INFORMATION TO USERS

This was produced from a copy of a document sent to us for microfilming. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help you understand markings or notations which may appear on this reproduction.

1. The sign or “target” for pages apparently lacking from the document photographed is “Missing Page(s)”. If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure you of complete continuity.

2. When an image on the film is obliterated with a round black mark it is an indication that the film inspector noticed either blurred copy because of movement during exposure, or duplicate copy. Unless we meant to delete copyrighted materials that should not have been filmed, you will find a good image of the page in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed the photographer has followed a definite method in “sectioning” the material. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For any illustrations that cannot be reproduced satisfactorily by xerography, photographic prints can be purchased at additional cost and tipped into your xerographic copy. Requests can be made to our Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases we have filmed the best available copy.
JAMES, WILLIAM EDWARD

AN ECONOMIC ANALYSIS OF PUBLIC LAND SETTLEMENT ALTERNATIVES IN THE PHILIPPINES

University of Hawaii

Ph.D. 1979

University Microfilms International

300 N. Zeeb Road, Ann Arbor, MI 48106

18 Bedford Row, London WC1R 4EJ, England
AN ECONOMIC ANALYSIS OF PUBLIC LAND
SETTLEMENT ALTERNATIVES IN THE PHILIPPINES

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION
OF THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY
IN ECONOMICS
August 1979

By
William Edward James

Dissertation Committee:
James A. Roumasset, Chairman
James Mak
Walter Miklius
Richard Pollock
Elias T. Ramos
ACKNOWLEDGMENTS

The idea of studying agricultural settlements in public land areas of the Philippines began taking form over two years ago. Dr. David Wurfel of Windsor University and Dr. James A. Roumasset gave valuable advice and encouragement to my plans at an early stage. The efforts of Dr. Roumasset, in not only encouraging me when things looked down, but in actively convincing others my study was worthwhile, will always be appreciated.

A generous research assistantship and travel allowance under grant number SOC 76-83845 from the National Science Foundation and the support of the International Rice Research Institute (IRRI) made it possible to study the land settlement process first hand. My thanks go to Dr. Robert W. Herdt, Ms. Violeta Cordova, Dr. Yujiro Hayami, and the many other colleagues and friends at IRRI.

Mr. Teofilo Argueza, who served as an interpreter and guide in both Palawan and Pangasinan, worked with skill, patience, and an always wonderful disposition. The kind assistance of Ms. Agnes Tobias in coding the data from the field interviews and of Ms. Lilia Tan in programming and aiding in interpreting the results was of immeasurable value.

I thank Dean Sandoval of the University of the Philippines, Los Baños and Dean Encarnacion of the University of the Philippines, Diliman for the support offered by the
Institute of Agricultural Development and Administration and the School of Economics respectively. I will always have fond memories of my association with these institutions, their faculty, and students.

I wish also to thank the Austria family whom I stayed with and who introduced me to Philippine language, customs, and friendship. Nor can I forget my companions on the last field trip to Cagayan Valley: Lessie, Jessie, and Blessie, all brave spirits in the face of a typhoon.

My ultimate thanks and best wishes go to the many families and friends in Palawan who generously gave of their time, friendship and hospitality.
ABSTRACT

Agricultural land settlement, the migration of settlers to open new land for farming, remains a viable rural development option in parts of the Philippines. Investment in land settlement may complement a strategy aimed primarily at raising productivity of existing agricultural land through irrigation and adoption of modern techniques.

Two major forms of land settlement, self-financed and government-organized, characterize such endeavors in the Philippines and much of the developing world. A comparative empirical study of both self-financed and government-assisted settlers in the province of Palawan revealed that self-financed settlers are more successful, earning higher incomes and achieving a higher level of farm development.

Settler selection explains the relative success of self-financed settlers. They have backgrounds that prepare them for pioneer farming, with a higher level of farm and managerial skills and larger initial capital of their own on average than settlers selected by the government. The subsidy offered by the government encourages migration of those unprepared for the tasks that confront them in frontier zones and leads to lower average productivity among government settlers. The subsidized loans made to government settlers are often defaulted on, compounding problems of financing. Self-financed land settlement involves much
lower public investment cost per settler than does
government-organized settlement. As a result it may involve
a much larger clientele than government-organized settlement.

Availability of open public land and wage differentials
courage migration into thinly populated areas. Improved
roads and infrastructure will further stimulate such migra-
tion. Agricultural contracts evolve in recently settled
areas that reflect relative labor and capital scarcity. The
process of farm-making is rarely undertaken singly by a set-
tler. Instead contracts such as sharecropping, land-
borrowing and exchange labor are commonly used as substitutes
for capital and labor markets. Many settlers begin as
rentals until they can establish and develop their own farms.
Tenants and rural laborers earn higher wages in recently
settled areas than in out-migration areas. Over time, agri-
cultural contracts adjust to changes in population pressure,
technology, and commercial development.

Land settlement does not succeed in creating egalitarian
rural communities. Differences in human abilities and imper-
fections in human institutions lead to this result. Govern-
ment organized settlement is no more successful at redistrib-
uting income than is self-financed settlement.

The experience of the Philippines appears to conform to
that in other developing nations. Studies of land settlement
in other countries indicate self-financed settlement has
greater net benefit and involves far more settlers than
government-organized settlement.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td></td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td></td>
<td>v</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td></td>
<td>xiii</td>
</tr>
<tr>
<td>LIST OF MAPS</td>
<td></td>
<td>xiii</td>
</tr>
<tr>
<td>PREFACE</td>
<td></td>
<td>xiv</td>
</tr>
<tr>
<td>CHAPTER I.</td>
<td>THE VIABILITY OF LAND SETTLEMENT IN THE PHILIPPINES</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>HISTORICAL BACKGROUND AND ISSUES</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Land Settlement and the Safety-Valve Theory</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Types of Land Settlement in the Philippines</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Government-Financed Settlement</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Self-Financed Settlement</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Review of Studies of Land Settlement in the Philippines</td>
<td>19</td>
</tr>
<tr>
<td>CHAPTER III.</td>
<td>RESEARCH METHODOLOGY, DATA COLLECTION, AND STUDY AREAS</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Farm Level Survey</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Field Study Areas Data Collection and Verification</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Price Level Adjustments</td>
<td>35</td>
</tr>
<tr>
<td>CHAPTER IV.</td>
<td>MIGRATION, THE FARM-MAKING PROCESS, AND AGRICULTURAL CONTRACTS</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>The Migration Process</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Agricultural Contracts and the Farm-Making Process</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Conclusion: Agricultural Contracts and Land Settlement</td>
<td>64</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS (continued)

<table>
<thead>
<tr>
<th>CHAPTER V.</th>
<th>LAND SETTLEMENT COSTS, INCOME GENERATION, AND FARM IMPROVEMENTS: A COMPARISON</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Land Settlement Costs Compared</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Income and Farm Improvements</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>Government Assistance and Farm Income</td>
<td>83</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER VI.</th>
<th>SETTLER SELECTION AND INSTITUTIONAL ADAPTATION, EXPLANATORY VARIABLES</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Explanatory Variables</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>Income Variations</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Farm Improvements</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>Analysis of Farm Finances: Settler Indebtedness and Subsidized Credit</td>
<td>109</td>
</tr>
<tr>
<td></td>
<td>Conclusion: Settler Success and Land Settlement Financing</td>
<td>119</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER VII.</th>
<th>LAND SETTLEMENT DYNAMICS: INCOME DISTRIBUTION AND CHANGES IN LAND TENURE AND AGRICULTURAL CONTRACTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Distribution of Land and Income</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>Some Generalizations about the Dynamics of Land Settlement and Self-Financed Settlement</td>
<td>133</td>
</tr>
<tr>
<td></td>
<td>Pioneer Settlement Stage</td>
<td>134</td>
</tr>
<tr>
<td></td>
<td>Consolidation Stage</td>
<td>137</td>
</tr>
<tr>
<td></td>
<td>Maturation Stage</td>
<td>138</td>
</tr>
<tr>
<td></td>
<td>Changes in Agricultural Contracts in a Recently Settled Area</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>Labor Hiring Practices</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>Government Organized Land Settlement</td>
<td>151</td>
</tr>
<tr>
<td></td>
<td>Conclusion: Land Settlement Dynamics and Income Distribution</td>
<td>155</td>
</tr>
<tr>
<td>TABLE OF CONTENTS (Continued)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>CHAPTER VIII. CONCLUSIONS AND POLICY IMPLICATIONS</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>Summary of Findings and Their Implications for Land Settlement in the Philippines</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>Settler Selection</td>
<td>163</td>
<td></td>
</tr>
<tr>
<td>Agricultural Organization and Contracts</td>
<td>166</td>
<td></td>
</tr>
<tr>
<td>Income Inequalities</td>
<td>169</td>
<td></td>
</tr>
<tr>
<td>Subsidized Credit Schemes</td>
<td>170</td>
<td></td>
</tr>
<tr>
<td>Public Land Management in the Philippines</td>
<td>172</td>
<td></td>
</tr>
<tr>
<td>Land Settlement Policy and Philippine Development</td>
<td>174</td>
<td></td>
</tr>
<tr>
<td>Applicability of Conclusions to Land Settlement Elsewhere in the Developing World</td>
<td>179</td>
<td></td>
</tr>
<tr>
<td>APPENDIX I.</td>
<td>186</td>
<td></td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>188</td>
<td></td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government-Sponsored Settlement Efforts in the Philippines</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>Public Land Applications and Patents since Passage of the Public Land Law of</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>the Philippines</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Barrios Included in Field Study by Stage of Development, Number and Type of</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Respondents</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Settlers in Palawan Field Survey by Mother Tongue</td>
<td>42</td>
</tr>
<tr>
<td>5</td>
<td>Settlers in Palawan Field Survey by Geographic Origin</td>
<td>42</td>
</tr>
<tr>
<td>6</td>
<td>Characteristics of Sharecropping Contracts in a Recently Settled Area, Palawan</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Rice Farms, 1978</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Farm Size, Pre-Migration and in Palawan</td>
<td>48</td>
</tr>
<tr>
<td>8</td>
<td>Land Ownership by Size Class, Pre-Migration and Palawan</td>
<td>48</td>
</tr>
<tr>
<td>9</td>
<td>Mean Area Held by Landowners, Pre-Migration and in Palawan</td>
<td>49</td>
</tr>
<tr>
<td>10</td>
<td>Land Tenure Changes Reported by Settlers</td>
<td>49</td>
</tr>
<tr>
<td>11</td>
<td>Income Changes Reported by Settlers In Palawan, Compared to Source Areas</td>
<td>50</td>
</tr>
<tr>
<td>12</td>
<td>Estimated Cost Per Hectare for Development of Lowland Rice Paddies, Palawan</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>1978</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Average Farm Size, Average Yield Per Hectare, and Average Length of Tenure</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>by Type of Contract in Palawan</td>
<td></td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Estimated Establishment Costs for a Five Hectare Rice Farm, Palawan, 1978</td>
<td>70</td>
</tr>
<tr>
<td>15</td>
<td>Type of Assistance Received by Government-Subsidized Settlers</td>
<td>75</td>
</tr>
<tr>
<td>16</td>
<td>Abandonment of Farmlots in Palawan Settlement Project</td>
<td>78</td>
</tr>
<tr>
<td>17</td>
<td>Success Indicators Compared for Self-Financed and Government-Assisted Settlers</td>
<td>81</td>
</tr>
<tr>
<td>18</td>
<td>Mean Values of Potential Explanatory Variables Compared</td>
<td>93</td>
</tr>
<tr>
<td>19</td>
<td>Regression Coefficients. Dependent Variable - Rice Income (YR), 1977-78 Crop Year</td>
<td>97</td>
</tr>
<tr>
<td>20</td>
<td>Regression Coefficients. Dependent Variable - Farm Income (YF), 1977-78 Crop Year</td>
<td>98</td>
</tr>
<tr>
<td>21</td>
<td>Regression Coefficients. Dependent Variable - Total Income (YT), 1977-78 Crop Year</td>
<td>99</td>
</tr>
<tr>
<td>22</td>
<td>Regression Coefficients. Dependent Variable - Area of Farm Improved (AFI)</td>
<td>105</td>
</tr>
<tr>
<td>23</td>
<td>Regression Coefficients. Dependent Variable - Farm Capital (FK)</td>
<td>106</td>
</tr>
<tr>
<td>24</td>
<td>Regression Coefficients. Dependent Variable - Repayment Rate</td>
<td>115</td>
</tr>
<tr>
<td>25</td>
<td>Landholding Distribution by Type of Settler</td>
<td>124</td>
</tr>
<tr>
<td>26</td>
<td>Effective Landholding (Cultivated Farm Area) Distribution by Type of Settler</td>
<td>126</td>
</tr>
</tbody>
</table>
# LIST OF TABLES (continued)

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>Income Distribution by Type of Settler, 1977-1978 and Rural Philippines, 1971</td>
<td>128</td>
</tr>
<tr>
<td>28</td>
<td>Income Distribution in 30 Non-Migrant Households, 1977-78, Tayug Pangasinan</td>
<td>131</td>
</tr>
<tr>
<td>29</td>
<td>Recontracting, Land Acquisition and Farm Development -- Palawan (% of Settlers Recontracting)</td>
<td>141</td>
</tr>
<tr>
<td>30</td>
<td>Labor Input Per Hectare by Technique and Source of Labor in Palawan Study Area (1977-78-Crop Year)</td>
<td>147</td>
</tr>
<tr>
<td>31</td>
<td>Percentage of Exchange Labor Used on Average for Various Tasks for Transplanted Rice in Palawan and Pangasinan Study Areas (1977-78 Crop Year)</td>
<td>148</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1. Returns to Land Settlement and Irrigation Projects ............. 8
Figure 2. Farm Income and Government Assistance .................. 85
Figure 3. Lorenz Curves ........................................ 129

LIST OF MAPS

Map 1. Province of Palawan ................................ xvi
Map 2. Study Areas ............................................ xix
Map 3. Map of the Philippines .............................. xx
PREFACE

One of the earliest problems considered by economic science was that of providing subsistence for a growing population. The dire predictions of the Reverend Malthus and David Ricardo regarding the outcome of population growth were based on the operation of the law of diminishing returns where land was the fixed productive factor. However, subsequent economic development contradicted the prognosis of "positive" Malthusian checks on population such as starvation and disease as well as the predicted tendency of real wages to fall to subsistence.

Changes positively affecting food supply were not foreseen in the static operation of the law of diminishing returns. The opening up of new lands and the application of scientific methods in agriculture have led to increases in food output that not only allowed a greater population to be maintained but also permitted living standards to rise for over a century and a half in the now industrialized countries.

In recent decades, rapid population growth in the developing countries of Asia, Africa, and Latin America and the global concern with natural resource scarcities have called up anew the spectre of diminishing returns. Though the spectre of starvation is real, it may yet be premature to say the globe's land resources have been exhausted.
A recent report from the Food and Agriculture Organization (FAO) indicates "middle-range" estimates point to a possible doubling or more of the current cultivated acreage in the world (FAO, 1978: 13). Most of the potential for expansion is in the humid tropical regions of Latin America and Africa, with smaller reserves in Asia. It is estimated that new land settlement is being undertaken on 3 to 3.75 million hectares on a spontaneous basis and 1 to 1.25 million hectares in organized schemes annually (ibid.: 13). The world agricultural base may grow by 10 percent, an increment of 150 million hectares, by 1985.

The pure magnitude of these endeavors underscores the importance of land settlement. From an economist's point of view, the finding that land settlement schemes organized by governments are on average eight times as costly as spontaneous settlement efforts raises interesting questions, especially since the scanty evidence available suggests spontaneous settlement may generate greater benefits (Nelson, 1973; Ruttan, 1975).

The term "spontaneous" does not connote the major distinction between the two types of settlements in this author's view. Source of financing is more expressive of the difference, hence for the remainder of the dissertation the term "self-financed" will be used for those settlers undertaking migration and farm-making without government financial assistance.
The lack of study to compare alternative programs of land settlement, the limited knowledge on the actual mechanisms by which new land is settled and developed, and the role of such activity in overall economic development, provide a strong impetus for empirical economic research. This study of the land settlement experience in a recently developed agricultural community in the Philippines is an effort at such research.

The settlement and development of new agricultural land has figured prominently in the economic development of the Philippines. Much of the current agricultural base in the archipelago has been carved out of the public domain. This process was encouraged not only by the passage of the Philippine Public Land Law in 1903 that instituted a homesteading system, but also by a long series of officially sponsored colonization projects.

The Philippines provides an appropriate setting for research in that a reservoir of experience exists that pertains to the key economic issues in land settlement confronting many developing countries. These include the viability of land settlement vis-a-vis alternative rural development projects, particularly those aimed at intensifying use of existing cultivated land; comparison of the benefits and costs of the two major types of land settlement, spontaneous and government sponsored; and patterns of income and wealth distribution resulting from land settlement.
To attempt to reach general conclusions based on a limited sample of settlers in one area of the Philippines is tenuous. It is wiser to view the results of studies such as this one as being useful in adding to the stock of knowledge about tropical land settlement efforts. In this context, such results may have wider implications to the extent that they correspond to, or perhaps even contradict, other studies. Further, empirical studies may be useful in actually testing hypotheses advanced in theoretical or non-quantitative works.

This investigation seeks to first clarify the role of land settlement in the development of the Philippines by assessing the perspectives and arguments regarding its future economic viability. Secondly, a direct comparison of the costs and returns of farm-making by self-financed and government-assisted settlers is conducted focusing on public sector outlays, settler expenses and income, capital accumulation and land development. Third, by examining settler characteristics, in terms of human and physical capital endowment an attempt is made to explain differential success. Finally, various institutional arrangements, agricultural contracts in particular, are examined in order to advance understanding of the actual processes of migration and farm-making which together constitute land settlement.
Map 1. Province of Palawan
MAP 2. Study areas.

1 - Estrella  
2 - Jose Rizal  
3 - Malatgao-Taritren  
4 - Malinao  
5 - Mariwara  
6 - Narra Poblacion  
7 - Panacan  
8 - Panitian  
9 - Princess Urduja

--- Municipal boundary  
National road  
Government Settlement Project  
- Study areas
Map 3. Map of the Philippines
CHAPTER I

THE VIABILITY OF LAND SETTLEMENT IN THE PHILIPPINES

Simkins and Wernstedt (1971: 1) argue that many developing countries, including the Philippines, have difficulty in meeting food demand not only due to a failure to adopt modern farm techniques but also because of the failure to utilize fully the available land resources. They cite large regional imbalances in the ratio of rural population to arable land to support the view that land settlement is potentially of major importance as a policy to increase food production. However, a study by Barker and Crisostomo-David (1972) of the growth of agricultural production in the Philippines revealed that a distinct change in the pattern of growth occurred in the 1960s. They found that extensive growth through cultivation of new lands was superceded by what may be termed "intensification" marked by increased investment in irrigation of existing cultivated lands and adoption of yield-increasing inputs and techniques. These findings led to a serious questioning of the continued viability of land settlement in the Philippines.¹ The hypothesis that the Philippines reached a land constraint in the decade of the 1960s is critically evaluated in this chapter. A number of reasons are presented in support of the view that additional investment in opening new land for settlement remains viable under Philippine conditions.
Hayami, David, Flores-Moya, and Kikuchi (1976) developed a land constraint hypothesis to explain the shift in the pattern of agricultural growth in the Philippines. Their statement of this hypothesis is as follows:

"As population pressure pushes the cultivation frontier into marginal areas, we expect the marginal cost of production via expansion of the cultivated area to rise relative to the marginal cost of production via more intensive land use. Eventually the economy reaches a stage at which more intensified land use becomes a less costly means of increasing agricultural output than expansion of the cultivated area." (Ibid., page 148).

Furthermore, Hayami et al., argue that escape from a Ricardian trap of mounting population pressure on a fixed supply of land in the Philippines depends on policies of:

"...intensified investment by the public sector in irrigation, and in research on the compelling need of the economy for internal land augmentation." (Ibid., page 155).

This conclusion is based on a comparative benefit-cost analysis of land settlement and irrigation projects performed ex ante. Results indicate that land settlement produces zero net benefit for society, while irrigation produces a substantial net benefit, particularly when combined with high-yielding rice seed varieties and large doses of fertilizer. Unfortunately, this analysis leads to the erroneous inference that no land settlement is profitable in the Philippines. On the basis of warning against such an
erroneous view a number of criticisms of the argument advanced by Hayami et al. are offered.

The analysis of Hayami et al. is based on overly restrictive assumptions. Relaxation of these assumptions leads to the view that there is likely to be considerable room for expansion of the area cultivated in the next decade even though in the long-run the land constraint is binding.

Aggregative analysis of irrigation and land settlement costs as done by Hayami et al. is misleading. The "marginal cost" curves drawn represent the average marginal costs of all projects. This obscures the fact that individual project costs vary greatly. For example, Huelgas and Torres (1974) found up to a fivefold variation in the per hectare cost of seven irrigation systems constructed in the Philippines by the National Irrigation Administration. Moreover, costs of large-scale irrigation systems recently constructed are substantially higher than assumed by Hayami et al. Barker (1977: 12) reports that, due to management problems, the construction costs of large irrigation systems may be double what is assumed prior to development. Some land settlement projects may now have a cost advantage over these irrigation projects.

The cost components of land settlement assumed by Hayami et al. include items budgeted for only a small subset of settlers receiving substantial government assistance. While government-sponsored resettlement efforts have often
involved high costs, schemes involving settlers who are self-financed may be quite inexpensive. Hayami et al. failed to consider the latter.

Hayami et al. assume the benefit stream in land settlement derives solely from one upland rice crop using traditional seed, or alternatively, two corn crops per year. This assumption leads to gross understatement of benefits since cropping patterns in recently settled areas are quite diverse and are frequently intensified over time.

Lewis (1971) and Simkins and Wernstedt (1971) indicate that self-financed land settlement with low initial levels of public expenditure resulted in dynamic economies in two areas of the Philippines. Substantial surpluses of rice, corn, and cash crops were produced and marketed in the areas studied. Similarly, a study of an upland area in Palawan settled by shifting cultivators (Eder, 1973) revealed that even these settlers engaged in a primitive farming regime responded to market opportunities. They intensified their farming methods and produced not only upland rice but also vegetables, copra, and livestock. These settlers achieved high incomes by rural Philippine standards at low investment cost, using mainly their own labor.

Cropping systems in government schemes have also been developed beyond the subsistence crop assumed by Hayami et al. On the other hand, several irrigation projects have proven, on the benefit side, to be less profitable than
originally imagined. In light of such exceptions to the rule that investment in intensification of land use is more profitable than land settlement, it seems that the land-constraint hypothesis is of dubious value in guiding the investment decisions of policymakers on a project-to-project basis.

Land settlement has several advantages relevant to rural development. In the Philippines, very large differences in the distribution of labor and capital with respect to land exist. Such differences are of concern to economists who generally agree that relocation of labor and capital to surplus-land from surplus-labor regions increases real national income. One obvious means for such relocation is land settlement. Land settlement may thus allow incomes of settlers to be substantially higher than what they could have earned in areas of relative labor-surplus, while leaving people remaining in such areas no worse off.

Land settlement, in addition, provides an attractive alternative to socially costly rural to urban migration, as well as a means to productively engage underemployed rural labor. The International Labour Office (ILO) Mission to the Philippines (ILO, 1974:466) estimated that a dollar invested in land settlement generates 50 to 100 percent more employment than a dollar invested in irrigation of existing cultivated land.
A final, but no less important, advantage of land settlement is that it can significantly expand agricultural production. In this context, it may contribute to goals such as national self-sufficiency in grain production or increased foreign-exchange earnings by boosting output of exportable crops.

A final reservation to a conclusion that land settlement is non-viable in the Philippines is the lack of knowledge of the availability of new land and of development costs. Hayami et al. admit their analysis is "highly conjectural" due to limited data on this question (Hayami et al., ibid., page 144). The National Economic and Development Authority (NEDA) in the five-year economic development plan for 1978 through 1982 (NEDA, 1977) estimates that an area of almost eight million hectares of uncultivated land remains in the Philippines, one-fourth of which may be suitable for agricultural development under existing technology. The plan envisions a major resettlement effort to bring potentially productive land under cultivation (NEDA, 1977: 106, 110).

The continued expansion of the area cultivated in some provinces indicates that the land frontier has not yet been reached. For example, if the land-constraint hypothesis is accepted in relation to the province of Palawan (see Map One), the land constraint would have been reached in 1960. Yet since then the lowland rice area has been expanded tenfold
and still less than one-fourth of the area released for agriculture is occupied (PEDC, 1977: 50). This rapid expansion in rice area occurred at the same time that the irrigated area was considerably increased, suggesting that a complementary approach of area expansion and irrigation is feasible. 6

The possibility of positive amounts of investment in both land settlement and irrigation projects is summarized in Figure 1. The curves LL' and II' illustrate the profitability of land settlement and irrigation projects respectively. If Ore represents the opportunity cost of investment capital in development projects, then it will be efficient to invest OA in land settlement projects and OB in irrigation works. Even though irrigation projects are, on average, more profitable than land settlement schemes, rational allocation of public investment funds requires equating the marginal rates of return to both types of projects.

Investment in land settlement appears to be viable. The major question is how profitable opportunities for land settlement may best be taken advantage of. The objective of the thesis is to explore this question in light of the Philippines' experience. To accomplish this the two main forms of land settlement are described and contrasted in terms of settler selection, and success. The role of agricultural organization and adaptation in recently settled areas is examined under each system. The nature of
Figure 1. Returns to Land Settlement and Irrigation Projects
agricultural contracts including land tenure and labor hiring arrangements and their relationship to development of recently settled areas is focused on. Conclusions based on the study for government policy regarding land settlement may then be drawn.
Footnotes to Chapter I

1 The ILO Mission to the Philippines was divided on the proper emphasis to give land settlement vis-a-vis intensification projects based on irrigation of existing lands. See special papers three and four in ILO (1974) for this discussion. A later World Bank report (Cheetham and Hawkins, 1977) makes scant reference to land settlement.

2 This danger is acknowledged by Hayami et al. (1978). The section on the viability of land settlement is based on an exchange of views between the author and Hayami et al. in the *Australian Journal of Agricultural Economics*, Vol. 22, No. 3 (December 1978), 206-211.

3 Exceptions to subsistence farming are noted in an interagency study of government resettlement (IARST, 1974: 7) and are also reported in the field study conducted by this author in subsequent chapters.

4 Barker (1977: 12) notes that in the case of national systems, "In many cases due to poor management of water in the major laterals, there may be essentially no benefits to be gained." Several large-scale flood control and irrigation projects have broken down in the recent past.


6 Hayami et al. acknowledged the existence of a large number of potentially profitable land settlement projects in the Philippines (Hayami et al., 1978).
CHAPTER II
HISTORICAL BACKGROUND AND ISSUES

The Philippines' experience with land settlement, both self-financed and government-assisted, is reviewed in this chapter. The mistaken view that land settlement may be a panacea rather than simply one component of economic development policy is disposed of. In this context, various studies and data covering the two main types of land settlement in the Philippines are reviewed in order to gain insight into the main issues involved and to provide a focus for the conduct of empirical investigation in the field.

Land Settlement and the Safety-Valve Theory

Developing countries possessing large areas of unused or underused lands suitable for agriculture have often come to regard them as a cushion against population pressure and attendant problems of poverty and unrest. For example, the validity of the renown hypothesis that the vast tracts of public land in the western United States provided a "safety-valve" preventing falling wages and labor strife in the industrialized east in American history was seriously challenged only decades after the closing of the frontier.

Frederick Jackson Turner asserted, "the free spaces of the West were destined to ameliorate labor's condition." An economist, Clarence Danhof, makes a convincing refutation of the safety-valve hypothesis based on an analysis of the
costs of labor migration and farm-making in the decade of 1850 to 1860 (Danhof, 1941). The study of Danhof finds these costs were substantially greater than the saving capacity of most eastern wage laborers. Others, notably Shannon (1936) and Gates (1973), offer additional evidence that the safety-valve theory is incorrect. Despite these revisionist works, the myth of the American western frontier remains popular.

In the Philippines the view that the large southern island of Mindanao and other relatively underdeveloped areas provided a safety-valve for surplus labor was criticized quite early by a few prescient scholars. Pelzer (1945: 127) stated:

"Mindanao, the second largest island of the Philippines, has been looked on by both the government and the public as the land of promise and unlimited opportunity, the frontier of the Philippines."

Pelzer argued that considerable areas of the island may not be suitable for agricultural development (1945: 127). Starner (1961) showed that the high costs of organized land settlement programs made it impossible for the authorities to significantly reduce population pressure in densely-settled regions, given the high rate of growth of population. Huke (1963) concentrated on showing that the unused agricultural lands in Mindanao were rapidly filling up. These studies indicated that, while land settlement efforts could profitably contribute to development, it was quite improper
to adopt the euphoric view that land settlement was a panacea for rural poverty. Simkins and Wernstedt (1971: 120) point out the limited role land settlement can be expected to play:

"Internal colonization is, at best, only a temporary palliative for population pressures in a country, unless the process is accompanied by other fundamental changes, such as increases in the productivity of agriculture, the development of alternative nonagricultural sources of employment and production, and ultimately a decline in the rate of population growth."

Types of Land Settlement in the Philippines

Land settlement requires that new land capable of development at a profit does indeed exist, that labor is sufficiently mobile to migrate to such land, and that capital is available to finance labor migration and farm-making. In the Philippines, as was pointed out above, the exact amount of land available remains unknown. Recent estimates range from one to four million hectares of economically arable land.

The location of such land is important. If it is in areas peripheral to developed areas then it will be easier to develop than if it is in remote areas. However, the latter case is typical, thus the conditions of labor mobility and capital availability assume great importance.

Both labor migration and land development may be considered investment activities requiring some initial capital outlay. Despite this fact, there is no implication that
land settlement is capital-intensive relative to other investments. Actually, land settlement may provide a means for mobilizing the capital-creating potential of underemployed rural labor in forming land infrastructure. Still some initial capital is required to permit migration of labor and to provide at least a minimum of funds for tools and subsistence until harvests on the newly farmed land are brought in.

The relative scarcity of capital makes it essential that this factor is allocated efficiently in promoting settlement. Projects with large initial outlays will have to be very limited in the number of beneficiaries that can be accommodated, whereas insufficiently endowed projects are likely to lead to a mere extension of subsistence agriculture. Beyond the initial capital outlay is the crucial question of whether settlers can generate a surplus for reinvestment in farm improvements.

There are various sources of capital including government, private business, and the settlers themselves. This study is concerned with land settlement schemes that draw either on government or on the settlers themselves as the major source of financing initially. These are particularly instructive since government-sponsored and self-financed settlements are the major alternatives that have been practiced historically in the Philippines and in much of the developing world.
Government-Financed Settlement

Government-assisted settlement of public lands in the Philippines is chronologically documented in Table 1, page 16. Central propositions of this approach to land settlement are that labor is unlikely to undertake unassisted migration to remote areas and that settlers lack the initial capital necessary to develop farms. This type of settlement has involved several different agencies over the years. Nevertheless, the ideas, if not the practices of such agencies, have been fairly standard. The responsible agency finances the settlers' migration and then provides them with land, housing, farm implements, seeds, work animals, health care, food up until an initial harvest, and sometimes access to mechanical equipment and modern production inputs, all on a no-interest, long-term loan basis. In addition, the agency is charged with provision of infrastructure such as roads, drinking water, and communications, as well as normal government services, sometimes in conjunction with other government bureaus. As Table 1 reveals, this type of settlement has not involved tremendous numbers of people.

At present, 40 projects with an aggregate area of 709,529 hectares and involving 47,619 families are administered by the Bureau of Resettlement of the Department of Agrarian Reform (DAR, 1976). Another 24 settlement projects are being currently considered. The new five-year economic development plan calls for the settlement of 32,800 families
<table>
<thead>
<tr>
<th>Date</th>
<th>Agency</th>
<th>Families Settled</th>
<th>Total Expenditure&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1913-1917</td>
<td>Insular Government</td>
<td>1,500</td>
<td>--</td>
</tr>
<tr>
<td>1918-1939</td>
<td>Bureau of Labor and Migration</td>
<td>9,172</td>
<td>--</td>
</tr>
<tr>
<td>1939-1949</td>
<td>National Land Settlement Administration (NLSA)</td>
<td>8,300</td>
<td>11</td>
</tr>
<tr>
<td>1949-1950</td>
<td>Rice and Corn Production Administration (RCPA)</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1950-1954</td>
<td>Land Settlement and Development Corporation (LASEDECO)</td>
<td>1,503</td>
<td>3.5</td>
</tr>
<tr>
<td>1954-1963</td>
<td>National Resettlement and Rehabilitation Administration (NARKA)</td>
<td>30,646</td>
<td>449</td>
</tr>
<tr>
<td>1964-1971</td>
<td>Land Authority (LA)</td>
<td>2,855</td>
<td>55.5</td>
</tr>
<tr>
<td>1971-</td>
<td>Bureau of Resettlement, Department of Agrarian Reform (DAR-BURE)</td>
<td>3,315</td>
<td>483.1</td>
</tr>
</tbody>
</table>

<sup>a</sup> All expenditure figures are in millions of current, unadjusted pesos.

by 1982 and a total of 106,020 by 1987 (NEDA, 1977: 110). The interagency study of the government's resettlement program found that little has been achieved in the way of redistribution of population from high-density to low-density areas, despite the fact that this has been a major objective of the official settlement program (IARST, 1974: annex G).

**Self-Financed Settlement**

Under self-financed settlement through the homesteading system, settlers are to receive a parcel of land not to exceed 24 hectares.\(^\text{12}\) Public expenses are usually limited to provision of roads, normal government services, and the administrative costs of processing and validating claims for public land. In contrast to government-assisted settlement, this program has involved substantial numbers of settlers and a large area of land. Table 2, on page 18, shows the number of patents which precede the final legal titling of land that have been granted and the area involved. This provides an extremely conservative estimate of the number of families accommodated on the public domain.\(^\text{13}\) A large number of applications have been filed but exist as a backlog not reported to the Central Bureau of Lands Office in Manila from provincial offices. In addition many settlers have not filed such applications despite their occupancy of public lands and the risk of being classified as "squatters" by the
<table>
<thead>
<tr>
<th>Years</th>
<th>Applications Approved</th>
<th>Area Issued (Hectares)</th>
<th>Patents Issued</th>
<th>Area Issued (Hectares)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1903-1909</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1910-1920</td>
<td>--</td>
<td>--</td>
<td>10,577</td>
<td>59,992</td>
</tr>
<tr>
<td>1921-1930</td>
<td>--</td>
<td>--</td>
<td>18,065</td>
<td>184,400</td>
</tr>
<tr>
<td>1931-1940</td>
<td>--</td>
<td>--</td>
<td>65,066</td>
<td>684,805</td>
</tr>
<tr>
<td>1941-1950</td>
<td>38,354</td>
<td>300,495</td>
<td>16,323</td>
<td>193,308</td>
</tr>
<tr>
<td>1951-1960</td>
<td>296,593</td>
<td>1,646,142</td>
<td>241,156</td>
<td>1,410,074</td>
</tr>
<tr>
<td>1961-1970</td>
<td>375,182</td>
<td>1,223,098</td>
<td>374,264</td>
<td>1,189,731</td>
</tr>
<tr>
<td>1971-1978</td>
<td>266,572</td>
<td>590,775</td>
<td>649,127</td>
<td>1,543,757</td>
</tr>
<tr>
<td>Total</td>
<td>--</td>
<td>--</td>
<td>1,393,912</td>
<td>5,342,686</td>
</tr>
</tbody>
</table>

*aDuring World War II all prewar records of the Bureau of Lands were destroyed.*

*This includes only the first quarter of 1978. In 1972 the President allowed provincial offices of the Bureau of Lands to issue patents for less than 3 hectares.*

*cIt is estimated that applications for 2.5 million hectares are currently pending approval or await patenting.*

Source: Records Division, Bureau of Lands, Central Office, Manila, September 1978.
Finally, the subdivision or renting out of public lands, though in some cases illegal, has probably allowed one patent to provide more than one farm.

**Review of Studies of Land Settlement in the Philippines**

A survey of literature on the Philippines' experience with land settlement revealed government-sponsored settlement has repeatedly been plagued by financing problems (Pelzer, 1945: 132, 154-155; Wurfel, 1960: 43-45; Huke, 1963: 162-170; IARST, 1974: 40-44). This has been largely due to selection of settlers unsuited to pioneer settlement and the high costs incurred in initiating these schemes. Settlers have often been unable (and perhaps unwilling) to repay the resettlement agencies for assistance extended. This has hampered the ability of such agencies to pay for vital infrastructure projects such as farm-to-market roads and has led to a rapid exhaustion of funds for further settlement efforts. This problem has been aggravated by the tendency of some settlers to abandon the area after assistance is terminated.

Mismanagement of funds and outright corruption have also been frequent problems in organized settlement efforts. Rocamora and Panganiban (1975: 68) point out that though administrators of resettlement agencies ascribed their failures to a lack of funds, the real problem was not too small a budget but rather a leakage of funds. Wurfel (1960: 45)
cited "mismanagement and corruption" and some of the administrators' "concentration on private profit-making" as problems.

Shortcomings in the homesteading system have also been described. Lack of capital was found to be a major problem in one study of unassisted settlers in Mindanao (Sandoval, 1957). A more recent study cryptically commented that the homesteading process merely places "old wine in a new bottle," in that problems of concentration of landownership, subdivision of farmlots, and the rise of an impoverished class of tenant-farmers and landless laborers quickly manifest themselves in settlement areas (Krinks, 1974).

Other studies have indicated that self-financed settlers in such far flung areas of the Philippines as the Digos-Padada Valley in Davao Del Sur province of Mindanao (Simkins and Wernstedt, 1971), the Cagayan Valley of Northern Luzon in Isabela province (Lewis, 1971), and the uplands of the main island of Palawan province (Eder, 1973), have been remarkably successful in improving their conditions and developing dynamic economies with little public expense. These studies and more aggregative studies based on census data (Simkins and Wernstedt, 1965; Kim, 1972) belie the proposition that labor is immobile, and hence, that government assistance is required to induce migration. Moreover, they suggest that self-financed settlers have found the means to overcome lack of capital in at least some cases.
An important question is whether self-financed settlers have certain characteristics in terms of human and physical capital that enable them to succeed individually in contrast to those settlers selected to participate in the official settlement programs. A related issue is whether self-financed settlers as a group have been able to develop institutional arrangements more easily than assisted settlers. Examples of such institutions are village government and reciprocal labor exchange agreements. Such arrangements may permit more rapid farm development and economic growth in new communities. Evidence for the latter is that the projects organized by the government have been found to lack the social cohesion found in other communities. This may be a result of the tendency for the government program to select settlers from diverse source areas for a given resettlement community (Pelzer, 1945: appendix c). In contrast self-financed settlement through the homesteading system is characterized by chain migration in which adaptation of newcomers is facilitated by what Simkins and Wernstedt (1971: 16) describe as "informational and aid links." If this is the case, the relevant question is whether or not the government assistance package is an effective remedy for the settlers' lack of capital and the absence of "informational and aid links." These two sets of characteristics, settler selection and homogeneity in terms of place
of origin have been found to be important to the success of land settlement ventures in case studies of successful pioneer communities (Lewis, 1971; Simkins and Wernstedt, 1971). They may be important in explaining differences in success between the two types of settlements. This implies that empirical study at the household or farm level is necessary in order to quantify these variables and to perform tests of relevant hypotheses.
Footnotes to Chapter II


8 ILO (1974: 457-458); IARST (1974: 8); and NEDA (1977: 78). The five-year plan (ibid.) projects a 1.3 million hectare expansion in Minadano's Augusan and Cotobato River Basins alone.

9 There is still some scope for new land settlement on the periphery of densely populated areas in the Philippines. This is illustrated in the ILO Mission Report (ILO, 1974: 457-458). A number of the government's settlement projects are located in areas adjacent to the densely populated Central Luzon Plain, Southern Luzon, and in the Visayan Islands (IARST, 1974: annex 'D'). Self-financed settlers also engage in settlement on the fringe of these areas (Pahimulin, 1978). Still the preponderence of open public land is in more remote areas of Luzon and on the outlying islands of Palawan, Mindoro, Mindanao and Samar.

10 Fisk (1961) argues that land settlement in Malaysia provides a means of utilizing the savings potential inherent in underemployed rural labor. Barker (1977) focuses on the inability of the public sector in developing Southeast and South Asian nations (excepting China) to mobilize rural labor for land infrastructure formation as a major problem restricting agricultural production.

11 The Insular Government's program implemented under the aegis of the Bureau of Labor and Migration is an exception. It provided settlers with only transportation to the settlement area and stipulated settlers must have a minimum amount of capital to participate (Pelzer, 1945).

12 The Philippine Public Land Law specified that up to 24 hectares may be claimed by homesteading, free patenting or award of judicial registration, provided certain conditions regarding cultivation and occupation were met (Noblejas, 1961). Sales patents and leases may be acquired covering larger areas (ibid.). Since imposition of martial law in 1972, actual policy has been to limit homestead claims to under 6 hectares, while free patents are no longer issued for new claims (IARST, 1974: 22, 25). The government has sought to lease large areas of marginal land to large-scale farms producing export crops, beef or grain (ibid.).
It is clear that the bulk of patents issued have been in areas settled only since World War II. Judicial registration is common for land in the long settled areas of Ilocos, Central Visayas, and Central and Southern Luzon. These areas were all well-settled before the end of Spanish rule. The homestead system was adopted in 1903 in order to spur colonization of Cagayan Valley, Mindanao, and other sparsely-populated areas. Census data clearly indicate the bulk of such settlement has occurred only since 1948 (Simkins and Wernstedt, 1965; Kim, 1972).

In some cases settlers have been paying taxes on the assessed value of lands they have improved despite the fact they have not complied with the law regarding public land applications. Receipts for such tax payments are regarded by such settlers as evidence of their rights to the land they have improved though technically the government may classify them as "squatters."

This is the title of Krink's paper (1974). In his view the existence of certain forms of agricultural contracts such as share tenancy is evidence that agrarian problems are simply transplanted to newly settled regions from settler source areas. Krinks holds this is an inevitable outcome of a system that creates private ownership of land in a peasant economy where wealth is unevenly distributed. The implication is that land reform and increased government regulation of settlement is required.

A review of several government settlements in the Philippines concluded that, "...on the whole, community help was weak, perhaps pointing to the lack of the bayanihan spirit (spirit of working together) in many of these resettlement areas." (CUS, 1978: 80).

Chain migration is also noted by Lewis (1971). Simkins and Wernstedt (1971: 117-118) state: "One possible explanation for the lack of success in many of the government-sponsored resettlement projects in the Philippines may have been the combining within individual communities of persons from widely different origins, often mutually suspicious if not downright antagonistic."
CHAPTER III

RESEARCH METHODOLOGY, DATA COLLECTION, AND STUDY AREAS

In line with the objectives of the thesis and the major issues discovered in the review of the Philippines' experience with land settlement, a research methodology focusing on empirical investigation at the farm level in recently settled areas was chosen. The design of the empirical study and survey instrument is first discussed. A description of the area in which the survey was conducted is then presented, including a discussion of verification of data gathered. In the process of the field work, it was decided that two additional field trips, one to an out-migration zone, and one to an area populated by self-financed settlers approaching a mature stage of development, would provide useful information. The nature of these field studies is described. Finally, the chapter concludes with a discussion of solution of the index numbers problem in comparing money values pertaining to the field study.

Farm Level Survey

The importance of settler selection and the institutional arrangements in the process of land settlement as possible explanatory factors for the differences in the success of settlers was a compelling reason for conducting empirical investigation on the individual farm level.
Settler success is measured in terms of net income, farm land development and capital accumulation. Positive net income implies settlers have a reinvestable surplus. This could be used for further farm improvements, development of non-farm income sources, improved consumption levels, education of children, or improved credit position by repaying debts or purchasing financial claims from others. Comparison of the two types of settlers (government-assisted and self-financed) as groups with respect to success and the attempt to ascertain the importance of settler characteristics and institutional arrangements in explaining differences in success required individual observation at the farm level.

Justification for this approach is that hypothesis generation and testing regarding settler characteristics and institutional forms would be facilitated. This approach also provides insight on the actual processes of migration and farm development. This is useful in determining the push and pull factors influencing the decision to migrate. The observation of wage and income differences between source areas and recently settled areas, the socio-economic status of settlers in their source areas, particularly with respect to land ownership and tenure, and the presence or absence of non-farm employment opportunities, are all likely to be useful in understanding the migration decision. Individual observation allows measurement of time lags between the arrival in the settlement area and location of a farmlot,
and between the time work on the forested lot is begun and its conversion to productive land. The various contractual arrangements used in farm development and the specification of payment to labor and land are also observable at the farm level.

Such information may provide an improved basis for future project analysis. Unfortunately, much of the current analysis of land-settlement projects has been based on arbitrary and, in some cases, quite unrealistic assumptions. The failure to accurately take into account institutional factors such as agricultural contracts has clearly led rural development policy astray in many instances. By observing and documenting institutional arrangements, such as contracts, and then ascertaining patterns in the incidence of such contracts, their role in the farm development process may be better understood and the economic implications may be drawn out.

The principal means of data collection was through interviews conducted with farm settlers and their spouses. An interview form was first developed for use in an area of recent settlement. The form was modified following pre-testing. It sought data on the background and experience of settlers, their pre-migration socio-economic status, migration and land development histories and costs, farm techniques, inputs and outputs, assistance from government, problems encountered in settlement, marketing, credit
position, and attitudes on their welfare change following land settlement.

The interview form incorporated a number of factors suggested in previous studies as being important. Data on settlers' human and physical capital were gathered by taking an inventory of their assets and educational, managerial, and technical training and experience. The desire to ascertain the role of "informational-and-aid links" in facilitating migration and settlement led to inclusion of questions pertaining to presence or absence of relatives and friends in the settlement area and their contributions to the settler's efforts. Migration histories in terms of intermediate stops between the source area and final settlement area and the time involved were also recorded, as was demographic information. Land tenure patterns and ownership were also considered as were the types of contracts chosen by settlers and their relationship to land development and use, yields, and factor payments.

Field Study Areas - Data Collection and Verification

The main island of the province of Palawan was chosen as the study site (see maps). Palawan, the largest province in the Philippines, covers 5,751 square miles or almost 1.5 million hectares. It is the least densely populated province in absolute terms and in terms of physiological density or the ratio of population to arable land. As of
1976, vacant or uncultivated crop land was 347,733 hectares or 76.5 percent of the total agricultural area (PEDC, 1976: 50). Substantial room for expansion of land settlement activities exists. The provincial government noted:

"There are 27 public land subdivisions in Southern Palawan consisting of 20,855 lots averaging about 8 hectares per lot for a total of 165,791.5 hectares. During the three-year period ending June 30, 1975, some 1,081 land applications were received at the District Land Office at Puerto Princesa. Pending action at the beginning of this period were 6,626 applications for the same number of lots. Pending action at the end of this period, June 30, 1975, were 11,345 lots indicating that the Bureau of Lands District Office in Puerto Princesa City is receiving applications more than it can process." (Ibid.: 65).

A major government resettlement project, considered "one of the more successful" (Rocamora and Panganiban, 1975: 72), covers over 25,000 hectares. See the map of the study area for the project's boundaries and location. Four more large settlement areas have been proposed for Palawan's main island. Rice production is emerging as the most important agricultural activity in the province. National Grains Authority (NGA) reports Palawan has recently become a rice-surplus area, a significant achievement since most of the rice lands in the province have been opened only since 1960.

A great advantage of the study area is that self-financed and government-assisted settlers live in close proximity under similar conditions with respect to
Topography, climate, and other natural conditions. Malaria, however, is still endemic to the area and constitutes a hazard for both settlers and researchers. Despite a significant Muslim population, estimated at 12 percent of the total in the province, the area has been largely free of the strife that has occurred on the island of Mindanao (PEDC, 1977: 41-42). This is not to say Palawan has been free of the problem of neglect by the central government that has incited the rebels in Mindanao. Palawan had its own secessionist movement in the 1920s led by none other than the provincial governor! Such neglect is likely to become a relic of the past due to the discovery of substantial oil reserves off the northwest coast of the main island of the province. The discovery of oil and increased government investment will probably encourage an even greater inflow of settlers in the near future.

One hundred interviews were conducted with settlers, 50 of whom received no direct assistance from the government and 50 of whom received varying amounts of aid. The interviews were conducted in Tagalog, Ilocano, or English. An interpreter aided the interview process. All interviews were carried out in eight barrios (villages) and one poblacion (municipal center). These were within the local National Grains Authority (NGA) administrative unit. The records of the local NGA office were used to identify rice-growing areas. The barrios surveyed were purposively
selected to get a cross section of areas at differing stages of development that can be classified as pioneer, consolidation, or mature.  

Table 3, page 32, presents the barrios according to stage of development, and number and type of settlers interviewed. Respondents were chosen randomly within barrios. A list of households in each barrio was compiled by the barrio captain, the school teacher, or from the resettlement agency records. From the list respondents were then selected by dividing the total number of households by the number of interviews desired. Substitution was allowed when it was not possible to locate the initial respondent designated.

Interviews with settlers were supplemented by meetings with key informants such as community leaders, land surveyors, local agricultural extension workers, peace corps volunteers, foreign technicians assisting settlers, and resettlement agency employees and ex-employees. A daily field diary was also kept to record observations not included in the interview form.

Available secondary data on the area provided by various government agencies were also used. Settlers' statements regarding the amount of assistance received was checked with the resettlement agency records. The size and amounts repaid of loans received from banks or through the government's subsidized credit program for small rice farmers, Masagana 99, were checked with the lending agencies.
TABLE 3
BARRIOS INCLUDED IN FIELD STUDY BY STAGE OF DEVELOPMENT, NUMBER AND TYPE OF RESPONDENTS

<table>
<thead>
<tr>
<th>Barrio</th>
<th>State of Development</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Estrella</td>
<td>Pioneer-consolidation</td>
<td>12</td>
</tr>
<tr>
<td>Jose Rizal</td>
<td>Consolidation</td>
<td>10</td>
</tr>
<tr>
<td>Malatgao-Taritien</td>
<td>Consolidation</td>
<td>10</td>
</tr>
<tr>
<td>Malinao</td>
<td>Consolidation-mature</td>
<td>10</td>
</tr>
<tr>
<td>Mariwara</td>
<td>Pioneer</td>
<td>11</td>
</tr>
<tr>
<td>Narra Poblacion(^c)</td>
<td>Mature</td>
<td>6</td>
</tr>
<tr>
<td>Panacan</td>
<td>Mature</td>
<td>11</td>
</tr>
<tr>
<td>Panitian</td>
<td>Pioneer-consolidation</td>
<td>20</td>
</tr>
<tr>
<td>Princess Urduja</td>
<td>Pioneer</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

\(^a\)Self-financed.
\(^b\)Government-assisted.
\(^c\)Town proper.

concerned. Records of land-holdings and the status of public land applications and patents were checked at the provincial office of the Bureau of Lands and the Registrar of Deeds in Puerto Princesa City, as well as the Bureau of Lands Central Office in Manila to verify settler-respondents' answers. It was found that settler responses and official records tallied quite well for loans but records for landholdings were in disarray.

A major source of secondary data was the records of over 4,000 farmlots in the government resettlement project in Palawan. These records included information on the boundary, size, and location of farmlots, the area of the lots improved by settlers, the topographic features of the lots, and the current and past occupants of the lots. In addition, in some cases the manner of transfer of lots (e.g., by inheritance, allocation by the resettlement agency, sale, or by "squatting") was recorded.

It was not feasible to examine the record of each individual lot. Instead a random sample of one in five of the farmlots (825 of 4,072) was drawn. This permitted an estimation of the degree of transference and abandonment of farmlots occurring in the resettlement project.

A large proportion of the settlers interviewed in Palawan were Ilocano-speaking. Many migrated to Palawan from the eastern part of the province of Pangasinan. This province is located on the extreme north of the Central
Luzon Plain bordering the Ilocos region (see map 3). It was decided after completing data collection in Palawan to conduct a field study of non-migrant farm households in eastern Pangasinan. This permitted a contemporary contrasting of conditions in an outmigration area with recently settled Palawan.

In particular, the survey in Pangasinan allowed some insights to be gained on differences in contracts and institutional arrangements for farming that exist in areas of different physiological densities and hence, factor price ratios. In addition, the impact of irrigation and the land reform program on small rice farmers, who have the option of migration to less densely settled areas, was observed.

The survey conducted in Pangasinan was conducted in one barrio that had contributed migrants to Palawan. A questionnaire was designed and administered to a randomly drawn sample of 30 households. The interviews conducted in barrio Saleng in the municipality of Tayug, Pangasinan (see map 3) were in Ilocano or English, again with the assistance of an interpreter.

A final field trip was made to the Cagayan Valley of northern Luzon. This area was populated largely following World War II by migrant settlers moving south and inland from the Ilocos region or northward from Central Luzon provinces such as Nueva Ecija. The settlement of this area by homesteaders was documented by Lewis (1971). Lewis'
study provided a good basis of information on the migratory movement from Ilocos, on farm development and the contracts and institutions associated with land settlement in the valley. This area was visited in order to provide an idea of the changes occurring over time as recently settled public lands mature into firmly established communities. The evolution of land tenure patterns and contracts in the Cagayan Valley may provide a clue of what patterns may evolve in Palawan and other areas currently on the frontier.

Five barrios in two municipalities were visited in Isabela province in the heart of the Cagayan Valley (see map 3). Instead of conducting interviews with a large number of farmers, an effort was made to meet with key informants and achieve an overview of existing contractual arrangements in farming, farm sizes, and input-output relationships on the farms. These data provide a useful basis for outlining some of the likely changes that may occur in the near future in areas such as Palawan as in-migration and settlement proceed. Furthermore, arguments advanced that land settlement leads to patterns of land tenure leading to pauperization of the majority of migrant settlers could be evaluated.

**Price Level Adjustments**

In order to render data on costs and other variables measured in nominal money terms comparable in different
time periods, a set of index numbers was required. A Laspeyres index was chosen. This is because the items involved in land settlement have been fairly constant over the years as evidenced by the form of direct assistance granted by land settlement agencies to government-selected settlers. Also the means of clearing and developing farm land have not changed drastically in the post-war period for settlers. Thus an index that evaluates the price of a constant market basket of commodities over time (a Laspeyres index) is more desirable than one that evaluates a changing market basket in each period (a Paasche index).

The index used is the General Wholesale Price Index For Manila (1949-1978). This index is one of the few available series going back sufficiently in time to be used. The accuracy of the index was tested by taking the costs of the government's settler assistance package at two points in time for which data were available (1972 and 1978), inflating the 1972 figures into 1978 prices with the index and comparing the results with the actual price of the assistance package. The magnitude of error involved was a less than 3 percent understatement of the increase in price of the assistance package. The small error in direction of understating inflation seems excusable since there is no significant bias implicit in such an error applied to the sample data in the sense of favoring one group of settlers over the other.
Footnotes to Chapter III

18 For example a feasibility study (DAR, 1972: 84-89, V.I) for the integrated development of the resettlement area in Palawan reports a benefit-cost ratio of 2.06. It assumes that increments in rice production resulting from the project (investment in irrigation and land-clearing) amounting to 100, 150, and 200 percent of current average rice yields will occur in the first three years of the project. It further assumes settlers will plant over 8,000 hectares of permanent crops in three years and maintain them until they first begin yielding six years later. The study ignores the problem of abandonment of the project farmlots. Another feasibility study of a resettlement project named after the Philippines' First Lady, called the "Imelda" project in Leyte, arrived at the very marginal benefit-cost ratio of 1.035 after invoking similar heroic assumptions. The discount rate used in both studies is a subsidized one.

19 This point is stressed in the well-known work by Myrdal (1971: 10, 14, 15, 73-75, 254-284). Boulding (1966: 12) notes, "One area where economists have a good deal to be humble about is in the field of economic development of the poor countries. In the rich countries we have done fairly well; in the poor countries our record is distinctly spotty. This is almost certainly because we are dealing in this case with a total social process, and the economic abstractions are simply not sufficient to deal with the problem. Here what we need is clearly economic anthropology, and this science, unfortunately, hardly exists." Fernandez (1972) and Best (1977) serve as examples of studies that reveal failure to reckon with institutional factors led to frustration of the rural development programs in the Philippines.

20 Roumasset and James (1979) discuss how economic analysis may be used to explain variations in sharecropping contracts in Asian agriculture.

21 Due to its length the form is not appended.

22 DAR (1976) lists four proposed new settlement areas but does not disclose the area of land involved or the number of settlers to be accommodated.

23 The growth in rice area may be seen by comparison of the area of rice farms reported in the 1960 Agricultural
Census (BCS, 1965) and the 1971 Agricultural Census (NEDA, 1974). The reported emergence of Palawan as a rice-surplus area is based on personal communication with the Provincial Manager of the NGA.

24 PEDC (1976: 17) states that Dr. Higinio Mendoza, "...is mostly known as the Palawan governor who spearheaded the secession movement of Palawan from the Philippines because of national government neglect of the province. President Quezon had to send then Secretary of Interior Elpidio Quirino with a gunboat to Palawan to pacify the secessionists."

25 Nelson (1973: 71-74) develops these concepts. Pioneer areas are "...characterized by recent and continuing settlement; limited lands cleared from forest..." with social organization and development of markets and other facilities at very primitive levels. Consolidation occurs 5 to 10 years after pioneering and settlement becomes more stable with "...a general upgrading of all aspects of development." Maturity occurs at the end of a growth stage when the area has an urban center and differs only slightly from other rural areas with respect to level and diversity of services and facilities. Nelson notes that all three stages "...may occur simultaneously on a specific project."

26 This index is made available by the Central Bank of the Philippines, Department of Economic Research, Manila. The index is computed monthly with data from private firms, public markets, the Bureau of Domestic Trade, and the National Census and Statistics Office.

27 In 1972 the settler assistance package cost 11,700 pesos. It cost 25,170 pesos in 1978. When the 1972 figure is inflated using the index the result is:

\[
\frac{411.5}{196.9} \times 11,700 = 24,451.75
\]

Since:

\[
25,170 - 24,451.75 = 718.25
\]

the error is:

\[
718.25 \div 25,170 = 0.028539
\]
CHAPTER IV

MIGRATION, THE FARM-MAKING PROCESS, AND AGRICULTURAL CONTRACTS

The actual processes of migration to the frontier and new farm development are discussed in this chapter based on field survey data and previous studies. Where relevant, the two types of land settlement are contrasted. It is shown that the availability of land and a wage differential act as incentives to attract migrants to the frontier. Differences in agricultural organization and contracts between densely-settled areas of out-migration and the frontier are reported on. The role of agricultural contracts in promoting land settlement is discussed.

The Migration Process

The migration to Palawan's main island involves long-distance, inter-island, and usually, inter-regional, movement by settlers.28 Large numbers of settlers have their origins in the Visayas or the Tagalog and Ilocano areas of Luzon. Many of the Visayan immigrants are from the island of Panay. In addition, a substantial stream of migrant settlers originates from Cuyo Island, a small, densely-populated island that is part of the province of Palawan as can be seen on Map 1. This latter movement was documented by Eder (1973) and was occurring prior to major movements of settlers from the other regions of the Philippines.
The origins of settlers in Palawan are similar to those for recently settled areas of Mindanao (Simkins and Wernstedt, 1965). The long-settled areas of Ilocos and the Visayas have been the main sources of migrant farm settlers in the Philippines past. These out-migration areas are characterized by high physiological density and high rent-wage ratios due to relatively great population pressure. The lack of available public land in these areas and the inheritance system have acted to reduce farm size to miniscule proportions and have led to the parcelization of holdings (Lewis, 1971). Furthermore, the abundance of labor has depressed wages and farm incomes have been barely above subsistence levels. More recently, in these areas there has been a trend towards creation of a class of landless rural proletarians. This has been documented by Ledesma (1978) in the case of the Visayan island of Panay and by Dozina (1978) for Central Luzon.

Historically, the large southern island of Mindanao and the rich Cagayan Valley of Northern Luzon have been the target in-migration areas for settlers. In contrast to Ilocos and the Visayas, these areas have a relatively low physiological density and hence, lower rent-wage ratios. Abundance of public land and public policy allowing settlers to claim up to 24 hectares allowed farm size to be quite large and remain substantially above that in out-migration areas. Relative labor scarcity has caused wages to be
higher than in out-migration areas. Farm incomes have higher potential in recently settled areas than in out-migration areas, however, the lack of marketing facilities and high costs of transportation have often led such potential to go unrealized. Development of these areas has been hindered by a lack of infrastructure, particularly roads. Palawan fits quite well in this typology as an in-migration area.

The origins of the 100 settlers interviewed is indicated by their mother tongues as shown in Table 4, page 42. It is clear that migrants come from the densely-settled areas of Ilocos, Visayas, Central and Southern Luzon, and Cuyo Island. The largest single source of settlers on the provincial level was Pangasinan. As an example of the contrast in density between out-migration and in-migration areas, simple man-land ratios in Pangasinan and Palawan were calculated by dividing total farm population by cultivated area using the most recent census data available (1971). Pangasinan had 3.95 persons per hectare compared to 1.91 persons per hectare in Palawan. Actual differences in physiological density are much greater since arable land area has all but been exhausted in Pangasinan but has great potential for expansion in Palawan.

Kim (1972) calculated that between 1960 and 1970 the ratio of net migration to natural population change was -26.15 percent, implying significant out-migration from
TABLE 4

SETTLERS IN PALAWAN FIELD SURVEY BY MOTHER TONGUE

<table>
<thead>
<tr>
<th>Dialect</th>
<th>Respondents</th>
<th>Spouses</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ilocano</td>
<td>42</td>
<td>41</td>
<td>83</td>
</tr>
<tr>
<td>Visaya</td>
<td>13</td>
<td>16</td>
<td>29</td>
</tr>
<tr>
<td>Tagalog</td>
<td>14</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>Zambal</td>
<td>11</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>Cuyonon</td>
<td>10</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Others</td>
<td>10</td>
<td>12</td>
<td>22</td>
</tr>
</tbody>
</table>

Total 100 100 200


TABLE 5

SETTLERS IN PALAWAN FIELD SURVEY BY GEOGRAPHIC ORIGIN

<table>
<thead>
<tr>
<th>Province</th>
<th>Number Originating&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pangasinan</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Zambales</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>Palawan (Cuyo Island)</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>Luzon provinces</td>
<td>61</td>
<td>30.5</td>
</tr>
<tr>
<td>Visayan provinces</td>
<td>37</td>
<td>18.5</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<sup>a</sup>Includes settler respondents and spouses.

Pangasinan. The same ratio was +10.75 in Palawan indicating a large in-migration took place.

Given the lower pressure on land in Palawan, it is expected that the rent-wage ratio would be lower than in settler source areas such as Pangasinan (Roumasset and James, 1979). Illustrative of this are the findings regarding output shares paid to rice harvesters and landowners in Palawan compared to those found in settler source areas.

In order to compare the current implicit wage in recently settled Palawan and densely-settled Pangasinan, data were gathered on harvesting arrangements in the two provinces. Settlers reported that when they emigrated to Palawan rice harvesters earned an average of only 12.9 percent of the gross harvest in their home provinces compared to more than 25 percent of the harvest in Palawan. At the time of the field study the average share earned by rice harvesters in Palawan in the sample had fallen to 19.4 percent of the crop; however, this is still substantially larger than the share earned by rice harvesters in out-migration areas of the Philippines. The author's survey of non-migrant farmers in Saleng, Tayug, Pangasinan found that harvesting is done on a cash contract basis for 120 pesos per hectare ($1.00 U.S. = 7.35 pesos), while threshing is done mechanically for 4 percent of the crop. This
harvesting contract is called "pakyaw" meaning a cash contract where payment is fixed on a per unit of land basis. Threshing is done by a large McCormick threshing machine.

In Palawan harvesting and threshing are usually combined in one contract and payment is in the form of a percentage share of rice, not in cash. In real terms, the average payment to harvesters in Palawan was 9.4 cavans of unmilled rice per hectare. This is greater than harvesters can earn in Pangasinan under reasonable assumptions. If one cavan has a price of 50 pesos, the yield per hectare is 100 cavans, and harvesters own the threshing machine, at most they would earn 6.4 cavans per hectare in Pangasinan. This estimate is an upper-bound since 100 cavans per hectare is much above average yields and most rice harvesters do not own threshing machines. There appears to be a clear wage differential between the two provinces, reflected in the higher real earnings of rice harvesters in Palawan.

Data on the shares paid to landowners by tenants were also gathered to compare rents in the two provinces. Landowners earned on average 42.2 percent of the crop in sampled settlers' source areas compared to 36 percent in Palawan on farms for which leasehold or sharecropping arrangements existed in the sample. Since yields were, on average, higher in settler source areas and landowners contributed less in terms of non-land inputs and in percentage share of farm expenses than their counterparts in Palawan in the
sample, there is a strong case that land rents in real terms are lower in Palawan.

The evidence indicates wages are higher and rents are lower in Palawan than in Pangasinan, firmly supporting the proposition that rent-wage ratios are lower in recently settled areas than in out-migration zones. Further evidence in support of the relative difference in rents is indicated by the type of output shares and input contributions found in sharecropping arrangements observed. By far the most common output sharing arrangement between tenant farmers and landowners in the out-migration areas, at least prior to the 1972 land reform, was the fifty-fifty division of output net of harvesters' share. This is documented in case studies (Lewis, 1971: 124; Kerkvliet, 1974: 50; Larkin, 1972: 82; Roumasset, 1976: 99) and in the census data (NEDA, 1974: 101). In Palawan, according to census data, the most common landowner's share was 30 percent in 1971 (ibid., 101). Table 6, page 46, reports on the nature of sharecropping contracts observed in the Palawan sample in 1978. The contract setting landowners' share at one-third of the crop is predominant. In addition, it should be stressed that for contracts where landowners received half the crop, tenants provided little more than labor. This differs from contracts with fifty-fifty output sharing in out-migration areas where tenants are required to provide some of the capital for farm operations, as well as to bear some
TABLE 6
CHARACTERISTICS OF SHARECROPPING CONTRACTS
IN A RECENTLY SETTLED AREA, PALAWAN RICE FARMS, 1978

<table>
<thead>
<tr>
<th>% Share of Landowner in Output</th>
<th>Number of Contracts Observed</th>
<th>Average Yield Per Hectare in Cavans</th>
<th>% of Contracts with Landowner Provision of Non-Land Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>7</td>
<td>56.85</td>
<td>100</td>
</tr>
<tr>
<td>33</td>
<td>20</td>
<td>43.29</td>
<td>25</td>
</tr>
<tr>
<td>30</td>
<td>3</td>
<td>31.90</td>
<td>0</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>15.00</td>
<td>0</td>
</tr>
</tbody>
</table>


portion of the costs of inputs. This indicates tenants' conditions are more favorable than in migrant source areas, a finding consistent with those of other studies (Lewis, 1971: 119-127; Mclennan, 1969: 675-679; Simkins and Wernstedt, 1971: 102-103). Other evidence that rent-wage ratios differ between regions is found in the type of contracts that exist in Palawan compared to out-migration areas such as Pangasinan. A common arrangement in Palawan is for settlers to let out land rent free for three years in return for improvements introduced by the borrower. This type of contract is currently unheard of in densely-populated areas, though evidence exists that such contracts existed prior to the
filling-up of available land in the Central Luzon area (Larkin, 1972: 303). Instead of contracts indicative of a land-surplus, contracts reflecting rising land rents and labor-surplus are now observed in the heavily populated areas of the Philippines. Even with the 1972 land reform this trend is manifest.

In some land reform areas of Luzon, the rise of sub­tenancy contracts between land reform beneficiaries and peasants not receiving land from the reform have been documented (Kikuchi et al., 1977). This trend was found in the Pangasinan survey where nearly one-third of the 30 respondents in the barrio were subtenants of amortizing owners created by land reform. On parcels that are not rented out, land reform beneficiaries are contributing less unskilled labor for tasks such as weeding and fertilizing and more supervision and management on their farms. While land reform has moved ex-tenants up the agricultural ladder as new amortizing owners, population pressure has supplied landless laborers to take up the lower rung.

Differences in farm size, defined as area cultivated, between source areas of respondents and Palawan are shown in Table 7, page 48. Prior to migration, settlers were cultivating on average 1.36 hectares compared to 4.09 hectares in Palawan. Changes in land ownership in terms of size class (Table 8, page 48), average size (Table 9, page 49), and land tenure status (Table 10, page 49) are even
TABLE 7
FARM SIZE, PRE-MIGRATION AND IN PALAWAN

<table>
<thead>
<tr>
<th>Ownership Class</th>
<th>Average Area in Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Migration</td>
</tr>
<tr>
<td>Government-Assisted Settlers</td>
<td>1.32</td>
</tr>
<tr>
<td>Self-Financed Settlers</td>
<td>1.40</td>
</tr>
<tr>
<td>All Settlers</td>
<td>1.36</td>
</tr>
</tbody>
</table>

TABLE 8
LAND OWNERSHIP BY SIZE CLASS, PRE-MIGRATION AND PALAWAN

| Ownership Class (Hectares) | Pre-Migration | | Palawan |
|----------------------------|---------------|---------|
|                            | SF | GA | Total | SF | GA | Total |
| Zero                       | 33 | 39 | 72    | 6  | 1  | 7     |
| 0.1 - 1.9                  | 12 | 7  | 19    | 2  | 0  | 2     |
| 2.0 - 4.9                  | 3  | 2  | 5     | 11 | 0  | 11    |
| 5.0 - 9.9                  | 1  | 2  | 3     | 18 | 45 | 63    |
| 10.0 or more               | 1  | 0  | 1     | 13 | 4  | 17    |
| Total                      | 50 | 50 | 100   | 50 | 50 | 100   |

*SF are self-financed, GA are government-assisted settlers.*
### TABLE 9
MEAN AREA HELD BY LANDOWNERS, PRE-MIGRATION AND IN PALAWAN

<table>
<thead>
<tr>
<th></th>
<th>Pre-Migration</th>
<th>Palawan</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Mean Area</td>
<td></td>
<td>Number of Mean Area</td>
</tr>
<tr>
<td></td>
<td>Owners</td>
<td>Owned</td>
<td>Owners</td>
</tr>
<tr>
<td>Government-Assisted</td>
<td>11</td>
<td>2.64</td>
<td>49</td>
</tr>
<tr>
<td>Self-Financed</td>
<td>17</td>
<td>2.53</td>
<td>44</td>
</tr>
<tr>
<td>All Settlers</td>
<td>28</td>
<td>2.57</td>
<td>93</td>
</tr>
</tbody>
</table>

*a Area is measured in hectares.

*b Ownership in Palawan does not imply legal title.

### TABLE 10
LAND TENURE CHANGES REPORTED BY SETTLERS

<table>
<thead>
<tr>
<th>Tenure Class</th>
<th>Pre-Migration</th>
<th>Palawan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landless Worker</td>
<td>28</td>
<td>9</td>
</tr>
<tr>
<td>Tenant</td>
<td>43</td>
<td>6</td>
</tr>
<tr>
<td>Owner-Operator</td>
<td>24</td>
<td>64</td>
</tr>
<tr>
<td>Other b</td>
<td>5</td>
<td>21</td>
</tr>
</tbody>
</table>

*a Reference is to effective land tenure, since some settlers who have land cannot afford to develop it.

b This includes those borrowing a parcel rent-free and who have mixed tenure arrangements.
more dramatic. Prior to migration, 72 percent of sampled settlers owned no land whatsoever, and those who owned land had, on average, only 2.57 hectares. Following migration 91 percent had claims on land (though were not owners) with an average size of 6.505 hectares.

Positive income changes have been achieved by the settlers sampled in their majority as is shown in Table 11, page 51. Whether land settlement allowed income changes beyond what migrants would have earned in their source areas, some of which have benefited from irrigation investment and improved farm technology, is difficult to assess. There is a strong indication, however, that net migration is strongly influenced by income differentials in agriculture.

Not surprisingly, the main attraction of Palawan's principal island to settlers was the availability of public land. Fifty-nine percent of the settlers interviewed cited lack of land as the major reason for leaving their provinces of origin, and 72 percent mentioned the availability of land as the most compelling reason for selecting Palawan for their new homes. The mechanism of migration differed for the self-financed and government-assisted settlers. Ninety-two percent of the government-assisted settlers were transported to Palawan at government expense in the sample. Of the 50 assisted settlers, only 10 reported being helped by relatives or acquaintances in Palawan and 27 claimed
TABLE 11

INCOME CHANGES REPORTED BY SETTLERS
IN PALAWAN, COMPARED TO SOURCE AREAS

<table>
<thead>
<tr>
<th>Type of Settler</th>
<th>Higher</th>
<th>Same</th>
<th>Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government-Assisted</td>
<td>34</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Self-Financed</td>
<td>45</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>All Settlers</td>
<td>79</td>
<td>4</td>
<td>17</td>
</tr>
</tbody>
</table>

they would never have made the move without government assistance.

In contrast, 38 of the self-financed settlers received help or information from relatives or other acquaintances in Palawan encouraging them to migrate. This indicates chain migration, whereby members of a community in a migrant source area tend to migrate to a new community inhabited by other former members of the same community of origin, is much stronger for self-financed settlers than it is in the government-sponsored settlement program. This finding tends to support the reasoning of Simkins and Wernstedt (1971: 75-76) in their explanation for the relative success of self-financed migration into the Digos-Padada valley of Mindanao compared to that of government-organized schemes:
"It is possible that the concentration of origins for migrants to given localities may have been responsible, in large part, for the success and growth of the colonization effort in the Digos-Padada valley, relative to some of the government-sponsored colonization schemes elsewhere in the Philippines and outside. Those areas in which the majority of new colonists have been drawn from landless or unemployed persons at large in a country have often had great difficulty in making the transition to viable, cooperative communities. Each colonist tends to feel himself among strangers. It is difficult, under these foreign circumstances, to reconstruct familiar associations, cooperative actions, political alliances, or economic organizations. On the other hand, in an area populated by persons of similar origins, many of whom are related, it is much easier to duplicate preexisting patterns of social and economic organizations and to create a unified community."

A further observation is that settlers seldom make just one move. Rather, the migration process occurs in several steps from the source area to the final destination. The sampled settlers moved on average between two and three times before reaching their final destination. Surprisingly, government-assisted settlers moved just as often as the self-financed settlers. A seeming advantage of the government settlement program in moving settlers directly to the area of their new farmlots in the targeted settlement location is, in fact, illusory. Both self-financed and government-assisted settlers averaged two moves after arriving on mainland Palawan.

Government-assisted settlers are allocated farmlots randomly by lottery. There is a marked tendency for these settlers to attempt to transfer from the farmlot they
receive through the settlement agency's lottery system to another lot that is nearer to farmlots of acquaintances or others from their region. Fernandez (1972: 180) notes:

"Ideally the system of allocation does not allow the settlers to choose the parcels of their preference; rather, they are awarded parcels according to numbers which they draw from a pool. This random allocation of lands finds its rationale in the Agency's attempt to 'randomly integrate' settlers of various ethnic origins. It remains, of course, only the ideal, for settlers have worked out various means to get parcels more closely approaching their standards of preference."

The pervasiveness of farmlot transference calls into question the wisdom of continued efforts to impose random allocation of lots on the assisted settlers by the agency, particularly in light of the probability that such an allocation may make adaptation to the new environment and formation of viable communities more difficult, while imposing additional costs on settlers. 38

Agricultural Contracts and the Farm-Making Process

Rarely does the actual process of land-opening in the frontier correspond to the blueprint drawn up by the government's resettlement agency or the legal requirements of the Public Land Law. As Fernandez points out (ibid.: 181):

"Each settler is bound by contract personally to occupy and cultivate the land assigned to him and not to engage in occupations other than farming if by so doing he would neglect the development and cultivation of his land. The contract further states that his rights to the land are nontransferable except by
inheritance. Absence from his farm for more than six months without the Agency's permission is reason enough to dismiss him from the settlement..."

Noblejas (1961: 79-80) outlines the procedure for the acquisition of a homestead settlement. Among the requirements are that the applicant reside continuously in the municipality adjacent to the land applied for and that one-fifth of the land be brought under cultivation within one year.

Rather than simply taking up public land and proceeding to individually develop their farmlots, settlers often prefer to begin by making contractual arrangements to work on other settler's farms or to have others assist them in developing their own. These practices will be referred to herein as "recontracting" since they represent contractual revisions of the officially specified contract for acquiring and developing public land.

Binding settlers to the condition of self-cultivation is common to both organized settlement and self-financed settlement. This is designed to prevent incipient landlordism on the public domain and specifically is aimed against the recurrence of agricultural contracts such as sharecropping. The Bureau of Resettlement has issued a condemnation of share tenancy in no uncertain terms:

"Share tenancy is considered to inhibit the tenant from becoming a more efficient and productive farmer. The fact that he does not own the land and the prospect of a small share in the
produce discourages him from making full use of this productive and scarce resource....Share tenancy is thus a vicious circle that starts from and ends in low productivity." (DAR, 1972: 1).

This argument is based on the theory of share tenancy attributed to Alfred Marshall. Roumasset (1978a: 4) points out:

"It is difficult to see however how this solution ("Marshallian") could be maintained....Both tenant and landlord could make themselves better off by recontracting and eliminating the excess burden."

Cheung (1969), Roumasset (1976, 1978b) and Roumasset and James (1979) have shown that share tenancy contracts are consistent with efficiency. Moreover, empirical studies have shown share tenanted farms to be as productive as other forms of tenure in the Philippines (Sandoval and Gaon, 1972: 372; Mangahas et al., 1976; Ruttan, 1966).

Hiring wage labor is an acceptable practice as long as the settler himself is involved in the actual farm development tasks. The reciprocal exchange of farm labor is also accepted as a means to develop one's lot.

Given the large labor requirement to clear and farm forested land and the need for adequate capital to endure until substantial harvests may be reaped, it is odd to expect settlers to all concentrate on their own lots initially. Indeed it usually requires some time and effort to locate an area for settlement in the case of homesteading. The high cost of hiring labor for cash and the possible
problem of being uncertain of a labor supply at crucial periods (e.g., planting and harvesting), favor longer-term contracts such as sharecropping, as does the fact that settlers typically operate in an environment where both labor and capital are in short supply and are vital to farm development.

The actual steps in farm-making are of interest. Table 12 (page 57) provides an estimate of the per hectare cost of turning a forested lot into rice paddies in Palawan if labor is directly hired for wages, and lists the different operations required. The first step is to gird the trees and to cut and burn the underbrush, followed by felling trees and removing the big branches and trunks. On average, these operations require nearly 70 man-days of labor. The actual time period involved is much longer since the underbrush must be allowed to dry as must the felled trees to allow burning. Of the 87 settlers in the sample who had to clear first-growth or second-growth forest, only 20 relied solely on family labor, while 21 hired some labor and 41 used exchange labor groups. After initial clearing, it is common practice to plant the swidden field with a crop of upland rice, root crops, or maize before initiating removal of tree stumps. The clearing of land is done largely in the dry months of the year, while rice growing is done in the wet months. There is a complementarity between working as a tenant on improved land
TABLE 12
ESTIMATED COST PER HECTARE FOR DEVELOPMENT OF LOWLAND RICE PADDIES, PALAWAN (1978)

<table>
<thead>
<tr>
<th>Operation</th>
<th>Cost a</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Land clearing</td>
<td>500</td>
<td>Hand labor, axe, burning</td>
</tr>
<tr>
<td>2. Removing tree stumps</td>
<td>1450</td>
<td>Hired labor with carabao</td>
</tr>
<tr>
<td>3. Rice paddy formation</td>
<td>1455</td>
<td>Hired labor with carabao</td>
</tr>
<tr>
<td>4. Digging irrigation</td>
<td>200</td>
<td>Hand labor</td>
</tr>
<tr>
<td>Total cost</td>
<td>3605</td>
<td></td>
</tr>
</tbody>
</table>

a All figures in 1978 pesos.

owned by another settler during the rainy season and working to clear one's own parcel during the dry season. In rainfed areas, settlers can earn an income as tenants without interfering with land-clearing of their own farmlots.

Removing tree stumps from one hectare of land occupied on average 100 man-days. Often destumping is done by a combination of using a water buffalo to pull out the stumps and repeated burning until fields can be leveled to permit plowing and harrowing for lowland rice culture. Not all stumps are removed and a virtual trademark of recently developed fields is the presence of large stumps, usually blackened by fire. Once the necessary amount of stumps have been removed, land forming can proceed. Again, it
must be emphasized that destumping occurs over a longer span of time than implied by the average direct labor required.

The final stage is to build rice bunds in order to retain water in the paddies. This is followed by repeated puddling and leveling of the soil with the assistance of a carabao. Actual forming of paddies for rainfed rice may be accomplished in one month's time for one hectare. On the first hectare formed, 61 percent of the settlers sampled did the work themselves, 10 percent used exchange labor, 14 percent hired labor, and 15 percent had other contractual agreements, or purchased or inherited already developed paddy land. Recontracting was commonly used to introduce improvements on subsequent areas cleared.

In the sample, a total of 316.2 hectares of rice paddies were developed. The time lag involved in the transformation of virgin forest into lowland rice is illustrated by the mean period in months up to the first harvest brought in on settlers' own farmlots. The mean was 38.5 months for self-financed settlers compared to 49.5 months for government-assisted settlers. The time lag involved emphasizes the role working on others' farms plays in the survival of settlers, even those who receive government food rations for a year or more. It is also interesting to point out that almost all of the settlers managed to develop their paddy lands at lower cash cost than shown in
Table 12 on page 57. This fact becomes more important when the costs of the entire settlement process of the two alternative systems are considered.

Only a small number of pioneer settlers, possessed of a large amount of capital, attempt to directly open virgin forest upon arriving in Palawan. For a newcomer lacking large amounts of capital, the chance of failure in bringing in an initial crop, given the time period required to clear even one hectare, vagaries of weather, presence of pests, wild animals, and other hazards, makes recontracting a preferable approach. There are often opportunities to initially work as a share tenant on improved land or to borrow an unimproved but cleared parcel rent-free. Recontracting permits more rapid planting and harvesting of a first crop with far less pressure on the settler's limited initial resources than attempts to clear a forested area for planting would. Fernandez (1972: 181-182) found this was common among government settlers as well as homesteaders:

"Taking temporary leave from their own farmland is often a profitable tactic: it allows the settler to earn a sure living without going further into debt, and enables him to put something aside for developing his own still unproductive lands at a later date. A brief survey of 27 homesteads in the nearby barrio of Panacan showed how popular this tactic was: an average of three settler families per homestead was found to be cultivating borrowed or rented parcels or working as sharecroppers."

Of the 100 settlers interviewed, 65 had engaged in recontracting, including 32 assisted settlers and 33 of
the self-financed settlers. The problem of lack of capital to finance land settlement efforts is not unique to the Philippines, nor is the process of migration and land-opening in which the initial pioneers, relatively well-endowed with funds, make possible an increased stream of migrant settlers. Danhof (1968) recognized this in the U.S. case:

"Given a class of men who moved west with adequate capital, it was possible for others lacking such capital to emigrate." (ibid.: 270).

Entering into sharecropping contracts on established farms was one tactic by which a settler in the U.S. west could generate capital to purchase and develop his own farmlot.

Danhof (1968: 255) historically documents this:

"It was suggested to farmers that they could rent improved land on shares and, after four or five years proceed to purchase their own lands with their savings."

Further (ibid.: 276):

"They might alternatively contract to improve, on a share arrangement, wild lands owned by someone else..."

Contracting among settlers on a share basis has been observed in recently settled areas as diverse as Indonesia (Utomo, 1967: 296), Africa (Gaitskell, 1959: 69-71), and South America (Hanson, 1965: 809). In each case contracting was aimed at overcoming the capital shortage
facing the tenant and the labor shortage facing the landowner. The dynamic properties of sharecropping arrangements in recently settled areas when considered in this light lead to a decidedly different solution than the static "inefficiency" model. The share tenant has an incentive to be as productive as possible since it will hasten the time when he can develop his own farmlot.

At the time the field survey in Palawan was conducted 34 of the settlers interviewed were involved as parties to such contracts. Three types of contracts were prevalent among government-assisted settlers: land-borrowing, sharecropping, and leasehold. Among self-financed settlers, land-borrowing and sharecropping were common, but leasehold was rare.

Land-borrowing typically stipulates a newcomer may farm a partially cleared parcel for three years in exchange for the introduction of improvements such as creating rice paddies and removing secondary growth. Though no rent payment is required, borrowing is not "free" since improvement costs are borne by the borrower.

The sharecropping contract is popular in the sample area despite the fact it has been declared illegal in public land areas under Presidential Decree No. 152. This contract occurs on land that has already been improved. The frequent incidence of share contracts is possibly due to the fact that rent is automatically adjusted up or down
with fluctuations in the amount of grain harvested. This is important in recently settled areas because the chance of a poor harvest is increased due to the farmer's unfamiliarity with conditions of weather, soil and pests.

The least common contract was the fixed lease. Its observance almost exclusively among government settlers is largely due to pressure from the government to abandon sharecropping agreements. While risk-sharing occurs under share contracts, under a fixed lease agreement the tenant bears the risk of a crop failure. If a contingency clause is added to fixed lease agreements this advantage of share contracts would be reduced from the tenant's standpoint. However, no such contracts were observed. Note that under land-borrowing, all risk is borne by the borrower.

The contracts observed in the sample are arranged in Table 13 according to type of contract, area of parcel, yield, and length of tenure (page 63). Land-borrowing involves the smallest parcels with the lowest yields on average. Sharecropping occurs on the best land yield-wise and has the longest duration of tenure, while falling in the middle with respect to parcel size. Leasehold occurs on poorer land than sharecropping in terms of yield, involves the largest parcels, and is of the shortest duration. The longer duration of sharecropping contracts does not imply share tenants were locked into a permanent status as tenants. In fact, share tenants had higher net incomes
# TABLE 13

**AVERAGE FARM SIZE, AVERAGE YIELD PER HECTARE, AND AVERAGE LENGTH OF TENURE BY TYPE OF CONTRACT IN PALAWAN***

<table>
<thead>
<tr>
<th>Type of Contract</th>
<th>Average Parcel Size</th>
<th>Average Yield Per Hectare</th>
<th>Average Length of Tenure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Government-Assisted Settlers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land-Borrowing</td>
<td>1.53</td>
<td>31.11</td>
<td>3.28</td>
</tr>
<tr>
<td>Sharecropping</td>
<td>1.83</td>
<td>46.56</td>
<td>5.46</td>
</tr>
<tr>
<td>Leasehold</td>
<td>2.71</td>
<td>35.00</td>
<td>3.00</td>
</tr>
<tr>
<td><strong>Self-Financed Settlers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land-Borrowing</td>
<td>1.03</td>
<td>35.53</td>
<td>2.92</td>
</tr>
<tr>
<td>Sharecropping</td>
<td>1.70</td>
<td>49.21</td>
<td>4.42</td>
</tr>
<tr>
<td>Leasehold</td>
<td>1.00</td>
<td>40.00</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Total Sample</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land-Borrowing</td>
<td>1.28</td>
<td>31.25</td>
<td>3.10</td>
</tr>
<tr>
<td>Sharecropping</td>
<td>1.77</td>
<td>48.10</td>
<td>4.62</td>
</tr>
<tr>
<td>Leasehold</td>
<td>2.50</td>
<td>35.32</td>
<td>2.75</td>
</tr>
</tbody>
</table>

*Parcel size is measured in hectares, yield is measured in 50 kilogram cavans of unmilled rice, and length of tenure is in years.*
than leaseholders and were more successful in passing up the agricultural ladder to owner-cultivator status (see Table 29, Chapter VII, page 128).

At the time of the survey, 65 percent of those who had recontracted as sharecroppers or land-borrowers had developed and were farming their own land. The extent of recontracting practiced by government-assisted settlers (64 percent compared to 66 percent of self-financed settlers in the sample) is alarming in light of the large outlays made to enable assisted settlers to directly improve their own farmlots. The mean level of assistance to the 50 settlers interviewed was over 16,250 pesos in 1978 prices, or over $2,200 U.S.

Conclusion: Agricultural Contracts and Land Settlement

It has been shown that agricultural contracts encourage migration into recently settled areas and facilitate development of raw land into farms. The higher shares paid to rice harvesters and tenants and the lower shares paid to landowners in thinly populated provinces such as Palawan mean implicit wages are higher and rents lower than in out-migration areas. The resulting lower rent-wage ratio encourages migration into the recently settled area. Further, agricultural contracts are a means by which migrant settlers can guarantee themselves a source of food and income soon after arriving in newly opened areas. Such
contracts allow settlers to conserve their limited initial resources and accumulate savings to eventually develop farms of their own.

The stylized pattern of how contracts evolve and change in response to a number of pressures is returned to in Chapter VII below. To some extent agricultural contracts act as substitutes for poorly developed capital and labor markets in areas of recent settlement. Far from inhibiting economic development, it appears arrangements such as share contracts have a positive impact.
Footnotes to Chapter IV

28 PEDC (1976: 40) shows the distribution of Palawan's population by mother tongue. Strong evidence for the in-migration from Tagalog and Ilocano regions of Luzon and from Panay and Cebu in the Visayas is found in the large percentage of residents of Palawan speaking the mother tongues of these regions. Approximately 25 percent speak Visayan dialects, 16 percent Tagalog and 5 percent Ilocano.

29 Using census data it was found that farms in provinces of in-migration were larger than those of out-migration provinces by 1.4 hectares on average in 1971 (using the 1960 and 1971 census of agriculture). In Palawan farm size in 1971 was over twice as big as the average size in out-migration areas.

30 Few accurate data are available on rural wage variations between provinces. Regional data is likely to be misleading since wages often vary seasonally and depend on tasks associated with a particular crop. Case studies offer more accurate information and are useful in documenting this (see e.g., Lewis, 1971: 71-72).

31 ILO (1974: Table 95) and NEDA (1977: 53-56) show that this is the case in parts of Mindanao and the Cagayan Valley.

32 One cavan equals 50 kilograms of unmilled rice.

33 Since average yields per unit of land are slightly higher in source areas, actual rent must be higher also.

34 Mangahas et al. (1976) find that it was generally the case that share tenants bear 50 percent of inputs in Central Luzon. Lewis (1971: 119-127) and de los Reyes and Lynch (1972: 28) find tenants in densely populated areas are obliged to not only bear a larger share of farm expenses, but may also have additional obligations to their landlords.

35 Of the tenants interviewed in the sample the overwhelming majority felt tenure conditions were more satisfactory in Palawan than in their source areas. Krirks (1974) argues such improved conditions are at best transitory and that the mere existence of share tenancy indicates a bleak future is the prospect for a majority of settlers.
Exemplifying this, one settler interviewed was considering returning to his father's farm in Ilocos which had recently been included in an irrigation scheme. This settler had not yet claimed a piece of land for himself in Palawan. The mean income of the settlers in Palawan was higher than the mean for the 30 non-migrant households interviewed in Pangasinan.

A simple regression equation was fitted with net migration between 1960 and 1970 as the dependent variable (NM) and average farm income in 1971 as the explanatory variable (AFY), for 59 provinces. Negros Occidental was excluded since it is a sugar-plantation province where the family farm does not predominate. The resulting regression equation is: (t-value in parentheses)

\[ NM_i = -54,810 + 19.7 \cdot AFY_i \]

\[ R^2 = 0.314 \]

This finding is supported by a study of pioneer settlement in Northeast Argentina by Eidt (1971). Eidt states (ibid.: 115): "Cultural differences are deeply ingrained among farm peoples the world over, and this has been quite evident in the lack of mutual trust during times of stress in the randomly mixed colonies on this difficult landscape... it would have been wiser to form separate adjacent settlements with people of similar background in this heavily forested area so demanding of specialized solutions to its problems."

Roumasset (1978a: 12, n. 3) points out it is, "...an oversimplification of the views of Alfred Marshall...(who) was aware of the possibility that the landowner could require and partially enforce a provision that would inhibit the tenant's ability to stint labor."

Utomo (1976: 296) discusses the role of contracts in Indonesia: "If the problem of limited labor cannot be solved by sufficient initial capital, some of the 'first-wave' pioneers have worked out the following system: they not only provide temporary lodging in their houses for newer pioneers but also give out land in their abandoned swiddens on a kind of sharecropping basis. The transient peasant receives an old swidden on the condition that the land be returned after one year, during which time the temporary occupant converts it into a coffee grove. As compensation, the cultivator will receive the first harvest and subsequently part of the coffee crop or sometimes part of the land itself, depending on the terms of the initial agreement."
Gaitskell (1959: 69-71) reported that the managers of the Gezira Scheme in Sudan adopted, "the customary system of dividing the crop into shares." This was found superior to the fixed lease since it allowed for sharing of the uncertainty involved and, "...gave the peasant and government a mutual bond in adversity or success..."

Hanson (1965: 809) noted that in Peru, "In the beginning...the new settlers are necessarily sharecroppers, but the aim is to help them become independent landowners, producing rice, beef, pork, chickens, palm oil, manila hemp, and other crops Peru needs."

Wurfel (1976: 14) found that despite a Presidential Decree (No. 152) declaring share contracts to be illegal in public land areas: "Tenancy is rife within the settlements and has been for years. Even settlement officers have their own kasama, or share tenants."
CHAPTER V

LAND SETTLEMENT COSTS, INCOME GENERATION, AND FARM IMPROVEMENTS: A COMPARISON

This chapter presents the results of the field survey regarding the costs and returns of land settlement to settlers under the two systems. An estimate of the current financial requirements for establishing a five-hectare rice farm under alternative systems is presented. Incomes and farm improvements of self-financed and government-assisted settlers are compared and the impact of the government assistance package on settler income is assessed.

Land Settlement Costs Compared

Table 14, page 70, presents cost estimates under alternative systems for establishing a five-hectare rice farm. It must be emphasized that these are estimates of financial costs. One is from the Department of Agrarian Reform's Bureau of Resettlement. Another is that of a 1973 World Bank mission to the Philippines. The third is estimated from sample data for the self-financed settlers interviewed in Palawan.

Cost estimates for government-assisted land settlement in both cases (World Bank and government agency) are discouragingly high. The Bureau of Resettlement places the current cost of its direct assistance program to move and settle one family from the Ilocos region of Luzon to Palawan
<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated Peso Cost (1978 Prices)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>World Bank</td>
</tr>
<tr>
<td>1. Land survey</td>
<td>370</td>
</tr>
<tr>
<td>2. Land clearing</td>
<td>9,421</td>
</tr>
<tr>
<td>3. Direct assistance consisting of:</td>
<td>12,811</td>
</tr>
<tr>
<td>a. housing</td>
<td>4,710</td>
</tr>
<tr>
<td>b. work animal</td>
<td>1,130</td>
</tr>
<tr>
<td>c. a year's subsistence rations</td>
<td>5,652</td>
</tr>
<tr>
<td>d. medical assistance</td>
<td>565</td>
</tr>
<tr>
<td>e. seeds and seedlings</td>
<td>377</td>
</tr>
<tr>
<td>f. chemicals and fertilizers</td>
<td>377</td>
</tr>
<tr>
<td>g. farm implements and hand tools</td>
<td>none</td>
</tr>
<tr>
<td>h. land preparation</td>
<td>none</td>
</tr>
<tr>
<td>i. moving and transportation</td>
<td>none</td>
</tr>
<tr>
<td>4. Costs without infrastructure</td>
<td>22,602</td>
</tr>
<tr>
<td>5. Infrastructure (no irrigation)</td>
<td>18,842</td>
</tr>
<tr>
<td>6. Total cost</td>
<td>41,444</td>
</tr>
</tbody>
</table>

at over 25,000 pesos. This does not include administrative or infrastructure costs. In addition, as the itemization of costs in Table 14 shows, this program budgets a far less than adequate amount for the all-important tasks of land-clearing and forming, while providing a large amount for housing. The large outlay for housing for the settler may reflect inefficient management of funds. The ILO Mission (ILO, 1974: 221) estimated a decent low-cost three-room house constructed from permanent materials with a floor area of 50 to 60 square meters could be built for 5000 pesos in 1974. Yet settlers' homes constructed in the resettlement project in Palawan were budgeted at 8,777 pesos that same year, even though they were only 30 meters square and had one room.

The figure for housing for self-financed settlers reflects lower expenditures for materials and hired labor. These settlers typically construct a simple shelter for the first few years. It is the outlay for this initial home that is reported in Table 14. After some savings are accumulated, self-financed settlers build higher quality housing at a fraction of the cost of government housing.

Infrastructure in the government project area is extremely poor, a condition that seems to be characteristic of official settlement projects in the Philippines. Rocamora and Panganiban (1975: 72) state:
"Only 10 to 15 percent of the planned road network in the settlements have been built and much of this is impassable in the rainy season. Out of the more than 500,000 hectares of resettlement reservations, only 10,000 hectares are irrigated..."

Another report (IARST, 1974: 39-40) indicates electricity is all but nonexistent and health and sanitation are less than adequate. Moreover, it should be noted that the estimates of infrastructure costs given by the Bureau of Resettlement are, in the words of the inter-agency study (ibid.: 43-44) "ridiculously low" and may be as much as ten years old. Poor infrastructure development may be endemic to government resettlement and it appears to receive low priority in the budgets of the resettlement agency as opposed to direct assistance.

The World Bank group's version of government-assisted settlement allocates realistic amounts for land clearing, farm development, and infrastructure, but results in very high costs per farm. It also ignores administrative costs, the cost of moving settlers to the settlement area, and the possibility of settler ingenuity in reducing expenses.

The figures in Table 14 for the cost of self-financed settlement were derived from the fifty interviews with settlers in this category. Land surveying is the actual price charged by private surveyors in Palawan (120 pesos per hectare). This figure is higher than that estimated by the
World Bank and the Bureau of Resettlement possibly due to lower per unit costs when a larger area is surveyed.

Land clearing, including removal of tree stumps, is the average cost to self-financed settlers allowing for use of family and exchange labor. It is assumed the first two hectares are developed fully by the settler at his own expense and labor. The other three hectares were assumed to be cleared by the settler, but improvements are assumed to be made by land-borrowers in recontracting arrangements as is common in the study area. Cost estimates on items (a) to (i) in Table 14 are average expenditures on each item by the self-financed settlers in the sample. Item (b), a work animal, is charged at 2,000 pesos in the government's settler assistance package. This is done regardless of the age, sex, size, or condition of the water buffalo. This was a sore point with many assisted settlers, who complained of receiving poor quality work animals.

The cost of farm development by self-financed settlement is only 44 percent of the Bureau of Resettlement's cost estimate and 55 percent of the World Bank group's estimate, yet includes adequate amounts for each item. Indeed, the difference in costs is almost enough to pay for the entire infrastructure bill estimated by the World Bank group. Furthermore, the administrative costs of self-financed settlement are low in comparison to those of government-assisted settlement. These costs are not included in the
table and would only serve to emphasize the costliness of government-sponsored settlement relative to self-financed settlement.45

The mean amount of assistance received by the 50 government-assisted settlers in the sample was 16,251 pesos in 1978 prices. Table 15, page 75, presents the percentage of these 50 settlers receiving various items in the assistance package. The level of assistance granted to the most recently moved in settlers is approximately equal to the figures given in Table 14 estimated from the Bureau of Resettlement.

The sample data indicate that land settlement costs, in financial terms, are much lower for self-financed settlement than for government-assisted settlement. The institutional adaptations made by settlers in migration and farm development through kinship ties and various contractual arrangements explain the lower money cost to the self-financed settlers. Exemplifying this is the fact that 76 percent of the self-financed settlers received aid and information from relatives or acquaintances compared to only 20 percent of the government-assisted settlers. Self-financed settlers' average cash expenditure up to the first harvest in Palawan was 2,339 pesos compared to 7,101 pesos for assisted settlers. The latter figure includes government outlays. Thirty-eight percent of the self-financed settlers were able to stay with
## TABLE 15

**TYPE OF ASSISTANCE RECEIVED BY GOVERNMENT-SUBSIDIZED SETTLERS**

<table>
<thead>
<tr>
<th>Type of Aid</th>
<th>Number Receiving</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Moving and transportation</td>
<td>46</td>
<td>92</td>
</tr>
<tr>
<td>2. Housing</td>
<td>45</td>
<td>90</td>
</tr>
<tr>
<td>3. Land clearing</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>4. Food rations b</td>
<td>47</td>
<td>94</td>
</tr>
<tr>
<td>5. Farm implements</td>
<td>46</td>
<td>92</td>
</tr>
<tr>
<td>6. Work animal</td>
<td>39</td>
<td>78</td>
</tr>
<tr>
<td>7. Health care</td>
<td>41</td>
<td>82</td>
</tr>
<tr>
<td>8. Seed</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>9. Fertilizer</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>10. Chemicals</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>11. Irrigation</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

aFifty assisted settlers were in the sample.

bThe mean period rations were received was 15.1 months.

and borrow land from relatives for extended periods upon arrival on Palawan's main island.

In terms of time, it was already demonstrated that self-financed settlers more rapidly developed their farmlots than government-assisted settlers, even though they have an apparent disadvantage in that they must locate open land and file an application with the Bureau of Lands, whereas government-assisted settlers are given a farmlot shortly after arrival in the settlement area. In reality, it is common for homesteaders to reserve land for relatives who migrate later, even though this is illegal (Simkins and Wernstedt, 1971: 73-74). Furthermore, government-assisted settlers who are assigned farmlots by random selection often seek to transfer lots to move nearer to settlers who speak the same dialect or to move to more favorable locations adjacent to roads (Fernandez, 1972: 181-182).

In the sample of assisted settlers interviewed, 36 percent had transferred lots, including five settlers who transferred two or more times. Thirty percent reported their lots had been occupied by previous settlers who after being moved in by the government settlement agency subsequently transferred to other lots or abandoned the area altogether.

The cost estimates given in Table 14 ignore the additional costs imposed by the tendency for a large number of government-assisted settlers to abandon the project area,
a problem that has characterized the official settlement program over the years. To get an idea of the rate of abandonment, a random sample of 825 of the 4,072 farmlot records for the Palawan settlement project was taken. The results show that under one-third of assisted settlers develop farms on the lots initially allocated to them and over two-thirds of the settlers transfer to other lots within the project or abandon the area, some to other areas of Palawan and some to return to Luzon. It was not possible to determine the number who actually return to their home provinces using the farmlot records, but estimates of key informants ranged from 30 to 70 percent of the assisted settlers in specific batches. Table 16, page 78, indicates the status of the farmlots included in the random sample examined. The number of settlers involved (992) exceeds the number of farmlots (825) due to the reallocation of lots, hence the differences in percentages reported in the table.

From the high rate of abandonment it may be inferred with a minor reservation that the fifty assisted settlers included in the field interviews may in some sense be regarded as successful in the context of the official settlement program. At least they did not retreat back to their home provinces. The additional costs to the government when the high abandonment rate is taken into account, even if the lowest estimate of 30 percent is used, are
TABLE 16
ABANDONMENT OF FARMLOTS IN PALAWAN SETTLEMENT PROJECT

<table>
<thead>
<tr>
<th>Status of farmlot</th>
<th>Number of lots</th>
<th>Percent of lots</th>
<th>No. of settlers</th>
<th>Percent of settlers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Occupied and cultivated by original settler of heir</td>
<td>310</td>
<td>37.5</td>
<td>310</td>
<td>31.2</td>
</tr>
<tr>
<td>2. Abandoned by original settler and reallocated once</td>
<td>68</td>
<td>8.2</td>
<td>136</td>
<td>13.7</td>
</tr>
<tr>
<td>3. Abandoned by original settler and squatted on by another settler</td>
<td>90</td>
<td>10.9</td>
<td>180</td>
<td>18.2</td>
</tr>
<tr>
<td>4. Abandoned more than once by assigned settlers</td>
<td>44&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.3</td>
<td>117</td>
<td>11.8</td>
</tr>
<tr>
<td>5. Abandoned by original settler and now vacant</td>
<td>69</td>
<td>8.4</td>
<td>69</td>
<td>7.0</td>
</tr>
<tr>
<td>6. Warning on abandonment to original settler</td>
<td>112</td>
<td>13.6</td>
<td>112</td>
<td>11.2</td>
</tr>
<tr>
<td>7. Cultivated by other than original settler (i.e., tenanted)</td>
<td>34</td>
<td>4.1</td>
<td>68</td>
<td>6.9</td>
</tr>
<tr>
<td>8. Blank record or never allocated</td>
<td>98</td>
<td>11.9</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>825</strong></td>
<td><strong>100.0</strong></td>
<td><strong>992</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

<sup>a</sup>Mean is 2.67.

Source: Record's Office, Central Palawan Settlement Project (Pilot Special Settlement Project), Department of Agrarian Reform - Bureau of Resettlement, April 1978.
staggering. This does not imply that the homesteading system does not also have its problems of abandonment. However, just as the costs of establishing a successful pioneer farm are lower for homesteading, so are the costs of failure.

Income and Farm Improvements

A major purpose of the study is to compare the incomes and capital formation of the two groups of settlers as indicators of success and as a way to ascertain whether direct government assistance contributes to these indicators. Three measures of income were developed for the comparison: rice income, farm income, and total household income. The flow of income over the 1977-78 crop years was estimated. Rice income was computed as a return to settler-owned factors of production. It was found by subtracting the cost of current inputs and factors of production not owned by the settler (e.g., rented land, hired labor, interest on loans, and rental charges on equipment) from the gross value of unmilled rice produced. (See Appendix I for an example of such a calculation.)

Farm income was found by simply adding the net income from all other farm production activities to rice income. In some cases vegetables, fruit, and poultry were produced for home consumption only. In the absence of an accurate method to estimate the value of these outputs they were omitted from the estimate of income which was consequently
understated. Total household income includes earnings from working outside the settlers' own farms by household members or income remitted by others to the household.

Measures of income for a single year are at best imperfect indicators of success. In recognition of this an attempt was made to estimate capital accumulation, including land development. Farm capital is measured by the estimated value of all farm equipment, work animals, and buildings held by the settler in 1978 pesos. Instead of attempting to estimate land values, the hectare area improved is used as a proxy. Improvements refer to rice paddies, areas planted to perennial crops, and the establishment of permanent as opposed to swidden or slash-and-burn upland fields.

The decision to invest in farm improvements is weighed against alternative non-farm investment and consumption opportunities. Therefore, the peso value of non-farm assets of the household, including business ventures, is considered as an indicator of success. Finally, since much of the farm capital and improvements is, in the case the government-assisted settlers, made possible by the resettlement agency loans of funds or "in kind" aid, the settlers' total indebtedness is reported. 49

For each of these measures of success, it was found that self-financed settlers outperformed government-assisted settlers, as Table 17 on page 81 shows. Statistical tests of the null hypothesis that the mean values of each variable
# Table 17

## Success Indicators Compared for Self-Financed and Government-Assisted Settlers

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Values for 1978 Prices</th>
<th>Statistical Differences&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Government-Assisted</td>
<td>Self-Financed</td>
</tr>
<tr>
<td>Rice income (YR)</td>
<td>2495</td>
<td>3983</td>
</tr>
<tr>
<td>Farm Income (YF)</td>
<td>3058</td>
<td>5035</td>
</tr>
<tr>
<td>Total household income (YT)</td>
<td>4436</td>
<td>6608</td>
</tr>
<tr>
<td>Farm equipment, buildings, (FK)</td>
<td>4864</td>
<td>5973</td>
</tr>
<tr>
<td>Total debts (DT)</td>
<td>8742</td>
<td>202</td>
</tr>
<tr>
<td>Other household assets (HHA)</td>
<td>4755</td>
<td>6760</td>
</tr>
<tr>
<td>Area of farm improved (AFI)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.4</td>
<td>4.9</td>
</tr>
</tbody>
</table>

<sup>a</sup>Level of significance for t-tests concerning means.

<sup>b</sup>Measured in hectares.

were equal for the two groups were conducted. The null hypotheses for the measures of income and total indebtedness could be rejected with the test significant at the 5 percent level for the income measures and equal to 1 percent for the latter. The alternative hypotheses that the mean values of rice income, farm income, and total household income were greater for the group of self-financed settlers could not be rejected at the 5 percent significance level. The alternative hypothesis that the mean value of total indebtedness of government-assisted settlers was greater than that of self-financed settlers could not be rejected at the 1 percent level of significance.

The null hypothesis concerning the equality of mean values of farm capital, area of farmland improved and non-farm assets of the household for the two groups could not be rejected. Nevertheless, that in itself is telling, given the high level of government funding to the assisted settlers. Net of such funding there is little doubt the self-financed settlers would be substantially ahead of the assisted settlers in these categories.

It may be argued that the superior performance of the self-financed settlers may be simply due to their coming uniformly from a more prosperous socio-economic strata than the government-assisted settlers, in which case such comparisons would be less interesting. The survey data indicate that self-financed settlers indeed had greater initial
capital of their own than government-assisted settlers, though the differences in mean values were not statistically significant. Also 38 percent of the self-financed settlers owned a parcel of land (no matter how small) in their source areas compared to only 18 percent of the government-assisted settlers. However, in both groups 28 percent were completely landless, without even status as tenants, in their source areas. This implies that the spontaneous settlement system does not exclude participation by the rural poor.

Further reflection leads one to the conclusion that even if the government program was really aimed at the poorest class, there would still hardly be a strong case for accomplishing this with a land settlement program in a frontier zone. This is not say the poorest should be excluded from such a program, though they would not be suited for initiating settlement of an area. Selection of only the poorest means there would be a low level of skills and entrepreneurial abilities. This would place great pressure on the government and would almost certainly lead to a paternalistic community, a problem that has been recognized in government settlement areas (IARST, 1974: 68; Fernandez, 1972: 272).50

Government Assistance and Farm Income

The error of assuming that large amounts of assistance can substitute for what applicants to the government's
settlement program lack in terms of capital becomes clear
when the amount of government aid is correlated with
income of the 50 assisted settlers in the sample. A
linear equation was fitted with farm income (YF) as the
dependent variable and government-assistance (GA) as the
independent variable, both in 1978 pesos. The resulting
estimate of the regression equation, with the t-value of
the coefficient of GA in parentheses, is:

\[ YF_i = 3958 - 0.09 \cdot GA_i \]

\[ R^2 = 0.07 \]

\[ (-1.97) \]

The t-value is significant at the 5 percent level,
indicating there is a negative relationship between the
amount of government assistance extended to the settler and
farm income. The relationship is shown graphically in Fig-
ure 2, page 85. Plotting the points indicated a nonlinear
(rectangular-hyperbolic) form would be more accurate. This
intuitively makes sense since there is less incentive or
pressure to work for income on one's farmlot the greater
the level of government assistance received. Moreover, the
farm capital given "in kind" by the government in the form
of work animals, plows, etc. can be sold for cash or traded
for consumption items. The level of income earned from
farming would tend to level off or asymptotically approach
some minimum greater than zero. A new equation was fitted
of the form:
Figure 2. Farm Income and Government Assistance
The resulting regression with the t-value in parentheses is:

\[
YF_i = a_i \left(\frac{1}{GA_i}\right) + e_i
\]

Again the t-value is significant at the 5 percent level. The negative correlation between the level of subsidy and settler income may result from the effect of the subsidy on individual's choice of whether or not to participate in land settlement. Without the subsidy, natural selection based on private benefit-cost calculations leads to migration of those individuals likely to succeed in the new environment. The subsidy, however, encourages marginal individuals in terms of ability to cope with the new environment to participate. These marginal individuals reduce the average productivity of the government settlement program. Selection of participants is inappropriate. At the time of the survey over 17,000 families that had applied to participate in the government resettlement program were on waiting lists, indicating excess demand. It appears the government does not select settlers on the basis of their skills. This finding may indicate that merely increasing the amount of funding without careful analysis of which items are included or the terms of the assistance loans may wastefully increase costs. In the following chapter explanation of the superior performance of self-financed settlers with regard to the
success indicators is developed through statistical analysis of the survey data.
Notes to Chapter V

44 The 1978 fiscal year budget request of the Bureau of Resettlement allocated sixty percent of the 55 million pesos to direct assistance alone. The remaining 40 percent was available for upgrading or developing infrastructure in project areas.

45 Administrative costs were estimated to be 687,828 pesos in 1973 for the Palawan settlement project, which would come to 1,295,976 1978 pesos, or 318 pesos per farmlot annually (DAR, 1972: 60). Note, however, that the agency was originally expected to be unnecessary after twenty years. Fernandez (1972: 177) found that: "Twenty-two years after it was established, Narra appears to be stranded midway in its development, and the Agency foresees the need to stay on for another twenty years." At the time of this author's field study in 1978 it appeared that the settlement agency had come under some budget tightening but was showing no signs of ending its operations in the foreseeable future.

46 In the sample it was found that two assisted settlers abandoned their farmlots in the project area and moved elsewhere hoping to escape their debts to the government resettlement agency.

47 Different "batches" or groups of settlers periodically moved to the Palawan settlement project may have different abandonment rates, leading to the different estimates given by observers to the author.

48 Some settlers may have moved on to more rewarding occupations in business in the nearby municipalities. This is very unlikely to be characteristic of most of the settlers who leave their farmlots.

49 This is analyzed in more detail in Chapter VI.

50 Fernandez (1972: 68), in this context, comments: "...it is not far-fetched to conceive of the Agency's administrators as surrogate landlords." The inter-agency report (IARST, 1974: 68) pointed out: "...even in the most successful settlements, some settlers found it quite natural to ask outsiders for financial assistance for community problems, instead of looking inward to their own community to see how
it might solve its own problems. This seemed to be evidence of the patron-client relationship engendered by the policies of the settlement administration, particularly in the provision of direct assistance to the settlers."
CHAPTER VI

SETTLER SELECTION AND INSTITUTIONAL ADAPTATION; EXPLANATORY VARIABLES

The relative success of self-financed settlers compared to government-assisted settlers is explored in this chapter. Results of tests of hypotheses regarding settler success are reported on. The tests concern variables representing settler selection and adaptability to the new environment for which significant differences were found between the two groups. The tests largely illustrate the importance of settler skills and initial capital endowment in explaining success. In addition, the financing problems of subsidized credit schemes are examined.

Explanatory Variables

The review of the history of public land settlement indicates that selection of settlers and the facility with which they adapt to newly settled areas are crucial to the success of such ventures. The selection of settlers lacking capital, both physical and human, as well as the lumping together of settlers from diverse source areas have characterized official settlement schemes (Felzer, 1945; Simkins and Wernstedt, 1971; Fernandez, 1972).

Poor settler selection was manifested in some early government settlement schemes by the selection of urban poor with no farm experience (Felzer, 1945: 132).
Fernandez (1972: 272) found that many of the government settlers sent to Palawan had:

"...backgrounds of tenancy, low educational attainment, limited technical skill, and a drab employment history."

The tendency to select settlers from diverse source areas is illustrated in Pelzer (1945: appendix c) for a project in Mindanao. This appears to also be the case in the Palawan settlement project. Homesteading, initiated by relatively prosperous pioneers, on the other hand, leads to chain migration and more rapid institutional adjustment (Simkins and Wernstedt, 1971: 75).

A major purpose of the field study in Palawan was collection of data relating to the characteristics of settlers and the processes of migration and development of farms. Detailed data on settlers' initial capital endowment, employment and skills, pre-migration socio-economic status, attitudes about migration, farm practices, and credit position allowed a number of variables representing settler selection to be quantified. In addition, by recording data describing the chronological order and steps in migration and farm development, tenure arrangements, labor contracts, and aid and information received from relatives and acquaintances in the study area, the quantification of a number of variables relating to the facility of institutional adaptation was permitted.
The methodology then was to use a number of the variables that had been defined for purposes of data collection and then quantified in analyzing the data to attempt to explain differences in the two groups of settlers with respect to the success indicators. As noted earlier, as much as possible, the design of the field study sought to rule out mere factors of locational or environmental advantage of one group over the other, though variations within each group of settlers in such things as access to roads, water, and market outlets, did exist.

The mean values of variables related to settler selection and institutional adjustment were calculated and compared for both groups. Statistical testing of the null hypothesis that the means of these variables are equal was then performed. If the null hypothesis could be rejected, a relevant alternative hypothesis was examined in light of the expected sign of each variable with respect to the income and farm improvement success indicators. Table 18 presents the results on page 93.

In Table 18, the respondent's age, the settler's initial capital, educational attainment, and the skills index of the respondent, all directly relate to settler characteristics. The settler's initial capital was the computed cash value (1978 pesos) of assets owned by the settler and his family upon arrival in the settlement area. Educational attainment was measured in years of school
### TABLE 18
MEAN VALUES OF POTENTIAL EXPLANATORY VARIABLES COMPARED

<table>
<thead>
<tr>
<th>Variable and (Symbol)</th>
<th>Mean values for:</th>
<th>Government-Assisted Settlers (RA)</th>
<th>Self-Financed Settlers (SFS)</th>
<th>Statistical Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age of respondent upon arrival in Palawan</td>
<td></td>
<td>36.3</td>
<td>26.6</td>
<td>***</td>
</tr>
<tr>
<td>2. Years in between migration from source area to current residence</td>
<td>(YMRSC)</td>
<td>10.3</td>
<td>5.3</td>
<td>***</td>
</tr>
<tr>
<td>3. Total costs up to the first harvest, 1978 P</td>
<td>(TCHI)</td>
<td>7,101</td>
<td>2,339</td>
<td>***</td>
</tr>
<tr>
<td>4. Government assistance, 1978 P</td>
<td>(GA)</td>
<td>16,251</td>
<td>0</td>
<td>***</td>
</tr>
<tr>
<td>5. Settler's initial capital (excludes 4), 1978 P</td>
<td>(KIS)</td>
<td>4,333</td>
<td>5,816</td>
<td>n.s.</td>
</tr>
<tr>
<td>6. Total man-days labor input on farm last crop season</td>
<td>(TMDF)</td>
<td>234</td>
<td>261</td>
<td>*</td>
</tr>
<tr>
<td>7. Hectares planted to permanent crops</td>
<td>(HPHC)</td>
<td>0.3</td>
<td>2.1</td>
<td>**</td>
</tr>
<tr>
<td>8. Area of farm cultivated to rice last crop year (hectares)</td>
<td>(AFC)</td>
<td>2.9</td>
<td>3.3</td>
<td>n.s.</td>
</tr>
<tr>
<td>9. Area planted to HYV seeds last crop year (hectares)</td>
<td>(HYVA)</td>
<td>0.9</td>
<td>1.2</td>
<td>n.s.</td>
</tr>
<tr>
<td>10. Educational attainment of spouse (highest grade completed)</td>
<td>(EDS)</td>
<td>6.1</td>
<td>6.4</td>
<td>n.s.</td>
</tr>
<tr>
<td>11. Skills index of respondent</td>
<td>(SIR)</td>
<td>3.2</td>
<td>3.8</td>
<td>**</td>
</tr>
<tr>
<td>12. Estimated crop loss in cavans past crop year</td>
<td>(ECL)</td>
<td>27</td>
<td>17</td>
<td>*</td>
</tr>
<tr>
<td>13. Fertilizer use, bags used on farm last crop season</td>
<td>(FU)</td>
<td>8.5</td>
<td>4.5</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

* Reject hypothesis that means are equal, \( \alpha = .10 \)
** Reject hypothesis that means are equal, \( \alpha = .05 \)
*** Reject hypothesis that means are equal, \( \alpha = .01 \)
completed. The index of skills was computed by assigning points to each respondent according to employment experience and training in vocational, technical and managerial skills. Inclusion of such an index was inspired by an earlier study of successful settlers in Palawan that found managerial or entrepreneurial skills to be key (Fernandez, 1972). Fernandez (ibid.: 185) noted in his study of 15 successful settlers that:

"...successful settlers stand apart from others in terms of formal education, exposure to media, travel, managerial skills, and employment experience."

In the skills index developed, one point was assigned for semi-skilled vocational experience (e.g., carpentry, fishing, masonry); two points for experience in managing a farm of one's own prior to migration; two points for management experience in business or the public sector; and two points for overseas job experience. This permitted the quantification of skills in a simple manner.

Variables reflecting farm management practices in Palawan such as total labor man-days input on the farm, hectares planted to perennial crops, rice area planted, area planted to high-yielding rice seed varieties, and fertilizer use, may also be thought of as broadly falling into the category of settler selection since they involve the settler's skill and efficiency in running a farm. The labor input variable was measured by estimating total labor
used for farm tasks over the 1977-1978 crop year. Fertilizer use was measured in 50 kilogram doses of fertilizer applied over the same period.

Variables corresponding to the category of ease of institutional adaptation are: the years in between migration from the source area to establishment in the current area farmed in Palawan, the costs up to the first harvest in Palawan, the amount of government assistance received, and a dummy variable based on the settler's attitude toward migration to Palawan.53

The dummy variable takes a value of one in the case of government-assisted who reported they would not have migrated to Palawan without government aid, and a value of zero in the case of settlers who would have migrated to Palawan without any government aid. The latter included all the self-financed settlers and the more self-reliant of the government-assisted settlers.

The only variable for which the mean value was significantly different between the two groups falling into the category of a locational or environmental advantage favoring self-financed settlers was estimated crop loss of rice in the 1977-1978 crop year, measured in 50 kilogram cavans of unmilled rice. Subsequent analysis found it to be insignificant in explaining income variations.

Though the differences in mean values for the settlers' initial capital are not statistically significant, it is
important to recognize that such a test obscures the fact that the self-financed settlers were, in general, able to stretch their own beginning assets farther than government settlers. This was due to aid received from kin and acquaintances, as well as lower costs up to their initial harvest. In addition, self-financed settlers brought in a harvest on their own farmlots approximately eleven months sooner than government-assisted settlers on average. Again, this reduced pressure on their initial capital resources.

The variables presented in Table 18 provided the basis for developing regression equations that are useful in explaining variations in the income measures and the farm improvement indicators. The regression equations were all of linear form. Tables 19 to 21, pages 97-99, present the results of the regression analysis. Note that in presenting the regression results the variables' names are abbreviated according to the abbreviations given in Table 18. Equations containing the dummy variable (ATD) could only be estimated using 94 of the 100 observations due to six of the government-assisted respondents being uncertain of whether they would have migrated in lieu of government aid. These settlers were dependent upon their parents in most cases at the time of migration.
### TABLE 19

**REGRESSION COEFFICIENTS**

**DEPENDENT VARIABLE - RICE INCOME (YR)**

(1977-78 Crop Year)

<table>
<thead>
<tr>
<th>Variable&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Coefficients&lt;sub&gt;(n = 100)&lt;/sub&gt;</th>
<th>Coefficients&lt;sub&gt;(n = 100)&lt;/sub&gt;</th>
<th>Coefficients&lt;sub&gt;(n = 94)&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIR</td>
<td>397.15**</td>
<td>413.16**</td>
<td>301.27</td>
</tr>
<tr>
<td>KIS</td>
<td>0.15***</td>
<td>0.15***</td>
<td>0.17***</td>
</tr>
<tr>
<td>TMDF</td>
<td>11.00***</td>
<td>9.46***</td>
<td>10.91***</td>
</tr>
<tr>
<td>GA</td>
<td>-0.02</td>
<td>-0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>HYVA</td>
<td>221.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YMRSC</td>
<td>-38.19</td>
<td></td>
<td>-41.41*</td>
</tr>
<tr>
<td>ATD&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>-1298.70**</td>
</tr>
<tr>
<td>Constant</td>
<td>-1347.73*</td>
<td>-972.92</td>
<td>-688.23</td>
</tr>
<tr>
<td>F-value</td>
<td>37.48</td>
<td>26.48</td>
<td>24.70</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.60</td>
<td>.61</td>
<td>.61</td>
</tr>
</tbody>
</table>

<sup>a</sup>The names of the abbreviated variables are reported in Table 18, page 93.

*Coefficient significant at .10 level.
**Coefficient significant at .05 level.
***Coefficient significant at .01 level.

<sup>b</sup>ATD is a dummy variable taking a value of zero if the settler would have migrated without government aid and one otherwise.
# TABLE 20

REGRESSION COEFFICIENTS
DEPENDENT VARIABLE - FARM INCOME (YF)
(1977-78 Crop Year)

<table>
<thead>
<tr>
<th>Variable(^a)</th>
<th>Coefficients ((n = 100))</th>
<th>Coefficients ((n = 94))</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIR</td>
<td>654.69***</td>
<td>510.15**</td>
</tr>
<tr>
<td>KIS</td>
<td>0.17***</td>
<td>0.19***</td>
</tr>
<tr>
<td>GA</td>
<td>-0.03</td>
<td>0.01</td>
</tr>
<tr>
<td>TMDF</td>
<td>9.87***</td>
<td>9.95***</td>
</tr>
<tr>
<td>HPPC</td>
<td>16.73***</td>
<td>16.59***</td>
</tr>
<tr>
<td>YMRSC</td>
<td>-59.91**</td>
<td>-62.38**</td>
</tr>
<tr>
<td>ATD(^b)</td>
<td>-1485.02*</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-969.59</td>
<td>-460.30</td>
</tr>
<tr>
<td>F-value</td>
<td>23.97</td>
<td>19.77</td>
</tr>
<tr>
<td>(R^2)</td>
<td>.59</td>
<td>.59</td>
</tr>
</tbody>
</table>

\(^a\)The names of the abbreviated variables are reported in Table 18, page 93.

\(^b\)ATD is a dummy variable taking a value of zero if the settler would have migrated without government aid and one otherwise.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (n = 100)</th>
<th>Coefficient (n = 94)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIR</td>
<td>1214.06***</td>
<td>1087.68***</td>
</tr>
<tr>
<td>KIS</td>
<td>0.16**</td>
<td>0.19**</td>
</tr>
<tr>
<td>HPPC</td>
<td>25.46***</td>
<td>23.99***</td>
</tr>
<tr>
<td>EDS</td>
<td>236.55*</td>
<td>189.27</td>
</tr>
<tr>
<td>TMDF</td>
<td>7.27***</td>
<td>7.33**</td>
</tr>
<tr>
<td>GA</td>
<td>-0.80</td>
<td>0.01</td>
</tr>
<tr>
<td>YMRSC</td>
<td></td>
<td>-36.92</td>
</tr>
<tr>
<td>ATD&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-1852.29</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-2868.97**</td>
<td>-2160.93</td>
</tr>
<tr>
<td>F-value</td>
<td>16.42</td>
<td>11.88</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.49</td>
<td>.50</td>
</tr>
</tbody>
</table>

*Coefficient significant at .10 level.

**Coefficient significant at .05 level.

***Coefficient significant at .01 level.

<sup>a</sup>The names of the abbreviated variables are reported in Table 18, page 93.

<sup>b</sup>ATD is a dummy variable taking a value of zero if the settler would have migrated without government aid and one otherwise.
Income Variations

Table 19, page 97, reports the results of three regression equations estimated with rice income (YR) as the dependent variable. The coefficients of the variables KIS and TMDF are statistically significant in each equation, while skills (SIR) is significant in the first two equations, but not in the third in which the dummy variable (ATD) was included. All signs are as expected.

Government assistance is negative in two of the three equations and is statistically insignificant in all three. Inclusion of variables such as use of high-yielding seeds and fertilizers did not appreciably affect the estimated equations for rice income. The F-tests indicate that the explanatory variables included in the regression equations with rice income as the dependent variable are significant at the one percent level in explaining variation of YR from its mean. Further, settler selection and ease of institutional adaptation represented by variables SIR, KIS, TMDF, ATD, YMRSC are in all but two cases significant individually and take the expected sign. The corrected R-squared values are reported.

Table 20, page 98, reports results of two regression equations estimating the effect of the explanatory variables on farm income (YF). Farm income included net earnings from all crops, therefore a variable for the area planted to perennial crops (HPPC) was included. The variables
Corrected R-squared values are representing settler selection and institutional adaptation (SIR, KIS, TMDF, HPPC, YMRSC, ATD) all take the expected sign and were individually significant statistically in both equations. Government assistance was negative in the first equation estimated without the dummy variable and was not statistically significant in either equation. Again, the F-tests indicate that the null hypothesis that the explanatory variables have zero effect on variations of YF about its mean could be rejected at the one percent level of significance. Corrected R-squared values are given.

Results of two regression equations with total household income as the dependent variable (YT) appear in Table 21, page 99. Educational level of the spouse was included as an explanatory variable in these equations. Its coefficient took the expected sign and in one equation was statistically significant. Coefficients of settler selection variables (SIR, KIS, HPPC, TMDF) all had positive signs and were statistically significant in both equations. The variables representing institutional adaptation (ATD, YMRSC) were not significant. Government assistance had a negative coefficient in one equation and was insignificant in both. Again, the F-tests indicate that the null hypothesis with respect to the explanatory variables could be rejected at the one percent level of significance.
In the regression analysis of income, settler selection in terms of skills (SIR) and initial capital (KIS), along with the variable for labor input (TMDF), which to some extent includes settler selection and ease of institutional adjustment, prove to be key to success. In all the equations except one, the skills index (SIR) is positive and statistically significant. KIS and TMDF are positively related to income and are statistically significant in every case. In the settlement area, the ability to mobilize labor, whether through the extended family or by contracting, is crucial to success as the results in tests concerning the variable TMDF reveal.

Government assistance (GA) proves to be negatively related to income in the multiple regression analysis, just as it was in the simple regression presented earlier, with two exceptions. When the dummy variable, ATD, is included it (GA) becomes positive but is not significantly different from zero.

The variable representing facility of institutional adaptation (YMRSC) has its expected negative sign in all income equations. It is statistically significant in three of the five equations in which it is included. The dummy variable, ATD, has the expected negative sign and is statistically significant in two of the three income equations in which it is included.
In the four equations estimated for farm income and total household income, the variable HPPC was included. It was positively correlated with income and statistically significant in every case reflecting the benefits of planting remunerative perennials such as coconut, coffee, and cashew. It is striking that government-assisted settlers have been so reluctant to grow tree crops in comparison with self-financed settlers. This suggests an inability or unwillingness to invest in such crops which require over six years to generate income.

Settler selection and the facility with which settlers institutionally adapt to their new environment as represented by the variables SIR, KIS, TMDF, HPPC, ATD, YMRSC, and EDS are helpful in explaining the higher incomes attained by the sampled self-financed settlers in the 1977-1978 period. The variables for settler selection also explain variations in success within each group, since both groups have cases of successful and unsuccessful settlers.\textsuperscript{54}

**Farm Improvements**

Farm improvement and capital accumulation are likely to be highly correlated with past income. Several forms of a regression equation with the land area of the farm improved by a settler (AFI) and with farm capital (FK) as dependent variables were estimated for the sample settlers. The equations did not include income in order to test the
effect of variables representing settler selection and ease of institutional adjustment on these crucial indicators of settlers' achievements independently of other success indicators. Subsequent analysis showed that for AFI and FK, the settler's initial capital (KIS) was the only such variable that was statistically significant and positive in relationship to the dependent variables.

In the first equations reported in Tables 22 and 23 on pages 105-106 all 100 observations were included. In these two equations as well as in the other three estimated for only the 50 government-assisted settlers, KIS was found to be statistically significant and positively related to the area of the farm improved and the amount of farm capital (AFI and FK respectively). It was found, as is reported in Table 22, that government assistance was negatively correlated to AFI and was statistically significant in all three equations. In the second equation estimated for farm capital it was found to be negative but not significant. The F-statistic for the first equation estimated with AFI as the dependent variable indicates the null hypothesis that KIS and GA have zero influence on the variation of AFI about its mean can be rejected at the 5 percent level. For all four of the remaining equations reported in Tables 22 and 23 the F-statistic is sufficiently large to allow rejection of this null hypothesis at the one percent level of significance. The lower R-squared values resulting in these
<table>
<thead>
<tr>
<th>Variable^a</th>
<th>All Settlers (n = 100)</th>
<th>Government-Assisted Settlers Only (n = 50)</th>
<th>Government-Assisted Settlers Only (n = 50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.27233***</td>
<td>4.95956***</td>
<td>5.65299***</td>
</tr>
<tr>
<td>KIS</td>
<td>0.00013*</td>
<td>0.00093**</td>
<td></td>
</tr>
<tr>
<td>GA</td>
<td>-0.00009*</td>
<td>-0.00120***</td>
<td>-0.00014***</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>.07</td>
<td>.34</td>
<td>.29</td>
</tr>
<tr>
<td>F-Value</td>
<td>4.01</td>
<td>12.63</td>
<td>19.52</td>
</tr>
</tbody>
</table>

*Coefficient significant at .10 level.

**Coefficient significant at .05 level.

***Coefficient significant at .01 level.

^aThe names of the abbreviated variables are reported in Table, page 93.
TABLE 23
REGRESSION COEFFICIENTS
DEPENDENT VARIABLE - FARM CAPITAL (FK)

<table>
<thead>
<tr>
<th>Variable(^a)</th>
<th>All Settlers Coefficient (n = 100)</th>
<th>Government-Assisted Settlers Only Coefficient (n = 50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1568.47*</td>
<td>2303.19</td>
</tr>
<tr>
<td>KIS</td>
<td>0.76**</td>
<td>0.65***</td>
</tr>
<tr>
<td>GA</td>
<td>-0.02</td>
<td>-0.02</td>
</tr>
<tr>
<td>(\bar{R}^2)</td>
<td>.41</td>
<td>.51</td>
</tr>
<tr>
<td>F-Value</td>
<td>68.11</td>
<td>25.18</td>
</tr>
</tbody>
</table>

*Coefficient significant at .10 level.

**Coefficient significant at .05 level.

***Coefficient significant at .01 level.

\(^a\)The names of the abbreviated variables are reported in Table 18, page 93.
equations are due to the exclusion of income as an explanatory variable.

The results show the positive impact of a settler's initial capital endowment on subsequent farm advances and reinforces the finding that government assistance is not a substitute for settlers' own capital. The fact that 12 of the 50 government-assisted settlers interviewed admitted selling the work animal given them by the settlement agency in order to raise cash for consumption purposes is illustrative of the frustrations arising in the attempt to provide farm capital to assisted settlers.

The regression results further indicate it is likely that self-financed settlers consistently achieve higher incomes on average than government-assisted settlers. This deduction is supported by the evidence that self-financed settlers accumulated larger amounts of farm capital and had developed more land than assisted settlers, despite a mean level of government assistance to the latter equivalent to 16,251 pesos in 1978 prices. The higher mean incomes attained by the 50 self-financed settlers in the 1977-1978 period thus seems to be no random occurrence.

The more progressive farm development of these self-financed settlers firmly indicates they have continually generated larger incomes in the settlement area than the assisted settlers moved in by the government. Government assistance rather than encouraging settlers to generate a
reinvestable surplus appears to have largely been used to augment household consumption and even to reduced investment in that less pressure existed for such settlers to work to improve their farmlots. The difference of mean levels of own initial capital of settlers in the two groups is not statistically significant. However, the lower costs of bringing an initial harvest made possible by aid-and-information links and the greater managerial skill of self-financed settlers enable these initial resources to be put to more productive use. Fernandez (1972: 184) noted that while successful settlers within the government's Palawan settlement project had approximately three times the initial capital of unsuccessful settlers, amount of capital alone was not key. He points out (ibid.):

"More important than the value of the settler's starting resources, however, is the strategy employed in their use."

That self-financed settlers are more skillful in employing their initial resources follows. Thus the insight contained in Fernandez's earlier study may be extended to the comparison between the two groups of settlers in light of the differential degrees of success.

The further implications of the role of government assistance and the differing status of the two groups of settlers are examined with regard to the settlers'
financial balance sheets. The financing problems of the government settlement agency with respect to non-collection of debts from the assisted settlers can be better understood when examined in the general context of the settlers' financial transactions in general and not just vis-a-vis the settlement agency.

**Analysis of Farm Finances: Settler Indebtedness and Subsidized Credit**

The 50 government-assisted settlers interviewed had a mean level of debt of 8742 pesos compared to only 202 pesos for self-financed settlers. The difference in means was significant at the one percent level. The major part of assisted settler debt was to the settlement agency.

The sample data indicate the familiar problem of loan default that has plagued government settlement agencies throughout this century in the Philippines as documented by several sources (see, e.g., Pelzer, 1945: 132, 154-158; IARST, 1974: 6, 51; Rocamora and Panganiban, 1975: 69, 72) is present in the Palawan settlement scheme. It was found that of the total direct assistance extended to the 50 assisted settlers, only one percent had been repaid.\(^{55}\)

The settlement agency's records showed that only two of the 50 settlers had fully met their obligations and even in these cases payments were tardy.\(^{56}\) Failure to repay the direct assistance loans means settlers cannot receive title to their farmlots, which further implies they cannot use
their farmlots as collateral. This results in government-assisted settlers being unable to acquire loans from institutional sources such as commercial banks.

Government-assisted settlers had also participated widely in a government-sponsored subsidized credit scheme for small rice farmers lacking collateral, called "Masagana 99." The program was designed to encourage peasant farmers to adopt modern rice varieties and chemical inputs by making production loans available at a subsidized interest rate. Best (1977) found that such loans were generally uncorrelated with net income from rice farming and resulted in a high rate of default.

Sixty-two percent of the government-assisted settlers took out non-collateral loans under this program, and generally this led to even greater indebtedness. Only 36 percent of the self-financed settlers received loans through this program. The indebtedness of assisted settlers to the settlement agency as well as the rural banks through which funds for the Masagana 99 program were channeled, combined with a lack of collateral, has forced them more and more to seek loans from moneylenders and grain merchants at stiff interest rates. Repayment of such non-institutional loans is strictly enforced by the simple fact that failure to repay on time means the last source of cash for future exigencies will be dried up.
The survey data provide quite an interesting opportunity to analyze the role of financial transactions and institutions in small farm development. Economists have frequently warned against the inept interference with market forces characterizing many efforts by government to meet the credit needs of peasant farmers in developing economies. However, the reasoning behind such warnings may be quite different. One paradigm, now largely discredited among economists, is that peasant's behavior is at odds with profit maximization. Penny (1968: 32-45) stresses that subsidized credit schemes are doomed to failure because of the "subsistence-mindedness" and lack of "will to develop" prevalent among Asian peasant farmers. Penny's hypothesis is based on a study of a recently settled area in Northern Sumatra, Indonesia. An alternative view now gaining in influence, is that peasant behavior is consistent with profit maximization under uncertainty.

The survey data provide information on loans taken out over the past three crop years (1975 to 1978). Information on the size of each loan, the date of its receipt and when payment was due, the source of the loan, the amount that must be repaid (and hence the annual interest rate), if collateral was required, the type of payment to
be made (in cash or "kind"), the amount actually repaid, the relationship of the debtor and creditor, and the purpose of each loan, was collected. The loan data from all institutional sources and the settlement agency were checked with the lending institution or personnel concerned. It was not possible to verify data for loans from non-institutional sources. On these loans settlers' responses had to be accepted at face value. One hundred and forty-nine loans were subjected to regression analysis to explain repayment and default.

Four "types" or classes of loans existed. The major form of debt was the long-term no-interest loans for direct assistance from the settlement agency to the 50 government-assisted settlers. The mean amount of such loans in nominal (current) prices was 6000 pesos. Settlers are expected to begin repayment of such loans in three years and complete repayment 13 years after arriving in the settlement area, upon which occasion they are to receive title to their farm lots.

A second common type of loan was the Masagana 99 rice production loan. These non-collateral loans tied to purchases of farm inputs were routed to settlers through rural banks or the Agricultural Credit Administration (ACA) office. A subsidized interest rate amounting to 12 percent per annum was charged. That such loans have lent themselves to abuse is common knowledge (Best, 1977:12). Farmers must
get approval from government agricultural extension workers or technicians to qualify for such loans. 60

A third major type of loan is that from grain merchants or moneylenders who generally have a patron-client relationship with the borrower, allow payment to be in "kind" rather than cash, and charge interest rates of 50 to 150 percent per annum. Such loans are usually made in the planting season and must be repaid at harvest time. Typically such loans stipulate that three 50 kilogram sacks of unmilled rice per 100 pesos borrowed will be repaid, a similar system to that noted by Larkin (1972: 82). Since each kilogram is worth one peso, the interest rate is:

\[(150 \times 1) \div (100) = 1.5\]

or 50 percent over the six-month planting season, an annual rate of 100 percent.

A fourth type of loan is uncommon. Institutional loans requiring land as collateral were issued to a small number of prosperous settlers in the sample for items such as hand tractors, irrigation pumps, and college tuition for children. Such loans are given at favorable interest rates since the government puts a low ceiling on loan rates charged by rural banks in the somewhat mistaken notion that small farmers will benefit. However, the borrower must have legal title to land and a good credit standing in order to secure such loans, qualifications only a small number of settlers can meet.
In the regression analysis, the dependent variable was defined as the repayment rate (RPR). It is a percentage figure varying in value from zero to 100. If none of the loan principal plus interest is returned to the lender for a loan by the due date then RPR is zero. The formula is:

\[ RPR_i = \frac{A_{it}}{(L_i + r_i)} t \]

where:
- \( A \) is the amount paid by the due date
- \( L \) is the loan principal
- \( r \) is the interest owed
- \( i \) refers to the particular loan
- \( t \) is the time the loan is past due, hence \( t=1 \) indicates the loan is repaid on schedule

Two regression equations were fitted using the loans reported in the sample. Both were linear in form and the results are reported in Table 24, page 115. The results of the first regression with the interest rate as the only explanatory variable reflects the inverse relationship between the degree to which loans are subsidized and the rate of repayment reported on by the ILO Mission to the Philippines (ILO, 1974: 238, n. 1). The coefficient for the interest rate variable is significant at the one percent level with a \( t \)-value of 6.93.

The results show a strong positive relationship between the interest rate and repayment of loans. The absence of
<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficients N = 149</th>
<th>Coefficients N = 149</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>34.89</td>
<td>25.10</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>0.39***</td>
<td>0.053**</td>
</tr>
<tr>
<td>Loan Size</td>
<td>-0.0007**</td>
<td></td>
</tr>
<tr>
<td>Loan Source</td>
<td>74.24***</td>
<td></td>
</tr>
<tr>
<td>Non-Collateral Loan</td>
<td>-3.506</td>
<td></td>
</tr>
<tr>
<td>Cash Payment</td>
<td>-5.676</td>
<td></td>
</tr>
<tr>
<td>F-Value</td>
<td>48.06</td>
<td>53.32</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>.25</td>
<td>.65</td>
</tr>
</tbody>
</table>

** Coefficient significant at .05 level.
*** Coefficient significant at .01 level.
any interest charge on the major form of debt of
government-assisted settlers, the loans from the agency,
acts as a powerful disincentive to repayment. This was
noted by the inter-agency team report (IARST, 1974:6):

"Direct assistance provided to settlers is
required by law to be paid in kind, as interest
free loans. These requirements do not promote
independent and responsible attitudes on the
part of the settlers. Collection of settler
assistance loans is estimated at about five
percent of total outlays, making the loans in
effect a grant."

This indicates there is a strong case for putting
interest charges on settler loans. The above regression
suggests that this would encourage repayment to some extent.
In the present situation there is a reward to debtors if
they delay payment, equal to the purchasing power of the
peso diminished by inflation. With no interest charge it
is quite rational, contrary to Penny, for them to delay
payment as long as possible, until (and if) they are able
to accumulate enough funds to repay the loan and perceive
a positive and greater net benefit would accrue from pos-
sessing a legal title to their farmlots. Recall that titles
may be used as collateral to acquire loans from institu-
tional sources.

The importance of institutional and other variables
on loan repayment was quantified in the second regression
reported in Table 24. In this multiple regression equation
loan size, the interest rate, and three dummy variables
were included in the analysis. Dummy variables were the requirement of collateral, the source of the loan, and the form of repayment. The collateral dummy takes a value of one if no collateral is required, zero otherwise. The source of the loan dummy takes a value of one if the loan is from moneylenders and a value of zero for the agency, rural bank, or ACA loans. The dummy for form of payment takes a value of one if repayment is cash, zero if it is in "kind."

The signs of the coefficients of all variables are as expected. Loan size and source of loans are statistically significant at the five and one percent levels respectively. The interest rate variable is positive but not significant due to the correlation between it and the dummy variable for the source of loans. The regression analysis suggests that defaults can be reduced by decreasing the size of loans, increasing loan interest rates closer to the market rates that would prevail in the absence of ceilings, and by improving the design of loan programs. The wisdom of continued direct-assistance loans to encourage land settlement is doubtful.

A problem in repayment of loans from official sources is noted by Best (1977: 12):

"This is the concept of the 'dole out mentality,' where anything that comes from the government is free."
It might be further added that as long as government agencies poorly manage funds this psychology is further reinforced.

The behavior of settlers in their loan repayment priorities appears to be consistent with rational behavior. Loans from non-institutional sources, bearing the highest rates and with the implicit social pressure involved are most likely to be repaid. A major social factor in the low default rate in such loans is the relative ease and speed with which such loans may be approved compared to loan requests to banks or government agencies. This means in an emergency a settler may turn to his 'suki' (the merchant a farmer commonly transacts with) for cash and have the amount in hand shortly after making such a request.61

The non-collateral loans provided through the Masagana 99 program for which farmers are charged a subsidized 12 percent interest rate have had such a high rate of default that the program may not be viable. Best (1977: Tables 12, 13, 14) demonstrates hypothetically that farmers who default on such loans are better off than those who repay.

Settlers are most likely to default on the no-interest, long-term loans provided by the settlement agency. Nonpayment of such loans reduces the real debt of settlers by the rate of inflation. The less than stringent enforcement of repayment made necessary partly by the low income levels prevailing among the assisted-settlers leads to the quagmire
of problems of financing further resettlement and of infrastructure development. The unproductive use of such loans represents a waste of scarce public development resources. The failure of various subsidized credit schemes in recently settled areas seems to result from poor design of the programs and ill-advised government policies.

Conclusion: Settler Success and Land Settlement Financing

The finding that the managerial and entrepreneurial skills or human capital as well as initial physical capital owned by settlers are important in explaining settler success indicates natural selection of settlers occurs. Government assistance interferes with natural selection and encourages migration by those not suited to the new environment. Moreover, the chain migration process that promotes establishment of rural institutions is inhibited under government-organized settlement.

The problem of default on government loans to assisted settlers is best understood in the context of credit conditions in recently settled areas. Default is due to the disincentives for repayment inherent in the various subsidized credit schemes, not to the alleged "irrationality" of settlers.
Footnotes to Chapter VI

51 Pelzer (1945: appendix c) shows the diversity of provinces from which the settlers for the National Land Administration’s (NLSA) project in the Koronadal Valley of Cotobato province in Mindanao were selected. Settlers selected for the Palawan project appear to also be from many different areas. Available data indicate 1,629 recent settlers (moved in since 1966) in the Palawan project come from 26 different provinces and Manila, with distinctly large proportions originating in Palawan itself (42 percent) and in Pangasinan (23 percent). The tendency for settlers within the project to prefer to settle in communities with people from their home provinces is clear, however, it is prevented from being easily realized by the random allocation of farm lots by the agency.

52 This variable is exclusive of government assistance.

53 Government assistance, of course, is greater than zero only in the case of the 50 government-assisted settlers. The dummy variable is omitted from Table 18 since it simply takes a value of zero or one. All variables in Table 18 are inflated into 1978 pesos.

54 The problem of overlapping distributions exists in using mean values for the two groups. However, the more successful government-assisted settlers would have migrated and succeeded in the absence of assistance. As Fernandez (1972: 272) states: "The successful settler differs from his fellows above all by reason of his business-managerial ability;...Most of these talents, and the basic attitudes they express, he brought with him to Narra,....he was, by and large, preadapted to coping with Narra environment."

55 Fernandez (1972: 183) found only 16 of 500 settlers surveyed in 1972 had begun to repay the agency.

56 The discrepancy between the mean level of government assistance reported in Table 18 (16,251 pesos) and the debt total reported for the assisted settlers in Table 17 (8,742 pesos) results from the use of the index numbers to inflate the figures in Table 18, whereas figures in Table 17 are in nominal terms. Since the actual debts owed are always in nominal terms, this convention will be followed throughout the following analysis of settler debt and repayment.
IARST (1974: 3-4) states: "Indications from 18 of the settlements which have reported in sufficient detail are that only four percent of the farmlots have been titled." The report goes on to say this may be a blessing in disguise since at least settlers have not been able to lose their land through debt. Krinks (1974: 17) asserts that the surest way to deprive a peasant of his land is to give him negotiable title to it. In lieu of titles settlers are issued a certificate of allocation which recognizes the use-rights of the settler on his farmlot but is not legally transferable. However, there were two cases in the interviews with government-assisted settlers where such certificates were accepted by rural banks. The settlers had in effect mortgaged their farmlots.

See, e.g., Rocamora and Panganiban (1975: 73-80) for a review of the Philippine experience with credit schemes.

The paradigm that postulates peasant farmers act consistently with economic rationality was initially advanced by Theodore Schultz (1964). For an application of this view to analyze the dynamics of technological and institutional change see Binswanger and Ruttan (1978).

Best (1977: 12) noted that, "...many credit technicians are receiving illegal 'kickbacks' from fertilizer and insecticide dealers for referring farmers and from farmers for merely processing loans."

The ILO Missions' general observations on the harmful effects on financial development of restricting competition and imposing ceilings on interest rates, as well as the specific observations of their effects on rural development are noteworthy. See (ILO, 1974: 227-243).
CHAPTER VII

LAND SETTLEMENT DYNAMICS: INCOME DISTRIBUTION AND CHANGES IN LAND TENURE AND AGRICULTURAL CONTRACTS

The distribution of landholdings is an important determinant of income inequality in less developed nations with large agricultural sectors. Government policy is often aimed at providing landless or land-poor peasants with access to vacant cultivable land in hopes of relieving population pressures in densely settled areas, increasing output, and improving income distribution. This chapter considers the impact of land settlement on the distribution of both landholdings and income using the sample data. In addition, changes in tenure, labor hiring practices and the terms of agricultural contracts in response to changes in population, commercialization, technology, and government policy are considered.

Distribution of Land and Income

In the Philippines, settlement of public lands has been a major part of efforts at agrarian reform (Golay, 1961: 281-282). The homesteading system implemented under the American colonial regime in 1903 had relief of agrarian problems as an important goal (Krinks, 1974: 1). It was thought that provision of agricultural land at virtually zero price would encourage landless and land-poor tenant farmers to migrate to unoccupied areas to settle and
develop prosperous farm communities. Such hopes clearly ignored the costs involved in pioneer settlement.

Several authors have commented on the failure of the homesteading system to achieve much in the way of improved equity (Golay, 1961; Krinks, 1974; Wurfel, 1976; Sandoval, 1958). Golay (1961: 281) denounces:

"...widespread and pernicious subversion of effective public land policy by land-grabbers, who acquire public lands quasi-legally in order to speculate with them or to become absentee landlords."

Krinks (1974:1) notes a trend toward concentration of land ownership and growth of income inequality in a study of an area settled by self-financed migrants in Mindanao. Organized land settlement was presented as one means of avoiding such problems as Wurfel (1976: 14) points out. It was thought that increased government regulation of land allocation and the provision of assistance to settlers would help promote a more egalitarian rural structure. This goal is glowingly proclaimed in a statement of the general objectives of the Palawan settlement project from which the sample of government-assisted settlers was drawn for this study (DAR, 1972: 6). The sample data are used to compare the distribution of landholdings and of income within both types of settlement systems. Table 25, page 124, summarizes the situation with regards to landholdings. The term "landholding" must be used advisedly. This is due to the fact
TABLE 25

LANDHOLDING DISTRIBUTION BY TYPE OF SETTLER

<table>
<thead>
<tr>
<th>Quintile of families</th>
<th>Percent of Total Landholdings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Government-assisted settlers</td>
</tr>
<tr>
<td>Lowest 20%</td>
<td>15</td>
</tr>
<tr>
<td>Second 20%</td>
<td>17</td>
</tr>
<tr>
<td>Third 20%</td>
<td>17</td>
</tr>
<tr>
<td>Fourth 20%</td>
<td>19</td>
</tr>
<tr>
<td>Top 20%</td>
<td>32</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>.14</td>
</tr>
</tbody>
</table>

Source: Field survey data, Palawan 1978.
that government-assisted settlers cannot receive legal title to their farm lots until they have discharged their debts to the government settlement agency. However, only two of the 50 settlers interviewed had done so. In the case of self-financed settlers only 11 of 50 had received title to a part of the land they claimed. The figures in Table 25 are based on the settlers' claimed landholdings. The Gini ratio is much lower for government-assisted settlers. However, much of the land claimed by assisted settlers had not been improved. In some cases the farm lot was still completely forested even after the settler had been in Palawan for four years and had exhausted the aid from the agency. The prospect for such settlers gaining ownership of claimed lands given their large debts, lack of capital, and meagre incomes is very poor.

A more accurate indication of wealth in land than simply raw area claimed is the area actually improved and cultivated. Access to improved land as well as possession of sufficient capital to farm it makes the distribution of area cultivated a better index of wealth than aggregate area claimed. Table 26, page 126, makes use of this correction and demonstrates that there is very little difference between groups in the sample in terms of land distribution inequality. The Gini ratio for self-financed settlers was .387 compared to .390 for government-assisted settlers. The Gini ratio for the latter group in terms of cultivated
### Table 26
EFFECTIVE LANDHOLDING (CULTIVATED FARM AREA) DISTRIBUTION BY TYPE OF SETTLER

<table>
<thead>
<tr>
<th>Quintile of families</th>
<th>Government-assisted settlers</th>
<th>Self-financed settlers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest 20%</td>
<td>2.6</td>
<td>4.2</td>
</tr>
<tr>
<td>Second 20%</td>
<td>11.5</td>
<td>10.5</td>
</tr>
<tr>
<td>Third 20%</td>
<td>17.2</td>
<td>16.1</td>
</tr>
<tr>
<td>Fourth 20%</td>
<td>23.2</td>
<td>22.8</td>
</tr>
<tr>
<td>Top 20%</td>
<td>45.5</td>
<td>46.4</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>.390</td>
<td>.387</td>
</tr>
</tbody>
</table>

Source: Field survey data, Palawan 1978.
area is much greater than for the distribution of area claimed.

The distribution of income within each group in the sample is reported in Table 27, page 128. The results reveal that the distribution of income is more egalitarian in the self-financed settler group than the government-assisted group. Despite the allocation of nearly equal sized farmlots and provision of assistance with which to develop such lands, the government program led to a more skewed income distribution than the homesteading system. The Lorenz curve diagram demonstrates this (see Figure 3, page 129). This result is not surprising in light of the importance of settler skills and initial resources owned by the settler in explaining variation in income. The tendency for government settlement schemes to select people with lower than average skills and capital while including some settlers who are well endowed leads to greater inequality in the organized settlement program. The more skillful settlers are able to make more productive use of aid and their own resources.

Overall the Gini ratio for income distribution in the sample is remarkably similar to that of the rural Philippines (ILO, 1974: 10). The data used for this comparison is for a period prior to the 1972 land reform but it is unclear whether the reform has really had much impact on income distribution (Wurfel, 1976).
TABLE 27

INCOME DISTRIBUTION BY TYPE OF SETTLER, 1977-78, AND RURAL PHILIPPINES, 1971

<table>
<thead>
<tr>
<th>Quintile of families</th>
<th>Government-assisted settlers</th>
<th>Self-financed settlers</th>
<th>Total sample</th>
<th>Rural Philippines (1971)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest 20%</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Second 20%</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Third 20%</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Fourth 20%</td>
<td>18</td>
<td>26</td>
<td>23</td>
<td>22</td>
</tr>
<tr>
<td>Top 20%</td>
<td>59</td>
<td>48</td>
<td>52</td>
<td>51</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>.49</td>
<td>.42</td>
<td>.44</td>
<td>.46</td>
</tr>
</tbody>
</table>

Sources: ILO (1974: 10); field survey data, Palawan 1978.
Figure 3. Lorenz curves.

- - - - - Self-financed settlers
- - - - - All settlers
- - - - Government-assisted settlers
Thirty nonmigrant farm households were interviewed in a land reform area of eastern Pangasinan province (see Map 3). Table 28, page 131, shows how farm income was distributed. The Gini ratio (.35) is lower than for the settlement areas in Palawan. However, the poorest quintile still had only 2.8 percent of total income in the sample in Pangasinan. This reflects the condition of the landless rural poor who were not directly benefited by the land reform.

The significance of the findings regarding the income and landholding distribution among settlers in the Palawan sample is that it indicates government settlement is no more effective than homesteading in achieving redistribu­tional objectives. The importance of human and own-physical capital in explaining settler success is undoubtedly the key to understanding this result. The combination of human differences and the imperfections of government institutions aimed at assisting settlers reinforce the problem of meeting equity objectives. Within the government settlement the more skillful and wealthy settlers more easily influence settlement agency employees. This tends to undermine efforts to improve distribution. The relationship between the successful assisted settlers and the settlement agency employees is commented on by Fernandez (1972: 185). He noted that successful settlers could obtain more credit by tapping sources virtually inaccessible to most settlers by
### TABLE 28

**INCOME DISTRIBUTION IN 30 NON-MIGRANT HOUSEHOLDS, 1977-78, TAYUG PANGASINAN**

<table>
<thead>
<tr>
<th>Quintile of Families</th>
<th>Percent of Total Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest 20%</td>
<td>2.8</td>
</tr>
<tr>
<td>Second 20%</td>
<td>9.4</td>
</tr>
<tr>
<td>Third 20%</td>
<td>16.5</td>
</tr>
<tr>
<td>Fourth 20%</td>
<td>26.6</td>
</tr>
<tr>
<td>Top 20%</td>
<td>44.7</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>.350</td>
</tr>
</tbody>
</table>

Source: Field survey data, Pangasinan 1978.
exploiting their relationship with the agency employees.

Fernandez (ibid., 185) comments:

"Unlike most settlers, the successful ones socialize freely with the Agency employees and the teachers, their ties having definite social-class overtones. Often such settlers have children who after college join the bureaucratic ranks. Indeed, their bridges extend beyond the confines of Narra to the topmost national-level officials in Manila. Alignments such as these give them additional leverage."

The special relationship between prosperous government settlers and the settlement agency was confirmed in several cases in the sample. One of the most successful settlers interviewed is an ex-employee of the settlement agency. He located a prime farm lot in the project area, resigned his position, and applied for the assistance package, which he promptly received. After his farm was a commercial success, he turned to business ventures including a farm supply store selling fertilizer and chemicals. His fortune undoubtedly rose when the settlement agency began giving out subsidized credit to settlers through the Masagana 99 program. These loans were tied directly to purchases of fertilizer, insecticides, and herbicides for rice farms.

A second successful settler after developing his farm-lot, built a restaurant and boarding house. He managed to become involved in the business of constructing homes for new settlers. The central government paid 8,777 pesos per house to the settlement agency in Palawan. The settlement
agency contracted with businessmen such as the successful settler for the actual construction. The actual construction costs were estimated at under 5000 pesos per house leaving a substantial profit margin for possible division between the settlement agency employees and the local businessmen involved.

These examples illustrate how the nature of institutions and human differences inhibit and frustrate well-meaning attempts to redistribute income and wealth to the rural poor. There is reason to believe that self-financed settlement may well be more beneficial to the rural poor than planned settlement. Chain migration made possible by aid and information links offers poorer settlers an opportunity to adapt to the new environment following the pioneer stage of development. To the extent that communities of self-financed settlers develop more rapidly than government colonies, the faster rate of job creation will favor the rural poor.

Some Generalizations about the Dynamics of Land Settlement and Self-Financed Settlement

Self-financed colonization of public land may take place with a minimal level of government activity. In this form of land settlement, government participation is initially limited to the supervision of land allocation through the homesteading process. Once settlement is underway
ordinary government services are demanded. These include schools, roads, police, postal services, and public health measures such as malaria eradication. Under this system, settlers migrate and develop their farms on their own initiative. In the following section generalizations on patterns common to self-financed settlement in the Philippines are made. Then this system is contrasted with a system of government resettlement. In particular, migration, settler selection, and changes in agricultural contracts involving tenure and labor hiring are discussed as development proceeds. The pioneer, consolidation, and maturation stages of development of an area are each considered in this context. The stagnation of government settlement areas somewhere between the first two stages is commented on.

Pioneer Settlement Stage

Self-financed settlement is initiated by pioneers who are usually young males. These pioneers emigrate from densely populated areas where access to land is limited (e.g., Ilocos, Central Visayas, Central Luzon). These pioneers, however, are not pushed out by poverty--rather they are "pulled" to the frontier by the profitable opportunities available. Typically, they have above-average skills, education, and employment experience. They finance their migration out of savings generated by land sales or
from income earned either as wage earners in modern productive activities or as salaried managerial or civil service employees. These pioneers may make several stops enroute to their final homestead site. Undoubtedly a search procedure occurs as settlers seek out a choice area based on land availability and quality, road and water access, and potential market outlets. The most important element in their choice is the availability of land.

The pioneers may homestead a maximum area of 24 hectares. In terms of size of holdings and land quality these initial pioneer settlers often do quite well compared to later arrivals depending on the elasticity of supply of vacant cultivable public land and capital endowment of future settlers.

Once the pioneers have located a farm site and made an application to homestead it they may begin land opening. At first "primitive" but effective slash and burn techniques are used to clear land and bring in an early harvest. These settlers have sufficient capital to subsist until such initial harvests.

The pioneers, though small in number, may have a significant impact on the rate of colonization of the settlement area. Often they maintain regular contact with relatives and friends in their area of origin, either by writing or by visiting. News of their success in gaining land acts
as a catalyst to further migration out of the area of origin to the frontier.

The presence of kin in the settlement area encourages the formerly hesitant to become migrants. These newcomers are now assured of information and even assistance until they can locate and develop their own homesteads. The encouragement of migration out of their source areas is of benefit to the pioneers. They require labor to help clear and cultivate their large farmlots. Often the new migrants may work as tenants until they stake their own claim to a homestead, and even until they can clear and plant a crop on their own land.

Once most of the parcels of good quality have been claimed, and normal services such as schools, roads, and markets have been established the pioneering stage is closed. Consolidation begins. In summary, natural selection works under self-financed settlement in leading to "self-selection" by those with suitable human and physical capital to open the frontier. However, once pioneers have achieved some success, a chain migration process occurs. The rate of colonization is, of course, influenced by other factors such as the early provision of schools, health care, and roads, as well as the peace and order situation in the area.
Consolidation Stage

The exhaustion of unclaimed land by no means ends the migration into the area. Later migrants may now have to pay early migrants a fee for land. There is still much land that is unimproved. Thus there is room for newcomers. Unimproved parcels may be contracted out rent-free through land-borrowing arrangements. Relatively low rents are charged to share tenants on improved land.

In this stage, the frontier appearance of the settlement area disappears as good land is improved and developed. Tree crops such as coconut and cashew that were planted in the pioneer stage begin to produce. These cash crops now supplement the grain grown and provide a further means of accumulation for the early settlers. In this stage non-agricultural activities arise and the area sees its first municipal center develop. Marketing becomes more important and modern conveniences such as paved roads, bus routes, movie theatres, and stores selling durable goods arise.

It is also in this consolidation period that latecomers are increasingly faced with difficulty in gaining land of their own. They may choose to move to marginal hill lands, to push out further to new more remote areas, or to settle as tenant farmers on lands owned by early pioneers. This marks the end of consolidation. A permanent community has been established. Marketing and commercialization
predominate and farming becomes more intensive. Nonfarm opportunities grow, maturation is being approached.

**Maturation Stage**

In the maturation stage of development, the settlement has a level of services comparable to those elsewhere in the country. An urban sector exists and nonagricultural activities take on increasing importance as sources of income and employment. However, it is likely migration into the area will still occur, even though the land is well settled. Such in-migration involves job seeking by the new arrivals. The fact that labor-land ratios are lower in the settlement area than in out-migration zones results in wage differentials in agriculture. Migration will continue until such differentials are eliminated, taking into account the costs of migration. In this stage, population pressures may manifest themselves in settlement areas raising rents relative to wages.

Further development depends on productivity increases in agriculture and provision of alternative employments in manufacturing and domestic trades. Failure of such development to occur may lead to stagnation, and ultimately to a repeat of patterns found in out-migration zones. In the following section changes in agricultural contracts as development proceeds are discussed.
Changes in Agricultural Contracts in a Recently Settled Area

Land tenure arrangements are not static in developing rural economies. Tenure contracts vary with population pressure, improvements in land, technological change, and economic growth. In recently settled rural communities such as the study area in Palawan tenancy arrangements are observed even in the initial pioneering stage of development. However, such contracts are markedly different from those in densely-settled out-migration areas, as was demonstrated in Chapter IV. The main form of tenancy contract is sharecropping. Land-borrowing on a rent-free basis is also common. Tenants under share contracts in recently settled areas receive higher output shares and farm larger parcels than their counterparts in out-migration zones. While tenants receive only half the output after deducting harvesters' shares in out-migration areas, they receive two-thirds or more in areas of recent settlement. Land-borrowing is not commonly found in areas of long settlement.

Settlers who begin as tenants farming already improved parcels, can begin with much less initial capital and may accumulate enough to develop their own farms in a few years. Often tenants and landowners in the recently settled area are relatives or ex-townmates.

As long as good, vacant public land is elastic in supply, settlers who begin as share tenants pass rapidly up the agricultural ladder into possession of their own farms.
Table 29, page 141, shows 68 percent of the Palawan settlers interviewed who recontracted as tenants gained possession of their own farms. The higher wages in areas such as Palawan and the elastic supply of land serve to encourage additional migrants. The opportunity to work as tenants under favorable conditions may likewise provide an incentive to move to recently settled areas. Agricultural contracts thus play an important part in the settlement process.

As the stream of migration continues and quality land is occupied, tenure arrangements adjust. Land-borrowing will exist only on parcels not yet improved—an increasingly reduced area. Moreover, the increased population pressure combined with further improvements such as irrigation will exert downward pressure on tenants' share in contracts. In this stage of development tenancy becomes more permanent—the agricultural ladder ceases to be fully operative. Those seeking their own farms must purchase land or push on to more remote locations.

Once the accessible public land in an area has been occupied it is likely that some intensive development will become profitable. As a result, as land productivity is raised and in-migration continues, it is probable that farm size will decline. Contracts will adjust giving tenants smaller, improved parcels to farm. Moreover, the process of subdivision through the traditional inheritance system begins to operate as settlers' children come of age.
TABLE 29

RECONTRACTING, LAND ACQUISITION AND FARM DEVELOPMENT--PALAWAN
(Percent of Settlers Recontracting)

<table>
<thead>
<tr>
<th>Type of Settler</th>
<th>Borrowed Only</th>
<th>Shared Only</th>
<th>Leased Only</th>
<th>Borrowed and Shared</th>
<th>Borrowed and Leased</th>
<th>Borrowed, Shared and Leased</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Assisted</td>
<td>92</td>
<td>67</td>
<td>33</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>72</td>
</tr>
<tr>
<td>Self-Financed</td>
<td>53</td>
<td>50</td>
<td>--</td>
<td>100</td>
<td>100</td>
<td>--</td>
<td>62</td>
</tr>
<tr>
<td>All</td>
<td>75</td>
<td>60</td>
<td>33</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>68</td>
</tr>
</tbody>
</table>
As long as extensive development is more profitable than working on the intensive margin of cultivation, technological change in the form of modern intensive rice farming involving hybrid rice seeds, fertilizers and chemicals will not be easily adopted in recently settled areas. Land-saving technology such as that developed at the International Rice Research Institute (IRRI) is less profitable in an environment that is still land-surplus than it is in densely settled areas. This does not imply that no technological change will occur until the extensive margin has been reached (i.e., when the average marginal cost of expanding farm area is equal to the average marginal cost of intensifying farming). Irrigation works in recently settled areas illustrate this.

Some farms that are easily irrigated and have ready access to roads and nearby markets will find it profitable to adopt improved technology at an early date, even while the extensive margin is being pushed out. The existence of irrigation projects in areas of recent settlement, constructed on a self-help basis, testify to this possibility. Tenure arrangements are likely to call for a higher landowner share where improvements such as water control exist. Over time further technological change in the direction of land saving may actually reduce landowners' share (Roumasset and James, 1979: 10). 74
The early development of nonfarm employment opportunities in areas of recent settlement serves to keep agricultural labor scarce. Tenants' shares may remain at a premium until the continued in-migration and natural increase of population bring shares into approximate equality with those in out-migration zones. Rapid economic growth is perhaps the best insurance against re-creation of conditions of miniscule farm size, low wages, and poverty characterizing out-migration areas in newly settled areas.

For the most part share tenancy and land-borrowing contracts expedite the development of settlement areas and respond to changes in relative prices of land and labor. Share contracts do this by adjusting the percentage shares of output going to landowner and tenant.

Public land allocation policy itself affects choice of tenure arrangements. Legal settlement on a homestead requires that the land in question has been released for agriculture and that it be developed by the homestead applicant. Share tenancy arrangements go against the requirement of self-cultivation of the homestead. Government prohibition of share tenancy arrangements, depending on the effectiveness of enforcement, may alter choice of contracts. Fixed-rent leases may arise, landowners may break relations with tenants, or shares of output, input costs, and provision of capital may be renegotiated.
Government provision of roads and other infrastructure items in areas of recent settlement will also affect contracts. Farms adjacent to roads may command higher rents. Overall the effect may be hard to judge on balance due to the offsetting tendencies brought on by infrastructure provision. On the one hand, provision of public goods stimulates more rapid settlement putting upward pressure on rents. On the other, it may encourage investment in non-farm ventures that provide a wider range of employment alternatives for settlers. The latter would tend to bid up wages.

In summary, agricultural contracts adjust rents and wages as development proceeds. Increased population pressure, improvements to land, and infrastructure investment in agriculture tend to raise rents. Offsets to this depend on the elasticity of supply of land, and most importantly, on growth of nonfarm employment opportunities. Land-saving technology only becomes profitable when the costs of pushing out the extensive margin rise to be comparable to intensification. Such technological improvements may also offset the relative rise of rents.

**Labor Hiring Practices**

Relative labor scarcity in recently settled areas results in farm wages above those paid in out-migration areas as Chapter IV demonstrated. The relative scarcity of
labor also induces differences in labor contracting practices and, in particular, leads to a greater incidence of reciprocal labor exchanges in rice cultivation in recently settled areas.\textsuperscript{77}

Settlers have two sources of labor: the members of the family and non-family labor. Usually the family alone is not sufficient to complete the initial tasks of land preparation and planting rice and the ultimate tasks of harvesting and threshing the grain within a rapid enough period to avoid crop damage and loss. Settlers therefore have seasonally peaked demands for farm labor in the planting and harvesting periods. In isolated barrios where labor supply may be limited and capital to hire outside labor is lacking, the reciprocal exchange of labor may be advantageous. Of course, each day of labor received must be repaid in kind, thus no net addition to total available family labor is brought about. However, by using exchange labor groups land is prepared and planted sequentially. This leads naturally to a staggered pattern of harvesting. This reduces the strain on available labor and allows farmers in the exchange labor group to satisfy seasonal labor requirements.

Exchange labor was more prevalent in recently-settled Palawan than in the out-migration province of Pangasinan. This is true not only in terms of the proportion of users among the farmers interviewed (52 percent in Palawan, 36 percent in Pangasinan) but also in terms of the degree of
use relative to total farm labor requirements (almost 15 percent in Palawan, less than 4 percent in Pangasinan).

Table 30, page 147, reveals that exchange labor in the Palawan sample is most common in very recently cleared areas. Most settlers' first crop on their newly cleared lots is under the kaingin or slash-and-burn system of agriculture. In clearing the land for a first crop, 47 percent of the settlers used exchange labor groups. In most cases the kaingin system is only a temporary expedient until the recently cleared areas can be converted into rice paddies, which can then be transplanted or direct seeded to rice. This pattern conforms to what Lewis (1971: Chapter 6) found in Isabela.

The exchange labor component in slash-and-burn agriculture is substantially greater than for transplanted and direct seeded rice farming. It is interesting that those farmers who adopted the direct seeding method in Palawan made little use of exchange labor. The much reduced labor requirement for planting may help explain this difference.

Table 31, page 148, demonstrates that even after conversion of kaingin fields to lowland cropping, with transplanting, exchange labor is far more prevalent in Palawan than in Pangasinan in the sampled farms. In addition, it can be seen that exchange labor is often used in land preparation, planting and harvesting and threshing. It is very rare for tasks such as weeding, fertilizing, or application
### TABLE 30

LABOR INPUT PER HECTARE BY TECHNIQUE AND SOURCE OF LABOR IN PALAWAN STUDY AREA  
(1977-78 Crop year)

<table>
<thead>
<tr>
<th>Planting Technique and Labor Source</th>
<th>Man-days per Hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Transplanted Rice</td>
<td>75.0</td>
</tr>
<tr>
<td>a. Family labor</td>
<td>25.6</td>
</tr>
<tr>
<td>b. Exchange labor</td>
<td>15.4</td>
</tr>
<tr>
<td>c. Hired labor</td>
<td>34.0</td>
</tr>
<tr>
<td>2. Direct seeded Rice</td>
<td>60.8</td>
</tr>
<tr>
<td>a. Family labor</td>
<td>19.4</td>
</tr>
<tr>
<td>b. Exchange labor</td>
<td>0.7</td>
</tr>
<tr>
<td>c. Hired labor</td>
<td>40.8</td>
</tr>
<tr>
<td>3. Kaingin Rice</td>
<td>58.4</td>
</tr>
<tr>
<td>a. Family labor</td>
<td>19.7</td>
</tr>
<tr>
<td>b. Exchange labor</td>
<td>23.9</td>
</tr>
<tr>
<td>c. Hired labor</td>
<td>14.8</td>
</tr>
</tbody>
</table>
TABLE 31

PERCENTAGE OF EXCHANGE LABOR USED ON AVERAGE FOR VARIOUS TASKS FOR TRANSPLANTED RICE IN PALAWAN AND PANGASINAN STUDY AREAS (1977-78 Crop year)

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Percentage Use of Exchange Labor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Palawan</td>
</tr>
<tr>
<td>1. Land preparation</td>
<td>22%</td>
</tr>
<tr>
<td>2. Planting</td>
<td>25%</td>
</tr>
<tr>
<td>3. Care of plants</td>
<td>2%</td>
</tr>
<tr>
<td>4. Harvest and post-harvest</td>
<td>13%</td>
</tr>
</tbody>
</table>
of chemicals--all tasks that fall between peak labor demand periods. This result accords with Lewis' findings in Isabela (1971: 115). In Pangasinan, virtually the only job for which exchange labor was of importance was in planting. Many farmers there have adopted mechanical methods of land preparation and threshing, while harvesting is done mainly by hired labor.

In Isabela, exchange labor has declined in importance, all but disappearing in two of the five barrios studied in 1978. In the other three barrios visited, exchange labor occupied at most 10 percent of the total labor input in rice farming and was used mainly in land preparation, and to a lesser extent in planting and harvesting. An exchange labor team of 15 men and work animals could plow the average-sized three-hectare farm in a half-day. The recent construction of modern irrigation facilities in the area and improvements in the highway linking the area with Manila were reported to have proceeded a major decline in the use of exchange labor.

Exchange labor seems popular in frontier areas where there is a scarcity of labor, where farmers lack large cash assets, and where farming is extensive in that farm size is fairly large and modern inputs are not widely used. In particular, exchange labor is associated with slash-and-burn rice farming and declines as fields are formed into lowland rice paddies. In the Palawan sample, most of the farms were
rainfed and covered single, contiguous parcels. Less than 40 percent of the farm area of the sampled settlers was planted to high-yielding seed varieties.

In the densely settled out-migration areas like Pangasinan, small farm size (1.5 hectares on average), the parcelization of holdings, labor surplus, and the adoption of modern inputs and irrigation have reduced use of labor exchanges. In addition, development of alternative employment and educational opportunities for family members, availability of mechanical means of land preparation and grain threshing have also contributed to this trend.

In determining the choice of whether or not an individual farmer will participate in an exchange labor group, opportunity cost is crucial. Better-off farmers with more farm improvements and perhaps even additional business ventures will be less likely to participate. Family labor availability, farm size and the degree of parcelization are also related to this choice.

Rising population pressure, intensified farming techniques, parcelization of land holdings, development of employment alternatives, monetization of rural economy, and the availability of mechanical equipment all lead to the demise of reciprocal labor exchanges. These forces grow in strength as recently settled areas develop. A shift occurs in which wage-labor is substituted for family and exchange labor (Anderson, Cordova, Dozina, James and Roumasset, 1979).
Government Organized Land Settlement

Government organized settlement differs from self-financed settlement in crucial ways. Under self-financed settlement settlers are naturally selected based on their own evaluation of the profitability of migration. This leads to pioneering by a group of settlers with above average resources and skills, followed by a process of chain migration, usually leading to the formation of viable communities. Government resettlement, instead of relying on natural selection, offers a subsidy to encourage migration even in the initial pioneer stage. This leads to excess demand to join the settlement program. Many individual applicants would not have undertaken settlement on their own, but are now willing to due to the subsidy. However, many of them may be unsuited for the opening of new land, lacking appropriate skills. Selection by government bureaucrats is unlikely to be based on concern over the skill level of applicants. Rather, political favoritism and objectives such as aiding only the "deserving poor and landless" may take precedence. This will lead to poor selection of settlers. The consequence may well be that, rather than establishing a dynamic community in the frontier, the government may simply create another poverty area that is dependent on further subsidies. This, of course, is aggravated by the tendency to settle a heterogeneous group of people in each settlement, making cooperation more
difficult due to language differences, differences in customs, and suspicion. This latter problem stands in stark contrast to communities established through chain migration.

The subsidy itself, far from acting as an incentive to promote more rapid farm development, may actually delay it. The assistance may be used for consumption purposes instead of for farm development. The subsidy reduces the pressure on government settlers to clear their land, especially if settlers entertain the hope that further aid may be made available.78

Settler misuse of assistance has been commented on. It is apparent that the issuance of assistance lends itself to abuse by government employees. In the case of resettlement aid, much of the assistance is given in kind. Tools, food rations, work animals, agricultural inputs and housing are all given in kind, rather than providing cash to the settler. In each of these items to the extent that the government resettlement agency personnel can increase the spread between the amount per item paid by the treasury and charged to the settler's account on the one hand, and the actual procurement price on the other, the scope for gain increases. In kind aid may be reduced in quality in order to increase the gain to corrupt employees.

Housing and work animal allocations are extremely lucrative, being the largest items in the assistance
package. Graft in housing was commented on above. Many assisted settlers complain that inferior work animals were given to them at a charge of 2000 pesos, enough for a strong, young water buffalo. This type of abuse makes the real value of assistance to settlers lower and, in effect, increases the burden of their debt to the agency. The direct assistance program creates opportunities for abuse and corruption that agency personnel are not always able to resist, as is reported on in other studies (Wurfel, 1960: 405; IARST, 1974: 15-16).

The likely outcome is that the government settlement areas may get stuck at some mid-point in development. Rather than viable, dynamic communities, government settlement may lead to stagnating communities with a poverty problem.

Government settlement does not seem to preclude the rise of tenancy. Wurfel (1976) noted that tenancy was common in the government settlement projects. Tenancy contracts arise for the same reasons as they do in self-financed settlements and respond in the same manner to changes in population pressure, technology and economic growth. The prohibition of share contracts may be more strongly enforced however. This could explain the greater incidence of fixed lease contracts in the government project area studied.
In the context of government efforts to establish productive communities in remote areas, the institution of exchange labor may facilitate tasks such as land-clearing, land-formation, and community development. A review of several government resettlement projects noted a decided lack of the "bayanihan spirit," bayanihan being the Tagalog expression for exchange labor (GUS, 1978: 80). In the field study in Palawan, exchange labor was used in farming as well as for home construction and some community endeavors. The more rapid development of communities of self-financed settlers in Palawan and elsewhere (Simkins and Wernstedt, 1971; Lewis, 1971) than in government project areas is related to the ability of the voluntary migrants to form exchange labor groups. Over time these groups become less important as labor continues to migrate into the area.

In Isabela, it was found that migrant laborers from Central Luzon arrived in the planting and harvesting seasons to work for cash wages. This seasonal migration, made possible by improvements in transportation, mitigates the use of labor exchanges by settlers.

The seasonal employment of migrant laborers at higher wages for tasks such as planting and harvesting rice in recently settled areas of relative labor scarcity has been documented in other studies. In this case land settlement has employment effects that reach directly to the poorest
rural people, the landless labor class. This group has not received any direct benefit from the redistributional land reform begun in 1972 which was aimed at tenants.

Conclusion: Land Settlement Dynamics and Income Distribution

The findings of this study indicate that self-financed settlement is more efficient in increasing agricultural production than government-sponsored settlement. Further, government-sponsored settlement has been no more effective than the homesteading system in achieving goals associated with equity considerations.

Agricultural contracts such as labor arrangements and land tenure act as substitutes for markets for land, capital, and labor in recently settled areas. In the initial stages of settlement tenants progress rapidly up the agricultural ladder. The availability of land and the low rent-wage ratio stimulate migration into the recently opened region. However, as migration into the area continues, population pressure raises rents relative to wages, tending to an equilibrium where wages are equal across regions. Choice of tenure and labor hiring practices adjust over time to changes in relative prices of land and labor. Downward pressure on wages induced by increased population pressure may be offset by increased non-farm employment opportunities and technological change. As an area develops and becomes more commercial, hired wage labor replaces exchange labor.
Restrictions on freedom of contracting may not only be inefficient, they may be unnecessary. If an area of recent settlement develops successfully with increasing productivity and rising wages, income distribution will improve and the incidence of tenancy will not rise. Government policy aimed at improving rural infrastructure is most likely to improve the income and employment opportunities in such areas.

Government-organized settlement often leads to corrupt practices due to the discretionary power vested in resettlement agency employees. It is unlikely that such power will be used to benefit the lower income groups.
Footnotes to Chapter VII

62 Myrdal (1971: 107) goes as far as to say, "Particularly in the South Asian rural setting, inequality is in fact mainly a question of land ownership..."

63 In fact, public land often commands a price in an informal market. This was brought to light in the field study where no less than 27 transactions involving public land were recorded among settlers.

64 This is as far as can be determined from the records of the Bureau of Lands and the Registrar of Deeds in Palawan's provincial capitol. The records of the provincial office of the Bureau of Lands were found to be in a state of disarray. It is clear though that many of the settlers interviewed had not even completed the somewhat cumbersome paperwork required to be eligible to receive title to their farmlots.

65 See pages 112 and 118 of Chapter VI. For a more thorough discussion of this program see Best (1977), Wurfel (1976), or Rocamora and Panganiban (1975).

66 This estimate is based on data presented by the ILO (1974) and the field study, including discussions with some of those involved.

67 In the survey in Palawan, 27 cases of illicit sales of public land were recorded. The per hectare price of a cleared parcel had increased from 500 pesos in 1960 to over 1300 pesos in 1978.

68 In some instances the development of a settlement area may reach a higher level than the out-migration areas. Lewis (1971) found that the Cagayan Valley developed into a highly commercialized area in contrast to Ilocos where the settlers came from.

69 Roumasset and James (1979) document that share contracts vary with land quality, population pressure, and technological change. While increases in land quality and population pressure lead to increases in landowners' share of output, land-saving technology has the opposite effect.
Gates (1973: 241) notes that in the U.S. prairie frontier states following the Civil War: "On a crop-share basis the returns to both tenants and landowners would be large." Gates goes on to state: "It may be argued that landlordism and tenancy were necessary frontier institutions..." (ibid.: 298). How analogous the situation in the Philippines is to the case of U.S. frontier development is open to question. It is interesting to consider agricultural contracts as institutions that substitute for markets.

Technically it is incorrect to refer to these settlers as owners since in most cases they did not have legal title to their farmlots, only a claim usually backed up by homestead applications and tax receipts in the case of self-financed settlers and by certificates of allocation for government-assisted settlers.

Lewis (1971) found that tenants' shares in a recently settled area of Isabela province in the Cagayan Valley fell from 70 percent to 66.7 percent between 1963 and 1971, mainly due to increased population pressure. A survey conducted in the same area in 1978 revealed that tenants' shares in some cases had fallen to 60 percent.

In Palawan, census data indicate that average farm size fell from 7.5 hectares in 1960 to 6.2 hectares in 1971. This is still double the national average.

This is demonstrated using a Cobb-Douglas production function with land, labor and fertilizer inputs. Adoption of fertilizer and chemicals leads to a fall in landowner's share. In reality the landowner's share of course depends on whether he or the tenant provides these inputs.

In the study area in Palawan, a number of nonfarm employment opportunities were available mainly in fishing and secondarily in mining. Palawan has the richest fishing grounds in the Philippines. Settlers have usually improved their diets compared to their pre-migration situation, due to the abundance of seafood in Palawan.

Share contracts are prohibited in public land areas of the Philippines. Nevertheless, Department of Agrarian Reform employees allow share contracts that give 70 or 75 percent of the crop to tenants.
Exchange farm labor has been found in areas of recent settlement that are quite separate geographically and even ethnically in the Philippines. Lewis (1971: Chapter 10) documents the importance of exchange labor groups in farming among Ilocano pioneer settlers in the Cagayan Valley in Isabela province of Northern Luzon. Sandoval (1957: 510) and Krinks (1974: 10) document the existence of farm labor exchanges in Cotabato and Davao provinces of Mindanao. These areas are located in the far south of the archipelago and were settled mainly by Visayans. In contrast, studies conducted by the International Rice Research Institute (IRRI) demonstrate that exchange labor is of limited significance in such long-settled areas as Laguna province of Southern Luzon (Kikuchi et al., 1977: Table 20), Iloilo province in the Western Visayas (Price and Barker, 1977: Table 2), and in the Central Luzon provinces of Nueva Ecija and Zambales (Dozina, 1978). In each of the areas reported on in the IRRI studies exchange labor comprised only 5 percent or less of the total labor input in farms. Furthermore, Lewis (ibid.) demonstrated that in the densely settled province of Ilocos Norte there was no significant occurrence of exchange farm labor. However, he shows that migrant settlers from Ilocos Norte were quick to develop exchange labor groups for farming under the different conditions found in the sparsely populated Cagayan Valley.

It is ironic that a study commissioned by the International Development Research Center undertaken by the Center for Urban Studies of De La Salle University argues that success of land settlement requires that: "the government provide the necessary assistance to make the settler an independent, self-reliant citizen..." (CUS, 1978: 170). This report finds that in eight government projects there is little or no correlation between the level of assistance extended and the level of living achieved by settlers. The report further notes that in six of the eight projects studied, the standard of living was below the average for the rural Philippines. The conclusion is that: "Perhaps a strengthening or reinforcement of the government's assistance program should be given prime consideration." (Ibid.: 170). However, the report notes: "This strengthening or reinforcement of assistance could create a new problem in financial consideration..." (ibid.). It seems that increased assistance rather than making settlers more independent would have the opposite effect.

In the Narra, Palawan settlement studied Fernandez (1972: 177) states: "As originally planned, the local Agency was to administer the Narra project for 20 years, it being anticipated that after that time the settlers would
have become economically self-sufficient and able to take over the administrative functions themselves. Today, 22 years after it was established, Narra appears to be stranded midway in its development, and the Agency foresees the need to stay on for another 20 years."

80 Share contracts have higher enforcement costs than fixed-rent contracts. The harvest must be monitored by the landowner to make sure the tenant doesn't underreport the gross output. Fixed-rent contracts would be more common in areas where landowners were absentee.

81 Lewis (1971) and Eder (1973) found that seasonally laborers would migrate to work on harvests in labor-scarce areas such as Isabela and Palawan. In the early years they could earn as much one-half of the crop of rice.
CHAPTER VIII

CONCLUSIONS AND POLICY IMPLICATIONS

Land settlement remains a viable economic development tool in the Philippines. It may be used to complement an overall rural development strategy aimed at increasing productivity and employment. This study has lent support to the argument that self-financed settlement is a superior alternative to government-organized schemes in the Philippines. The generality of this result throughout much of the developing world is commented on below.

A summary of the findings of this study, the policy implications, and applicability to land settlement efforts elsewhere in the less developed countries are included.

Summary of Findings and Their Implications for Land Settlement in the Philippines

A general conclusion is that self-financed settlement is likely to provide greater net benefit and involve substantially larger numbers of people than government-organized settlement. This conclusion is reached based on the field study conducted in Palawan as well as an evaluation of case studies of both types of settlement in different areas of the Philippines at different points in time and available data on the overall magnitude of the alternative programs. This study directly compared the two
programs in order to develop and test hypotheses regarding the differential success of self-financed and government-organized settlement. The central proposition is that natural selection of settlers occurs under self-financed settlement, leading to higher average productivity than in government settlement schemes.

The processes of migration and farm-making are described under the two systems and the role of agricultural organization and contracts in land settlement is clarified. It is found that arrangements such as sharecropping, land-borrowing, reciprocal labor exchanges, and kinship ties play an important positive role facilitating land settlement.

Finally, the impact of land settlement on income and wealth inequality was considered, including the impact of subsidized credit schemes. The conclusion is that land settlement is unlikely to lead to an egalitarian rural structure due to human differences and the imperfection of human institutions. These defects point to the result that government-organized settlement, if anything, will lead to greater inequality than self-financed settlement.

It is necessary to recognize that these conclusions have not been shown to be generally valid on a statistical basis due to the limited nature of the sample. However, the results of tests of hypotheses are of interest since no other empirical studies comparing the two types of settlements in the Philippines have been undertaken prior to this.
The results provide a point of departure for further study. While the findings require further testing in other settings beyond Palawan and even the Philippines to establish their general validity, they do have policy implications which may be tentatively stated.

Settler Selection

Studies of human long-distance migration, both rural-to-rural and rural-to-urban, indicate that migration is attributable as much to positive perceptions by the migrants that they will achieve increases in their living standards than to negative considerations such as impending poverty. In particular, the decision to migrate to frontier regions of the Philippines at least in the early stages of settlement, has been shown to be more due to the "pull" of available land and profitable opportunities than the "push" of poverty, landlessness, and underemployment (Simkins and Wernstedt, 1971). 82

However, as this study has shown, a substantial amount of capital is required to undertake land settlement in the pioneer and early consolidation stages. Even more important is for settlers to have farm experience and management skills necessary to adapt and thrive in a new and, at least for the first few years, difficult environment. These requirements lead to migration of those preadapted to coping with the challenges of long-distance migration and farm-
making under self-financed settlement. In essence this is a process of natural selection. Once the initial pioneering of an area is completed, the stage is set for an increased migration stream. Positive information flows from the recently settled area to the pioneers' home communities encourage migration by friends and relatives. The presence of relatives in the newly settled area and the possibility of working as tenants on the partially developed lots of pioneer settlers allow those lacking the capital for farm-making to participate in resettlement. The chain migration process has the added benefit of permitting cooperation between settlers to readily occur for tasks such as land-clearing and house-building.

Government settlement policy appears to be based on a misinterpretation of the migration phenomena. If it were true that spontaneous migration is due to people being pushed by poverty out of areas of heavy population pressure, some subsidy could well be argued for. Actually, settlers are more likely than not to be relatively well-off, while the poorest people are apt to remain in their home communities, excluded from land settlement by the significant costs of migration and farm-making. By offering a subsidy to participate in the land settlement process, some people who would not decide to migrate based on their own private benefit-cost calculations will now be induced to participate. Many of them may be without management skills needed
to wisely use the assistance offered by the government. Hence, lower productivity may be expected on government projects.

The selection of settlers by the government agency is based on criteria that applicants be landless or displaced rather than on the level of skills possessed, or farm experience. The offer of direct assistance on a zero interest, long-term loan basis has created excess demand to participate in the government-organized resettlement program. The costs and abuses associated with direct assistance, the resulting financial difficulties for the government agency, and the corresponding debt of the government settlers, have been amply documented. The government resettlement program tends to select settlers from diverse source areas and then lumps them together in frontier communities. This makes cooperation more difficult for these settlers. Under self-financed settlement these problems are avoided.

On a per-farm or per-settler basis the public sector outlays required are much lower for self-financed settlement than for government-assisted settlement. By investing in roads and other infrastructure items that facilitate self-financed land settlement, a larger clientele can be accommodated and greater productivity achieved. Efforts to ameliorate poverty in areas of heavy population pressure,
other than resettlement of the landless to frontier areas, are likely to have greater promise.

**Agricultural Organization and Contracts**

Relative to areas of out-migration, labor is scarce in recently settled areas. The lower population pressure causes wages to be higher and rents lower in newly settled lands. The scarcity of labor and the relative abundance of land lead to differences in agricultural organization on the frontier as compared to densely populated regions. Farm practices for rice cultivation tend to be less intensive in application of labor and inputs such as fertilizer per unit of land in recently settled areas; also farm size is larger on average and holdings are generally consolidated in a smaller number of parcels. In addition, labor exchanges are more common in areas of recent settlement than in densely settled areas where there is a substantial landless rural population available for hire.

In the rural areas of the Philippines, labor and capital markets are not well developed, thus differences in terms and forms of agricultural contracts signal wage and rent differentials between regions. The underlying relative labor scarcity in Palawan and other in-migration areas is indicated by the greater percentage share of output paid to harvesters and tenants than in out-migration zones such as eastern Pangasinan. Wage differentials as well as the
availability of land encourage migration into thinly populated provinces.

The early rise of share tenancy in recently settled areas is due to an absence of developed labor and capital markets. Wages, measured by tenant's share of output adjusted for contributions of inputs, are greater than in out-migration zones. Sharecropping arrangements generally offer settlers lacking capital sufficient to immediately develop lands of their own an opportunity to save. In effect, an agricultural ladder exists in the first stages of settlement where settlers pass rapidly from tenancy to owner-operator status. Land-borrowing is an alternative form of tenure found in recently settled areas but not in out-migration zones.

The field interviews of 100 settlers in Palawan revealed that settlers, whether receiving government aid or not, prefer to engage in contracts that mobilize labor and capital over a relatively long period of time (at least one season or 6-8 months) rather than hiring labor on a daily basis. Forming such pacts typically is in violation of the rigid plans or blueprints envisioned in both the Public Land Laws and the official resettlement program. The proposition that contracts such as share tenancy are inefficient has been challenged both on theoretical and empirical grounds. There appears to be no sound basis for restricting freedom of contracting in recently settled areas. Current
government policy prohibiting share contracts may be unnecessary since tenancy tends to disappear as economic development proceeds (Roumasset, 1979: 17-18).

Moreover, in dynamic terms, both organization of production and contracts adjust to changes in population pressure, technology and land improvements. In due time, settlers will adopt more "intensive" techniques of production as they become profitable. In areas that are cheaply irrigated and have good accessibility to markets, these changes will occur in a very short time period.

Rather than seeking to regulate choice of contracts and prevent tenancy from occurring, policy aimed at improving the recognition and enforcement of property rights over public land would do more to stimulate development. In the Philippines conflicts over public lands claimed, the slowness with which land is zoned and subdivided for agricultural development, and the delays in issuing bonafide titles to settlers cause far more hardship than alleged "exploitation" of tenants in areas of labor scarcity. Furthermore, provision of better primary and feeder roads in thinly populated areas would increase marketing potential. This encourages settlers to become more productive and increases competition by grain hauling concerns and among grain merchants. Increased infrastructure development also encourages more rapid settlement and the rise of nonfarm employment opportunities that will tend to offset the tendency for agricultural wages to fall as population increases.
Income Inequalities

Land settlement programs are often framed with the objective of creating egalitarian rural communities of small-holders. The gap between this objective and actual experience is quite sizeable. Under the homesteading system cases have been documented where the wealthy have profited from their superior ability to file legal papers and have them acted on. In the extreme, years of effort by settlers have been lost due to failure to comply with the application process. It was thought that such irregularities could be minimized by a well-organized government settlement program. However, this appears to not be the case. The more successful government settlers have been able to manipulate the employees of the government settlement agencies to their advantage in gaining choice farmlots, credit, and in profiting from the direct assistance package.

The sample data showed that there was little difference in inequality of income and wealth distribution between the two groups of settlers.

The settlement of public lands through homesteading by self-financed settlers has benefited far more Filipinos than government resettlement. Thus, the redistributional effect of the former has been far greater. The high unit public costs of government resettlement severely impinge on its redistributional impact, even under ideal conditions. The substantial private investment and management skills
required to migrate and create a farm generally precludes the use of resettlement as a policy designed to benefit the poorest rural people directly. The indirect employment effect of land settlement efforts is more likely to beneficially affect the landless poor, as was seen in the harvest time employment of migratory rural laborers in Isabela.

Subsidized Credit Schemes

The financial difficulties of government resettlement agencies over the years stem from the high rate of default by settlers on direct assistance loans. The rate of default has been estimated to be as high as 95 percent (IARST, 1974: 6).

The level of debt settlers can support is given the formula:86

\[ P = \sum_{i=h+1}^{j} k(y_i - \bar{y}) (1 + r)^{-i} \]

where

- \( P \) = credit extended to settlers
- \( r \) = interest rate
- \( h \) = grace period in years
- \( j \) = term of loan in years
- \( k \) = percentage of income above subsistence level used to repay loans
- \( y_i \) = real annual family income
- \( \bar{y} \) = minimum subsistence level income
\[ y_i - \bar{y} = \text{income available to service debts in year } i \]

The implication of the above equation is that offering loans at subsidized interest rates increases the supportable level of indebtedness of settlers, provided they earn sufficient income over a subsistence level. In the sample of government-assisted settlers only 48 percent were producing crops mainly for commercial sale, over half were basically subsistence farmers. In contrast 56 percent of self-financed settlers were producing primarily for sale. Part of the repayment problem stems from the low income level of settlers, particularly in the first few years in the new area. However, even among commercially successful government settlers loan default on direct assistance and subsidized production loans was found to be substantial. This is probably due to the positive relationship between interest rates and the \( k \) term in the equation.

By examining credit practices of settlers it was found that the source of loans and the level of interest rates were important determinants of loan repayment. Settlers tend to regard government loans as grants. The effect of artificially low interest rates, which in the extreme case of direct assistance loans equal zero, is to discourage repayment. The behavior of settlers in financial transactions involving debt and repayment is consistent with rationality. Settlers repay loans according to the magnitude of gains and losses associated with default.
Government settlers had much greater levels of indebtedness than self-financed settlers. Many lacked titles to their farmlots and hence, do not qualify for collateral loans from rural banks. This has meant credit is sought from grain merchants and moneylenders at exorbitant interest rates.

Policy on credit could be improved by allowing interest rates to reach their equilibrium levels. Indebtedness would be substantially reduced by eliminating direct assistance loans. The effect of deregulating interest rates would be to increase the flow of funds into rural banks and would tend to reduce the effective rate of interest currently facing settlers.

Public Land Management in the Philippines

As much as three million hectares of public land economically suitable for land settlement exist in the Philippines. Management of this large area is an important priority (NEDA, 1978: 81-103). If allocation of these remaining lands in a manner that will maximize net social welfare is desired past practices will have to be modified. In many cases ecological deterioration and land conflicts have occurred on the public domain (IL0, 1974: 19-20, 59; Huke, 1963: 163-165; Bahrein, 1968: 50-58; Noblejas, 1961: 70-71; Krinks, 1974: 7-9; IARST, 1974: 8-24; Wurfel, 1976: 14-17).
In the past, property rights to parcels have not been well-specified and conflicting claims have not been rapidly settled. Delays in processing applications, verifying claims and issuing titles combined with the allocation of public land at a zero price under the Public Land Laws has aggravated the situation. Uncertainty regarding the outcome of assignment of property rights to a parcel and its availability at zero price act as disincentives to investment and encourage users to "mine" the soil. Improved management by the government in the form of more rapid verification of claims and issuance of titles would reduce the problem. Allowing users to bid for public land subdivisions would also promote the goal of allocating land to its highest valued uses.

Interestingly, it was discovered in the field study in Palawan that an informal market for public land exists. Newcomers often pay a fee to earlier settlers or native peoples for the "rights" to a parcel of public land. This fee was found to be positively related to the quality of the land. This informal market mechanism points to the fact that good land is becoming increasingly scarce and valuable. Zero priced public land is now largely a legal fiction. It may well be that marketing the remaining public land would be advantageous, if the requirements for cultivation of such lands are maintained. Government would derive revenues from sales with which to finance land surveys, process
applications, regulate uses, and resolve conflicts. Public land sales appear to be disadvantageous to the poor, however, given the high costs of farm-making it is clear that successful pioneers rarely have backgrounds of poverty.

**Land Settlement Policy and Philippine Development**

Policy implications of the study for the Philippines may be summarized as follows:

First, land settlement on a limited scale is economically feasible. Profitable land settlement projects complement the overall agricultural development strategy of raising productivity through irrigation of existing cultivated areas. Land settlement is of particular importance in promoting the development of remote, thinly populated provinces such as Palawan.

Second, self-financed settlement generates greater net benefit than government-organized settlement, while allowing a larger number of participants. Government policy aimed at facilitating self-financed settlement through investment in infrastructure, particularly roads, coupled with improved processing of applications for public land, has a higher return than allocation of funds to direct assistance of settlers. The scrapping of both direct-assistance loans and the policy of moving settlers selected by a government agency to project areas would have the added benefit of reducing official corruption and financing problems brought on by loan default.
Third, subsidized credit schemes often fail. Subsidized credit lends itself to abuse. A more effective strategy is to lift unrealistically low interest-rate ceilings. This would permit rural thrift institutions to attract more funds, especially in capital-scarce areas. Small, low income farmers would have greater opportunity to borrow from institutional sources at interest rates below those now charged by traditional lenders.

Fourth, restrictions on particular forms of agricultural contracts such as share tenancy arrangements appear to be unwarranted and unnecessary. Such contracts often allow settlers lacking sufficient capital to immediately develop farms of their own a means of subsistence and of accumulating savings. For the most part, share tenancy is only temporary in the early stages of development in recently settled areas. Tenants pass rapidly up the agricultural ladder to owner status. Once public land is filled tenancy becomes more permanent, however, tenure contracts tend to allocate resources efficiently. In the latter stages of development, growth of non-farm employment opportunities and market development will lead to the decline of share tenancy.

Fifth, land settlement is not an effective means of redistribution of income. The large initial costs of migration and land-clearing and the importance of management skills militate against using land settlement as a
method of benefiting the poorest rural groups. Government assistance has virtually no permanent impact in improving income distribution in recently settled areas, though it may well actually reduce equality.

Sixth, improved public land management expedites development in remote areas. Greater effort to complete public land surveys, process applications and title private owners will increase incentives to invest and raise productivity. A system of self-financed settlement requiring less government supervision overall would permit greater concentration of effort in this priority area. Recognition of the existing informal market in use-rights over untitled public land is worth considering. A market price mechanism encourages allocation of land to its highest-valued uses. Sales of public land in small units would also raise revenue.

The above policy recommendations apply to future land settlement endeavors. In existing government resettlement areas upgrading of infrastructure, and decentralization of migration, farmland allocation, and choice of tenure would lead to improved productivity. Unfortunately, it is unlikely past debts will be collectible in any significant amount. Future credit should be administered on a strict business basis. Certainly no-interest assistance loans should be discontinued. The resettlement agency should be phased out and replaced by regular local government bodies. The
resettlement agency could perhaps play a role in identifying areas suitable for future self-financed settlement. It will continue to have an active role where resettlement is non-voluntary, as in irrigation projects or natural disasters that require a number of people to be relocated. Of the many families who have applied to participate in the official resettlement program, only those willing to undertake the costs of migrating to vacant areas of existing settlements should be encouraged.

In the area studied, production of food grain is increasing rapidly. The government's National Grains Authority (NGA) has recently built a new grain warehouse in the study area. At the time of completion of the field interviews (July 1978), grain procurement was well ahead of schedule and the new 50,000 ton capacity warehouse was nearly full. There is little doubt that as roads providing access to markets are improved the area will consistently produce surpluses of rice. The emergence of central Palawan as a rice surplus area was achieved at much higher opportunity cost than was necessary. In developing future settlement areas the lessons available from the experience in central Palawan should not be ignored. Settlers are eager to occupy remaining areas and are quite capable of developing them through their own initiative given certain minimal standards of accessibility and health.
Self-financed settlers earned significantly higher farm and non-farm incomes than government-assisted settlers in the sample. The difference is largely explained by settler selection, reflected in the higher degree of management skill, farm experience, and initial resources owned by the former group. Neither land quality nor greater length of tenure in the sample area can explain the income differential. Means of both were virtually equal for the two groups. Despite large amounts of direct assistance, the majority of government settlers were unsuccessful commercially. Self-financed settlers had, on average, improved and cultivated a larger area of riceland, amassed a larger amount of farm capital and had diversified more in terms of production of vegetables, livestock, and tree crops. The larger non-farm incomes earned by the self-financed group reflect the greater upward mobility they have achieved.

The potential for profit is an inducement that will continue to motivate those settlers with suitable skills and initial capital to undertake land settlement. If even a modest area of one million hectares is developed in the coming decades, a substantial contribution will be made to increasing food production and promoting rural development in the thinly populated areas of the Philippines.
Applicability of Conclusions to Land Settlement Elsewhere in the Developing World

New agricultural settlements established on a voluntary, self-financed basis are almost universally more successful than government-organized schemes. A study of 24 settlement projects in Latin America (Nelson, 1973) found an inverse relationship between the level of government participation and the degree of development in settlement areas. Nelson (ibid.: 265) states:

"...few spheres of economic development have a history of, or reputation for, failure to match that of government-sponsored colonization in humid tropical zones."

This finding is supported by additional case studies in Latin America, which accord with the Philippine experience. A study of colonization in Brazil (Katzman, 1978: 709, 723) reported that government planned settlements were failure prone in comparison to privately-financed schemes. In Colombia, Tinnermeier (1967) found that self-financed settlers were more successful than government-assisted settlers.

Preliminary evidence indicates self-financed settlers in Indonesia fare well compared to settlers selected and moved to outer islands with government aid.\(^9\)

Malaysia's FELDA (Federal Land Development Authority) schemes are among the most successful government settlement projects in the developing world and are an important
exception to the general conclusion (FAO, 1978: 36-40). However, FELDA is extremely limited in the number of settlers it can accommodate due to the very high capital requirements per settler. This has led to greater interest in self-financed settlement schemes in Malaysia.

Robert Chambers' (1969: 250-251) survey of settlement projects in the African tropics also reports that settlers relying on their own initiative generally achieve greater success than those receiving large amounts of government assistance.

The principle of natural selection is important in understanding the relative success of self-financed as opposed to government-organized land settlement. Pioneer settlers who voluntarily migrate to the frontier possess the necessary managerial skills and initial capital to open new land. Government subsidies, on the other hand, encourage migration by those who would not migrate based on private benefit-cost calculations. There is lower productivity, greater indebtedness and lower incomes in government projects than in voluntarily-formed communities. Often, government settlement results in creation of stagnant, dependent communities with a poverty problem. Nelson (1973: 288) emphasizes the importance of settler selection in his appraisal of Latin American land settlement endeavors:

"In spite of the evil reputation spontaneous settlement has acquired because of natural
resource destruction and shifting subsistence agriculture, it offers the best chance of success in developing new lands where capital and administrative resources are scarce. The key element is highway access, preferably to areas on the periphery of an existing settlement where soil is reasonably good. The pioneer settlers who follow such roads will better match the development task than those who come as a result of elaborate promotional and selection procedures."

The significance of settler selection is emphasized by other studies. A study of pioneer settlement in Northeast Argentina (Eidt, 1971: 209-210) stresses the importance of agricultural experience as well as settlers' sensitivity to market demand changes and ability to innovate in explaining success of schemes. Homogeneity of settlers with respect to cultural backgrounds and home communities is also cited as a component of successful settlement by Eidt (ibid.: 121-181).

Land settlement is not a panacea or "safety-valve" for poverty. This was documented in the case of the U.S. (Danhof, 1968) and the Philippines (Huke, 1963; Simkins and Wernstedt, 1971). Katzman's recent study in Brazil (1978: 721-723) emphasizes this conclusion. The skewed income distribution resulting in recently settled areas, under either type of system, should dispel the romantic notion of egalitarian communities forming in frontier areas (Shannon, 1936; Katzman, 1978).

The failure of subsidized credit programs aimed at permitting participation of the rural poor in pioneer settlement, the resulting indebtedness of settlers, and
the frequency of corruption is amply documented (Nelson, 1973: 229; Katzman, 1978: 723; Chambers, 1969: 250-252). This results from attempts to provide loans at below equilibrium rates of interest, and not from any irrationality on the part of settler-borrowers. Raising interest rate ceilings to realistic levels would encourage capital to flow into recently settled areas, expand the availability of credit, and reduce dependence of indebted settlers on traditional sources of funds.

The role of agricultural contracts in facilitating land settlement and farm development in the U.S. (Danhof, 1978), Peru (Hanson, 1965), Indonesia (Utomo, 1967), the Sudan (Gaitskell, 1959), and the Philippines was discussed in Chapters IV and VII. Katzman (1978: 722) found in Brazil net income of share tenants was only marginally below that of small owner-operators. The conclusion that agricultural contracts substitute for labor and capital markets in early stages of development, serving as efficient devices for resource allocation under uncertainty, is supported by available evidence. Restrictions on choice of tenure in recently settled areas are unwarranted, and ultimately, unnecessary.

Government policy aimed at improving basic infrastructure and enforcing property rights under a system of self-financed settlement will lead to superior achievements than efforts aimed at coordinating the entire land settlement
process. The natural selection of settlers pre-adapted to succeed under difficult conditions in the pioneer stage of development under self-financed settlement is the key reason for this conclusion. The initial success of the pioneer settlers encourages further waves of migration into recently settled areas. Natural selection is not limited to the initial pioneering stage, but continues to play a role after the frontier area has begun to mature. Self-financed settlers are likely to be more adaptive at each stage of development. This is reflected in the diversification of farming found among the self-financed settlers but not among government settlers in the Palawan study. The greater upward mobility into business ventures of the self-financed settlers further demonstrates this point. Indeed, once the available public land in an area is filled the self-financed will continue to migrate to expand non-farm commercial ventures requiring entrepreneurial skills. More rapid development of agriculture, community institutions, and non-farm employments found in areas settled by voluntary migrants as opposed to government settlements is the result. Not only does the self-financed approach lead to greater average productivity in newly settled areas, but it allows the largest number of settlers to participate and improve their living standards.
Footnotes to Chapter VIII

82 These authors state (Simkins and Wernstedt, 1971: 116): "Those migrants who responded to the opportunities offered by the Digos-Padada Valley were not selected from those in greatest need, i.e., the landless, the poorest, or the least educated. On the contrary, the early migrants particularly were disproportionately drawn from among the farming and laboring groups who were somewhat better educated than the average and from among those who were able to absorb the cost of relocation, i.e., the owners of small properties and those who had been able to accumulate some savings."

83 An advertisement placed by the Philippines government in Forbes magazine (February 1979) (Gatbonton and Feleo, 1979: 31-40) describing its policy on human settlements reflects this misinterpretation. It states (ibid.: 32): "Often enough the only choice for these families is between starving where they are and migrating. Many choose to flee. Some move to the frontier regions of Mindanao, the southern main island, or to the few provinces of Luzon that are still thinly populated."

84 A formal criterion for participation in the official settlement program is that applicants are of "deserving landless" status (DAR: 1977). The large number of applicants relative to funds for subsidizing their resettlement creates a situation where the government agents' choice is likely to be influenced by political considerations.

85 In 1974 a waiting list of 17,000 families existed (IARST, 1974: 3).

86 The formula is from Nelson (1973: 227-228).

87 As of December 1977, the Bureau of Lands estimated an area of 3.319 million hectares of public agricultural land was available (Bureau of Lands, 1977).

88 The record of land settlement in Palawan with regard to productive use of forest resources and avoidance of ecological problems is not encouraging if the field study indicates a general trend. Despite the potential income that could be generated by selling the trees as logs or lumber, settlers at best make use of the trees they clear as
construction material in their houses or as firewood. Out of the 87 settlers who had forested lots, 79 had trees with potential commercial value, yet none of the settlers were able to take advantage of this potential. In fact, 71 settlers reported that they burned up the bulk of the timber as they cleared their lots, while 8 claimed logging concerns took out the valuable timber, but offered no remuneration.

The settlers within the government settlement project were no different from the self-financed settlers in their failure to make use of the forest resources they had. The settlers have acted as a "human bulldozer" according to one observer and a previous study asserts that the process of clearing destroyed valuable watershed and greatly reduced the potential for irrigation in the project area (Fernandez, 1972). This claim was supported in the field study in which settlers repeated often the complaint that there was insufficient irrigation water, rendering the irrigation dams and canals constructed useless to many settlers. Soil erosion was not observed to be serious, however, declining soil fertility was invoked as a problem by 36 percent of the assisted settlers and infestation of farmlots by cogon grass was mentioned by 12 percent. Similar problems were observed in the homestead areas included in the study.

A particularly interesting phenomenon was observed in the marginal area at the very south of the government's project. Two communities, one composed primarily of assisted-settlers and one of self-financed settlers, Princess Urduja and Mariwara respectively (see map 2), are adjacent to one another. Both are within the resettlement project area. The topography of the area is rolling and is most suited to upland cropping. The government has moved-in at least three batches of settlers, all lowlanders from Luzon, yet hardly any farms had been established. Beginning in 1972, a group of settlers of Visayan origin migrated to Palawan from Cotobato due to the civil disturbances there, without receiving direct assistance. They were experienced upland farmers and have succeeded in developing farmlots where the assisted settlers failed. The fields are intercropped with coconut, banana, and other fruit trees. Any plowing is done contour-style to minimize erosion. It is generally agreed that this group's experience with upland farming enabled them to succeed again indicating the importance of settler selection.

One in five settlers interviewed (11 self-financed and 9 government-assisted) had at one time or another been embroiled in a dispute over ownership of the lands they occupied in Palawan. In one area surveyed (Malatgao-
Taritien) a group of small-holders occupied and developed public lands open for homesteading but failed to file legal papers. Currently they are facing court proceedings instigated by another party who filed all the relevant documents and hence can claim the land is his. The latter is reported to be an influential family locally and even in Manila. Such cases are nothing new in homestead areas. The presence of conflicts within the government resettlement project is less expected however.

89This statement is based on personal discussions with Indonesian economists and agricultural experts. Further detailed empirical study of the Indonesian experience would be valuable in confirming this pattern and testing explanatory hypotheses regarding settler selection.
APPENDIX I

RICE INCOME CALCULATION: EXAMPLE

1. Total output value 19,250.00
2. External factor paymens 10,562.78
   a. Wage 5,170.00
   b. Rent 2,470.00
   c. Interest and rental fees 50.00
   c. Current inputs 2,862.00
3. Inputed family factor income 8,687.22
   a. Wage* 2,600.00
   b. Rent
   c. Profit 6,087.22
4. Value added (1-2d) 16,388.00

Factor share (%)

Labor (2a + 3a / 4) 47.4
Land (2b + 3b / 4) 15.1
Capital (2c + 3c / 4)** 37.5

*Evaluated using market wage rates.

**Capital is defined to include the residual as a return to the entrepreneurship of the settler.
BIBLIOGRAPHY


___________. 1979. "Food Security and Rural Institutions" (mimeo).


