. Since foreign exchange earnings fail to cover the entire requirements, foreign aid becomes a necessity.                |

4. Do you think there exists any other important objectives(s) not covered in the ITEM 3 ? yes  no

A. If yes, name it (them) with ranks

.....

.....

.....

.....

Section : II

1. It is argued that foreign aid is harmful for the development of underdeveloped countries for the following reasons:

- |   |  |
|---|--|
| 1 | A. It acts as a substitute for domestic savings and thus impairs the incentive and the ability to save.  |
| 2 | B. It precipitates balance-of-payment crisis by creating debt-servicing problem.   |
| 3 | C. Roughly 66% of total bilateral aid to the developing countries are in the form of tied aid. This form of aid distorts national priorities and prevents optimal allocation of resources. |

- 4 D. It is usually given to create capacity and it is hardly available to maintain the existing capacity at its installed level. Thus there exists the 'excess capacity' which represents misallocation of resources.
- 5 E. Directly or indirectly, the donors gain access to the economic and political decision-making process & thus influence the course of nation.

Do you agree?    yes                       No

(i) If yes, rank them in order of importance (use 1,2,3 etc.; cross out if any reasoning is not relevant)

- 6. It is argued that since it is impossible to say what would have happened to the economy without aid, it is equally impossible to say what has happened or would happen with aid.

Do you agree?    yes                       NO.

- 7. It is argued that the donor gives far less than it could give and the recipient needs far more than it receives, it is therefore useless to determine the amount of aid required. What is needed is to persuade the donors to increase the present level of aid.

Do you agree?    yes                       No

- 8. It is suggested that the advanced countries should allocate 1% of their GNP for economic aid to the developing countries. Suppose the following four programs are competing for the same resources, which one would you select? How would you rank them? (assume yourself a donor).

- 4 A. Space Research Programme in the donor country
- 3 B. Foreign Aid Programme for the developing countries
- 2 C. Removal of internal poverty-pockets Programme. (viz. Negro problem in the U.S.; Red Indian problem in Canada etc.) in the donor country
- 1 D. Removal of water and air pollution in the donor country.

Section : III (Only for those specialised in the field)

- 9. Do you think there exists any well-defined and generally acceptable theory of foreign aid?    yes     NO

10. It is argued (particularly by Chenery and his collaborators) that the theory of "DUAL GAP" provides a reasonable basis for determining (i) the amount of total aid required by the developing economy to attain socially-acceptable minimum growth rate; (ii) the time path of optimal capital inflow over a planning horizon; and (iii) the determination of aid-termination period.

Do you agree?      yes       NO

A. If yes, will you equate it with the theory of foreign aid?

yes       no

B. If no, what is your fundamental objection?

.....  
.....  
.....  
.....  
.....

Section : IV

11. The tax-payers of the developed countries pay tax as an alternative to going to prison. Out of the tax-fund, foreign aid program is financed.

Would you call this act of giving aid a charitable act?

yes       no

12. Recently Mr. Darling made a statement in the British Parliament.

"We are in the danger of becoming a bunch of hypocrites if we mouth platitudes that more aid should be given and do not get down to practical problems of how to give it where it is most needed and on the scale needed" (The Times, Nov. 29, 1969).

What is your reaction? meaningful  no comment  nonsense

13. Have you visited any other underdeveloped country or countries ?

yes       no

A. If yes, name the country or countries .....

.....; mention the purpose and duration of visit  
.....  
.....

B. What striking differences have you noticed ?

.....  
.....  
.....

Section : V.

14. Are (or were) you actively associated or engaged in any research project relating, directly or indirectly, to the impact of foreign aid on the development of the underdeveloped countries ?

yes  no

A. If yes, mention the title of the project and its date (or expected date) of completion and/or publication:

.....  
.....  
.....  
.....

Do you want to be in touch with these who are engaged in the research in the same direction? yes  no

B. ~~If yes,~~ Do you know any one who is interested or involved in the research in the same direction ?

yes  no

(i) If yes, give the name and address of the person(s)

.....  
.....  
.....  
.....

15. Use the space below for any comment you think relevant for Part I:



P A R T - 2  
(PAKISTAN)

1. Are you Pakistani by birth or domicile? Birth    
 Domicile

2. What is your mother tongue? Bengali  Urdu    
 English  Other

3. What other languages do you know? (use a,b,c and d for good, fair, poor and not at all, respectively)

	Speak	Write	Understand
Bengali	a	a	a
Urdu	c	c	b
English	b	b	a
Other	d	d	d

4. Here are a few recently completed aid-financed projects in Pakistan. Provide the following informations against each Project.

PROJECTS	Heard of		Location		Donor Country
	yes	no	East	West	
01 Warsak Hydroelectric Project	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	US
02 Sukkur Thermal Power Plant.	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	USA
03 Dacca-Chittagong Transmission Line	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		USA
04 Sylhet Fertilizer Factory	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		JAPAN
05 Rajshahi Sugar Mills	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		CANADA

5. Major contributors of grant aid to Pakistan (other than U.S.) are Sweden, U.K., Canada and Australia (upto 1966-67). Rank these countries according to your estimation of the amount of their contribution. (use 1,2,3 etc.)

SWEDEN  4 U. K.  1 CANADA  2 AUSTRALIA  3

6. Given the present social, economic and political conditions in Pakistan, do you think foreign aid to Pakistan is indispensable for its economic development? yes  no

7. Pakistan used nearly 11% of total U.S.AID budget for three year period (1960-61) for expansion of Govt. administration while India did 1%. Does this mean that the donor-recipient participation in Pakistan has been much greater than that of India? yes  no

(a) If yes, would you say that U.S. had much greater influence in decision-making process in Pakistan than in India? yes  no

(b) If yes, do you think it has been beneficial to Pakistan? yes  no

8. People normally use the following words and phrases to describe their feelings about the quality of a project? Express your feelings regarding the project in Item 4:

	01	02	03	04	05
Sound and well located	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Bad location					
Wastage of resources					
Beneficial to the Society	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
High priority project				<input checked="" type="checkbox"/>	
Low priority project			<input checked="" type="checkbox"/>		

9. Do you think there exists a considerable gap between pledging and committing and between committing and disbursing in the aid-receiving process? yes  no

(a) If yes, do you think that it impedes the smooth implementation of a plan? yes  no

10. Rank the following causes for slow disbursements:

- 1 A. Wrong choice of top personnel
- 2 B. Faulty project preparation, programming and scheduling
- 3 C. Failure of supplying raw materials and components
- 4 D. Non-availability of local funds
- 5 E. Inadequate aggregate demand
- Other wrong decisions, - if any .....

11. Tied project aid distorted the national priorities, increased ~~or~~ debt-service burden, created excess capacity in the economy.  
Do you agree? Yes  NO

12. If yes, would you accept tied aid in future if the choice is between tied aid and no aid at all? Yes  no

13. Check the type you prefer

(a) Bilateral aid  or Multilateral aid

(b) Grants  or Subsidized or interest free loan

(c) Tied aid  or Untied aid

(d) Project aid  or Commodity aid

14. Prof. Higgins has recently argued that the technical assistance can "raise both the capacity to absorb capital and the maximum domestic efforts". Do you agree? Yes  no

15. Did you have any personal contact with any aid official from donor country? Yes  no

(a) If yes, did you feel that he was sincerely committed to the economic development of underdeveloped countries.

yes  no

16. Do you think foreign aid to Pakistan has contributed to its development process?

No  Very little  Small  Substantial

17. Use the space below for any comment you think relevant for Part 2:

Table E. 1

## Pakistan's defence expenditure

(In ten millions of rupees)			
	Central expenditure total (1)	Defence outlay (2)	(2) as a % of (1)
1950-51	126.62	64.99	51.32
1954-55	117.26	63.51	54.16
1955-56	143.34	91.77	64.02
1956-57	133.07	80.09	60.18
1957-58	152.18	85.42	56.13
1958-59	195.65	99.66	50.93
1959-60	184.65	104.35	56.51
1960-61	189.42	111.24	58.72
1961-62	198.68	110.86	55.79
1962-63	179.53	95.43	53.15
1963-64	223.71	115.65	51.69
1964-65	273.62	126.23	46.13
1965-66	449.81	285.50	63.47
1966-67	377.64	229.35	60.73
1967-68 (Rev.)	404.20	223.00	55.17
1968-69 (Bud.)	436.20	245.00	56.16
Total	3795.58	2132.05	60.91

Source: K.P. Misra, Journal of Peace Research, 1, 1972.

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