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A STUDY OF THE DETERMINANTS OF MIGRATION:
THE CASE OF GREEK MIGRATION TO WEST GERMANY 1960-1982

by

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A Doctoral Thesis

Submitted in partial fulfilment of the requirements
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Director of Studies: Dr. K.J. Button

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In the period following the end of World War II, Western European countries have experienced rapid economic growth. In the second half of the fifties, labour shortages emerged, obliging developed countries to have recourse to foreign labour in order to maintain high growth rates. During the sixties, bilateral agreements between European industrialised countries (West Germany, France, Sweden, Belgium ...) and less developed Mediterranean countries (Spain, Portugal, Greece, Yugoslavia, Turkey ...) produced large-scale migration in Western Europe. The main bulk of Greek emigration has been directed towards West Germany, reaching a peak in 1971, while the reverse flow of returning migrants exceeded emigration from 1974 up to 1981.

Data concerning these two flows, from 1960 to 1982, give us the opportunity to test the determinants of both outward and return migration using models based on the Neo-classical, the Keynesian and the Human Capital theories. Under the Neo-classical assumptions about labour and product markets, migration of labour is explained by income differentials prevailing between two regions. The Keynesian model adds unemployment as a cause of migration.

Because of the static framework concerning the above models, expectations about future income resulting from migration have been introduced to make the model dynamic. Under the Human Capital theory, migration will occur if the present value of the expected benefits exceeds the present value of the expected costs resulting from migration. Empirical tests of the above models using OLS or other methods attempting to overcome econometric problems, are presented. Logarithmic forms of emigration equations present the best results.

The logarithmic form implicitly assumes that emigration is of a Cobb-Douglas type function. Because of the weaknesses concerning Cobb-Douglas type functions, a translog type emigration function is determined and tests are applied in order to find the best estimation provided by the two functions. Next, we consider migration decision-making at the level of an individual who seeks to maximise his welfare in conditions of uncertainty. Introducing utility functions and risk coefficients, the maximisation of welfare yields a stochastic
migration function. Furthermore, we examine the migration decision in a binary choice model context. The potential migrant has to decide whether to migrate or not, and an application of the binary logit probability model enables us to estimate the probability that an individual drawn at random from the population will choose to migrate.

Finally, we estimate emigration and return migration functions together with employment (or unemployment) and wages functions in a simultaneous equations system in order to avoid simultaneous bias resulting from interdependence between migration and other variables used as explanatory in the previous models.
DECLARATION

This thesis is a record of research work carried out by the author in the Department of Economics of Loughborough University of Technology and represents the independent work of the author; the work of others has been referenced where appropriate.

The author also certifies that neither this thesis nor the original work contained herein has been submitted to any other institution for a degree.

E. XIDEAS
ACKNOWLEDGEMENTS

It is my pleasure to express my utmost gratitude to Dr. E. Owen Smith and Dr. K. J. Button, whom I have been privileged to have had as my supervisors, for their continuous guidance and inspiration throughout the course of this research. Their extensive knowledge and research experience has been invaluable to the development of this work, while their unceasing enthusiasm and optimism were a tremendous encouragement.

I am also greatly indebted to my brother and his family for their love and continuous encouragement throughout my stay in Loughborough.

Last, but not least, my deepest gratitude goes to my parents. Without their support this work would have been impossible: to them I dedicate this work.
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PREFACE

One of the most significant factors which influenced the Greek economy during the last thirty years is undoubtedly the huge out-migration flows that Greece experienced since 1955; for example, during the 1955-1973 period the volume of out-migration reached a total of about 1,155,000 people.

Despite the great number of people involved in these flows and the important effects of migration on the Greek economy, only a few studies exist on the subject to Greek migration and they are mainly concerned with socio-political aspects. This thesis contributes to the study of migration by examining the economic determinants of Greek migration to West Germany, the main destination of Greek migrants since 1960.

A series of models, derived from general economic theories are employed in an attempt to estimate the causes of migration. Furthermore, improved models are proposed which provide not only the causes but also the effects of migration.
CHAPTER ONE

MIGRATORY TRENDS

1.1 Introduction

Greece occupies the southernmost end of the Balkan peninsula (Figure 1.1). With an estimated population in 1985 of 10,028,000, Greece has experienced an outflow of more than 1,800,000 emigrants since 1830, according to the statistical data provided by the National Statistical Service (NSSG, 1985).

Greeks have always been inclined to migrate. In ancient times economic or political reasons forced them, either through war or as refugees, to find new and better places to settle around the Mediterranean. For the same reasons they continued to migrate and to establish new cities during the Hellenistic and Byzantine periods thus dominating the Mediterranean and the Middle East (Paparigopoulos, 1965) (Figure 1.2). In later years, however, they had to conform to certain migration rules imposed on them by other sovereign countries.

Within the last one hundred years, Greece has twice experienced heavy emigration movements. In particular, during the last years of the nineteenth century until the First World War, Greece exported migrants in rising waves to the New World (Center of Planning and Economic Research, 1981). In relation to the country's small population the response to migration calls from other countries has always been significant and, as a consequence, large groups of people of Greek origin are found today in the USA, Canada and Australia. The second major movement has continued since the middle of the 1950s from Greece to Northern and Western Europe ('Greeks Abroad', Center of Planning and Economic Research, 1981).

Both these major streams of emigration had economic motivations (Siampos, 1980). However, the character of emigration and the type of migrant differed. Transoceanic emigration took the character of a permanent movement, while migration into European countries was generally seen as temporary both by the migrants and the receiving
Figure 1.1
countries (Siampos, 1980; Böhning, 1972). This is confirmed by official policies of the receiving countries and the statements of the emigrants (Hammar, 1985). With the exception of Sweden, the receiving European countries did not encourage naturalisation of the immigrants and they themselves made little effort to integrate socially (Unger, 1981). Furthermore, employment opportunities for the immigrants in European countries were overwhelmingly for wage-earning jobs. There did not exist, as was the case in transoceanic countries, many opportunities for self employment, based on access to the consumer, such as petty trade or repair and maintenance work. These both constitute a strong incentive for the immigrants to learn the local language and involve them finally in the culture of the receiving countries (Fakiolas, 1980). Additionally, Europe's proximity to Greece facilitated close links with the mother country.

Independently of the type of migration (permanent or temporary) the reasons which cause it are found in the relationships of the economically weaker countries with the developed ones. The decision for someone to migrate in order to sell his labour must be seen in relation to the world economic system which, by creating unequal development, produces and feeds back the conditions which cause migration.

In the post-World War II period, Western European countries have experienced rapid economic growth. That growth has been associated with an enormous expansion of trade and foreign investment and with considerable spatial redistribution of the population (Kindleberger, 1967). For instance, in 1974 the migrant workers of Greek origin in Europe represented more than 10% of the total Greek labour force. Foreign workers made up more than one-quarter of the Swiss labour force and more than 10% of both the West German and French labour force. By 1970 in Western Europe, the total number of migrant workers exceeded six million (Böhning, 1975).

Since the nineteen fifties receiving countries have been experiencing a gradual socio-economic restructuring of the employment habits of their work forces. There has been an exodus of indigenous
labour from the most onerous and worst compensated tasks, and
development which precipitated selected but chronic labour shortages
in these activities with low socio-economic status. For instance,
in 1961 in the Federal Republic of Germany there were about one
million jobs available and only 180,000 persons unemployed (Owen
Smith, 1983). These activities had become incompatible with the
new minimum social and economic expectations of native workers and
also indispensable to the economic welfare of the advanced industrial
countries.

Many labour surplus countries (Least Developed Countries, LDCs)
became involved in the migration process expecting the dawning of a
new era (Figure 1.3). They saw the opportunity for the emigration
of their unemployed and underemployed workers as a blessing.
Emigration not only helped to alleviate serious unemployment and
underemployment problems but also functioned as a safety valve for
society allowing some of the more mobilised and impatient members of
these societies to opt-out (Papademetriou, 1978).

The development gap between labour receiving and labour sending
countries has, in most instances, widened in spite of, or perhaps
because of, migration (Baucic, 1975). Under conditions of substantial
and almost uninterrupted growth on the part of receivers, structural
labour shortages in the advanced European industrial powers have been
aggravated. Their need for large contingents of foreign labour has
therefore been increased making their continuous growth dependent on
the constant supply of such labour (Kindleberger, 1967; Ward, 1975).
At the same time, under this developmental asymmetry, the LDCs on
the European periphery were called to play the role of industrial
satellites to the industrial metropoles and migration appears as a
structural component of the world economy.

However, as is usually the case with events which are allowed to
evolve in a policy void, there was a lack of anticipation of long-
term consequences and of the necessary regulatory and programmatic
machinery. By the end of the 1960s it was already becoming obvious
that the importation of foreign labour had not only failed to solve
Note that Northern regions of Greece have been mainly affected by emigration. This is due to their proximity to Western Europe and the fact that Southern Greece had already experienced mass emigration to transoceanic countries.
the structural problems of the labour-scarce industrial societies but had actually contributed toward maintaining and aggravating these problems. It would be reasonable to argue that except for the economic benefits to workers and their contribution to the short-term profitability of certain classes of private capital, the importation of labour has given rise to additional serious economic, political and social problems (Papademetriou, 1982).

Host countries' expectations concerning the ease of controlling and regulating the importation of labour were proving inaccurate. A 'self-feeding process' appeared which allowed migration to co-exist with unemployment and denied them the economic flexibility that foreign labour was supposed to guarantee. In fact, while labour importers have reduced their active migrant populations (in some instances by as much as 20% between 1974-1978), they experienced an increase in foreign population during the same period. The main reason for this unexpected development is that migrants, insecure about their future and having gained the right of permanent residence as a result of their long tenure, have remained there and brought their families along. Thus, by 1983, in Western Europe the total number of foreigners was about fourteen million as Table 1.1 indicates.

On the other hand, the labour exporting countries did not anticipate: (i) the evolution of emigration into an uncontrolled depletion of their already meagre supplies of skilled manpower and the most healthy, dynamic and productive members of their population; (ii) the untoward demographic and socio-economic effects; and (iii) the often marginal socio-economic gains from the acquired skills and remittances of migrants.

The following two sections in this chapter are concerned with the consequences of migration for both the receiving and the sending countries. In particular, the immigration of foreign labour in a receiving country affects: (i) its total production and social services directly, and (ii) capital formation, savings, inflation, per capita income and balance of payments indirectly. In the same way, out migration from a sending country affects: (i) its labour
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<td>Austria*</td>
<td>250.0</td>
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* 1980 estimations

Source: OECD, Continuous Reporting System on Migration (SOPEMI), 1983, for all countries except Great Britain.
supply, wage rates and the composition of population directly, and (ii) savings, investment growth and balance of payments indirectly. Since our main interest is the study of the determinants of Greek migration to West Germany, the background of migration flows for these countries as well as the characteristics of migrants are subsequently examined. Finally, the effects of migration (costs and benefits) on the socio-economic environment of Greece are also considered.

1.2 The Economic Effects of Labour Immigration to West Europe

1.2.1 The Direct Production Effect

It has been over 25 years since migrant workers from Mediterranean countries began to arrive in Western and Northern European countries. This manpower movement was hailed as a new chapter in European co-operation. Unutilised and underutilised labour from Southern Europe and other Mediterranean countries was transferred to Europe's industrial countries to fuel their economic engine that was experiencing substantial labour shortages.

The general economic situation in which the use of additional foreign labour is required is as follows;
(a) when there is full employment of the labour force;
(b) since there is under-employment of capital, unused production capacity exists;
(c) the output which could be generated by this production capacity would be purchased. In other words, there is surplus demand.

This is the cyclical situation that has always led economies to open their doors to migrant workers (Drettakis, 1976). The most important of the above three complementary conditions is the under-employment of the available capital as the admission of foreign workers cannot be explained without it. This is the standpoint from which the rationale for the 'work permit' procedure has to be considered. This sets out to establish an automatic inter-acting relationship between the growth in a country's capital stock and the
growth in the labour force through immigration. On the other hand, this self-adapting mechanism does not exist when the causes of immigration are political when, in fact, the capital-labour ratio may fall. (3)

In view of the labour migration policy adopted by governments, implicitly or explicitly, firms decide what investments they will make in the knowledge that they can call on foreign workers in case they need additional labour. This means that variations in capital and labour are concomitant since the former give rise to the latter. Foreign labour, possessing no capital, is therefore brought in to ensure that the capital growth which firms have to implement can be achieved. The admission of labour has the same effect as an increase in a factor of production. That is, the national production is increased (Gallais Hamonno, 1977).

Figure 1.4 depicts this concomitant movement of the two factors. Part (A) represents the production function, i.e. the different national income levels obtained from a given capital stock by varying the volume of labour (Reder, 1963; Berry and Soligo, 1969). With capital stock (Ko) and the entire domestic labour force in employment, the total production obtained is N1. An increase in production capacity through investment pushes the production function upwards, since production can be increased to N2 with the same volume of labour (To) but with more capital (Ko + ΔK).

Part (B) of the figure shows how production volume is distributed between the two production factors, labour and capital. The initial national income with full employment (NI) is represented by the area OCGTo, where the line CG depicts the firms' labour factor demand. Wage-earners receive wages (OS1) and the total wage share is OS1GTo. The firms or investors receive the profit S1CG. A net investment causes the production function and firms' labour demand to rise (line DEH). The full employment of the labour force (To) will result in an increase in production which is represented by rectangle CDEG.
Figure 1.4
The Direct Production Effect – A
If $M = T_1$, foreign workers are employed, the total output becomes $N13$ and the area becomes $ODHT1$. Thus the production is increased by $ToEHT1$, compared with the previous situation where no migrants were employed. The wage rate is now $OS3$. Wage-earners already in employment receive the volume of wages $OS3FTo$, while migrants receive $ToFHT1$ and investors $S3DH$.

Figure 1.5 represents only the changeover from the situation of investment without migrants to that in which migrants are admitted. It is obvious that: (a) existing wage-earners do not participate in the distribution of the growth in production; (b) the entire growth in production is distributed between migrants' wages share ($ToFHT1$) and the profit ($EFH$) which the firms derive from this additional production.

The direct production effect of foreign workers is clear: they increase national production. The above analysis is based on the assumption that national and foreign workers are a substitute for each other. On the assumption that they are complementary to each other, the production effect becomes two-fold:

(a) additional production generated directly by foreign workers (the direct effect)

(b) production by nationals which is made possible by the presence of foreign workers (the induced effect).

It has been estimated that, for example, in France during the 1967-1971 period, foreign workers represented about seven per cent of the total wage earners and contributed 4.6 - 5.0 per cent of the gross national product at market prices (Gallais Hamonno, 1977).

1.2.2 The Instantaneous Welfare Effect

The increase in labour supply, due to the influx of foreign workers, lowers the wage rate and results in a fall in the total and per capita wages bill of the indigenous labour force. This fall in earnings accrues to capitalists as additional profits. As shown in Figure 1.6 the wage ratio decreases from $OS2$ to $OS3$ and the wage bill
Figure 1.5

The Direct Production Effect - B

[Diagram showing MPP(K₀ + ΔK, T) and f(K₀ + ΔK, T)]
Figure 1.6
The Instantaneous Well-Being Effect

\begin{align*}
MP & \\
S_2 & \\
S_3 & \\
D & \\
E & \\
F & \\
H & \\
MPP(T, K_0 + \Delta K) & \\
0 & T_0 & T_1
\end{align*}
of indigenous workers reduces from (OS2To) to (OS3ToF). The increase in total output is shared between the capitalists and foreign workers. Consequently, the advantage accruing to the host economy is only the balance (triangle EFH), i.e. the return on the capital used to generate production with migrants. If capitalists are indigenous, the income of the indigenous population rises. This constitutes the "instantaneous welfare effect" (Gallais Hamonno, 1977). The higher the proportion of the capital stock owned indigenously, the greater will be the increase in per capita income for the indigenous population.

This definition of the well-being effect depends on the implicit assumptions of full employment\(^4\) and interchangeability. If migrants are complementary to particular categories of domestic workers whose jobs depend on their presence, the collective advantage is the instantaneous welfare effect together with the entire induced production effect, since that production could not have occurred without them. The instantaneous welfare effect for France was calculated by Gallais Hamonno (1977) to be about one-quarter of the direct production effect or between 1.2 and 1.2 per cent of gross national product in 1971 (depending on assumptions). In another study, Usher (1977) calculated the effects of the immigration of one million people (46 per cent of them workers) with no capital into the United Kingdom in 1974. The undiscounted increase in National Income was 1.33 per cent of which 0.1 per cent was the instantaneous welfare effect.\(^5\)

We must note that the increase in returns to capital and the redistribution of income from wage earners to capitalists is important in the analysis of the long-term effects of immigration (MacMillen, 1982).

1.2.3 Dynamic Effects

The analysis given in the previous section can be characterised as 'static'. The researcher had to compare short-run situations in the economy with the presence or the absence of labour migration.
Using the neoclassical growth model (Bhagwati and Rodriguez, 1976), it is possible for the long-run direct production effect and the long-run impact on the welfare of the indigenous population to be defined. The model predicts that the growth rate of the immigrant labour force determines the steady state long-run growth rate of domestic output. A necessary condition for this to happen is that the growth rate of the indigenous labour force or the rate of capital accumulation or the level of technology remains unchanged. If immigration of labour is continuous at a constant rate, a higher (permanent) long-run growth rate of output will be achieved. An immigration of labour at an increasing rate will raise the growth rate continuously.

In their model, Mishan and Needleman (1968) attempt to determine the long-run effects of a continuous immigration of foreign labour in the United Kingdom. They accept that the level of output in Britain at any time is determined by the aggregate amounts of labour and capital employed and by the state of technical knowledge in the economy (Figure 1.7). Assuming that one could predict how the labour force, the capital stock and the state of technical knowledge would change over time without or with immigration, one would then be in a position to estimate: (i) the effect of immigration on the average level of income per worker, (ii) the effect on the average income per head of the whole population, and (iii) the effect on the distribution of income between wage and salary earners and owners of capital.

They assume that over a long period both the domestic and immigrant labour supply grow at a constant rate. The annual inflow of immigrants is considered as a policy variable and they assume a constant annual rate of inflow of half a million immigrants which is equal to about 1 per cent of the existing population. Immigrant labour is also freely substitutable for the indigenous population. As for the growth of capital, they assume that the long-run supply of capital increases annually by a fixed proportion of income that is saved and invested each year. There also exists in the model full employment of both labour and capital and their long-run supply is unaffected by any changes in their respective prices.
The production function has the general form \( X = X(L, K, t) \) where \( X \) is aggregate domestic product, \( L \) is aggregate labour, \( K \) aggregate industrial capital and \( t \) time. The succession of points \( X_1, X_2, \ldots X_n \) on the isoquant surface denotes the aggregate outputs corresponding to the expected combinations of aggregate labour and capital in years 1, 2, \ldots, \( n \) in the absence of immigration. The succession of points \( X'_1, X'_2, \ldots X'_n \) denotes the aggregate outputs produced when the domestic labour supply is augmented by any given net inflow over time of immigrant labour.
The three factors of economies of scale, elasticity of substitution and technical progress play an important role in any attempt to link the level of output with the amounts of labour and capital employed and the state of technology. Mishan and Needleman assume: (a) the degree of economies of scale is within the range of 1 to 1.2; (b) the degree of substitutability or the "elasticity of substitution" between labour and capital in the economy (Henderson-Quand, 1981) is 1.0, although they also use the values of 0.5 and 2.0; (c) technical progress is neutral, that is, it saves labour and capital in equal proportions (Hicks, 1948).

From the above assumptions they concluded the following: that with immigration there is a slight decline in income per worker over time, compared with no immigration (assuming constant returns to scale). For an elasticity of substitution of 0.5, the loss in real income per worker, as a result of immigration, runs at a rate of £14 a year in the 15th year of immigration and of £18 a year in the 30th year. (6) For an elasticity of 2.0, it runs at the rate of £24 in the 15th year and at about £52 in the 30th year. Of greater importance is the effect that large-scale immigration is likely to have on the distribution of income. In all cases, wages fall in relation to profits. The distribution of income is mainly affected by the degree of substitutability between labour and capital. For example, an elasticity of substitution of 0.5 increases profits by more than 50 per cent compared with wages in the 30th year of the immigrant inflow which is irrespective of the degree of economies of scale. For an elasticity of substitution of 2.0 the differential increase in favour of profits is 11 per cent in the 30th year. Whether or not the indigenous population as a whole has a higher average income as a consequence of immigration depends on the assumptions made. With increasing returns to scale the indigenous population will have a higher income with immigration than without. However, if there are constant returns to scale, the indigenous population suffers losses irrespective of the degree of substitutability between labour and capital.

All the above conclusions depend on the assumptions related to
the growth rate of the indigenous population, the level of technology and the rate of capital accumulation which may all be influenced by the immigration of labour. There is not much evidence about the relationship between labour immigration and the natural growth rate of the indigenous population. A study of the possible effects of immigration on the activity rates of the indigenous population (Callais Hamonno, 1977) does not provide any definite quantitative conclusions. The other possible relationships between immigration and the rate of capital accumulation or the level of technical change have been given more attention.

Both net investment and technological progress raise labour productivity and hence raise total output. The effect of labour immigration on labour productivity has been explored by studies of sectoral, occupational and skill distribution of migrants, which show that several possible mechanisms are responsible for a potential change. Migrants tend to be employed in low productivity jobs. This may permit the expansion of industries which have low capital for labour substitution possibilities thus saving investment funds for sectors with higher substitution rates. As a result, higher rates of growth of labour productivity would be observed in those sectors and consequently for the whole economy. Immigration may have positive effects on national labour productivity if migrant workers are mobile on arrival, as is often the case. But later, and especially if joined by their family, they become more like indigenous workers regarding mobility (Buckland, 1970, 1976).

Immigration may result in a fall in labour productivity unless there is a complementary net investment which will prevent a decline in the capital-labour ratio. There are cases where immigration of labour is considered as complementary to net investment because firms may invest in the knowledge that foreign labour could be recruited. Immigration may also stimulate investments in other ways: (i) an expansion of the domestic market may cause new expectations on demand increases; (ii) it may also cause an increase in the rate of return on capital and an increase in the volume of savings (the savings-output ratio will rise); (iii) it may also stimulate investments in the
country by foreign firms. Industries making non-traded goods employing migrants may price these goods lower than the prices of traded goods. This will encourage multi-national companies to settle in the LIC to serve the market for traded goods than export to them (Yannopoulos, 1976).

As far as the second is concerned, empirical analysis (7) indicates that there will be a redistribution of income from the indigenous population who are wage earners to capital owners. If capital owners have a higher marginal propensity to save, savings will rise. Additional returns may accrue to capitalists from the capital manned by foreign workers. The rate of return of these funds will depend on the supply of labour. The more elastic is the labour supply, the bigger will be the rate of return to capital. Thus capitalists will have the opportunity to reinvest more capital resulting in an increase of the capital-labour ratio (Lewis, 1954).

The savings of migrants also contribute to an increase of total savings. On the other hand, however, remittances to the sending countries have often been considered as a loss to the host country (Völker, 1973). Gallais Hamonno (1977) support the view that this may not be the case since remittances consist of the product of the migrant's labour not consumed in the country but available for export. There is adequate data on the volume of remittances but not on the volume of savings of migrants. There are only some average local savings rates available to compare with national savings rates (Granier Marciano, 1975; Blitz, 1977; OECD, 1973). Sample surveys in the UK (1966) indicated that local savings of New Commonwealth immigrants did exceed remittances and that local savings rates were about two percentage points above the UK average (Jones and Smith, 1970). A French survey (1970) indicated that a foreign worker saved fifty per cent more than a French worker with equal income (Granier Marciano, 1975). In 1971 Turkish workers abroad (Table 1.2) had an average remittance rate of 11 per cent of their mean income and an average savings rate of 36 per cent of their mean income (Paine, 1974). This was above the national savings rate for any labour importing country.
Table 1.2
Comparative Data on Income, Savings and Remittances of Turkish Migrant Workers, 1971

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Total</td>
<td>6608</td>
<td>8492</td>
<td>4146</td>
<td>6607</td>
<td>6611</td>
</tr>
<tr>
<td>before Basic departure</td>
<td>6226</td>
<td>8165</td>
<td>3692</td>
<td>6215</td>
<td>6611</td>
</tr>
<tr>
<td>Basic Side</td>
<td>382</td>
<td>327</td>
<td>454</td>
<td>392</td>
<td>0</td>
</tr>
<tr>
<td>Income while abroad</td>
<td>25980</td>
<td>27636</td>
<td>23856</td>
<td>26172</td>
<td>22476</td>
</tr>
<tr>
<td>Basic expenditure while abroad</td>
<td>11184</td>
<td>11880</td>
<td>10248</td>
<td>11268</td>
<td>9600</td>
</tr>
<tr>
<td>Savings while abroad</td>
<td>9221</td>
<td>9130</td>
<td>9390</td>
<td>9510</td>
<td>6200</td>
</tr>
<tr>
<td>Remittances while abroad</td>
<td>2867</td>
<td>2260</td>
<td>3655</td>
<td>2910</td>
<td>1535</td>
</tr>
<tr>
<td>Non-essential expenditure</td>
<td>2708</td>
<td>4366</td>
<td>563</td>
<td>2484</td>
<td>5141</td>
</tr>
<tr>
<td>while abroad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income Total on return</td>
<td>11279</td>
<td>13678</td>
<td>7896</td>
<td>11203</td>
<td>13432</td>
</tr>
<tr>
<td>Basic Side</td>
<td>10089</td>
<td>12514</td>
<td>6670</td>
<td>10068</td>
<td>10705</td>
</tr>
<tr>
<td>Mean expenditure abroad</td>
<td>(%)</td>
<td>43</td>
<td>43</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>as % of mean income abroad</td>
<td>(%)</td>
<td>36</td>
<td>33</td>
<td>39</td>
<td>36</td>
</tr>
<tr>
<td>Mean savings as % of mean</td>
<td>(%)</td>
<td>11</td>
<td>8</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>income abroad</td>
<td>(%)</td>
<td>10</td>
<td>16</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Mean remittances as % of</td>
<td>(%)</td>
<td>10</td>
<td>16</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>mean income abroad</td>
<td>(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual (i.e. percentage of</td>
<td>(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>earnings abroad spent on</td>
<td>(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-basic expenditure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Employed workers only.

Source: Paine, 1974 (p.102)
One can conclude from studies of the local savings behaviour of immigrant workers that they may make a substantial contribution to LIC savings and capital formation (Werner, 1978). The question which arises at this point is to ask if their savings are sufficient to provide the additional capital required for their employment and for the use of public facilities in order to maintain the industrial capital-labour ratio and the social capital-population ratio. For the United Kingdom, Usher (1977) calculated the extra capital a migrant would have to bring with him and invest in order to offset the decline in the indigenous residents' income because of the sharing of public capital with the immigrant population. The sum was about £51,000 for a family of four in 1974. It is to be stressed that these studies estimated the capital requirement at a point in time. In the long term the structure and composition of migrants may change (e.g. family reunification) and they will probably adopt the economic behavioural characteristics of the indigenous population (Descloitres, 1967).

1.2.4 Social Services

Our concern here is whether immigrants' demands on social services, relative to their tax and other statutory contributions, exceed those of the indigenous population. Krauss and Baumol (1979) concluded that if this is the case, the welfare of indigenous workers will not be improved by government welfare programmes. Unfortunately data on migrants' tax and social security payments are almost non-existent. The income tax liability of a family depends mainly on family income and the number of dependants. On average, family income for immigrants is lower than for indigenous families. In France it was 12 per cent lower than the average family income in 1970 (Granier Marciano, 1975). Immigrant employees cannot avoid social security or national insurance contributions which are deducted from their wages.

On the other hand, the use of social services and social security benefits by migrants depends on legislation and bilateral agreements between receiving and sending countries. Jones and Smith (1970)
conclude that, compared to the indigenous population, immigrants' demands on UK social services were lower for all social services except education and child care. Bavarian data (Blitz, 1974) on education indicate that the educational costs of migrants' children is 15 per cent more than the average cost per student in Germany, but the student/worker ratio of migrants is only one-third of the indigenous population.

If over time immigrants become more integrated, especially in terms of employment, their contributions will approach that of the indigenous population. On the other hand, as they get older and are joined by their families, their demands on social services increase. However, it seems unlikely that, compared with the indigenous population, immigrants would in the long run impose a net burden on social services relative to their contributions.

1.2.5 Balance of Payments and Inflation

Immigration may affect both the balance of payments and inflation. It can influence the balance of payments through its impact on: the rate of inflation (depending on the exchange rate regime); the direct effect of increased demand and supply; remittances; the effects of the immigration-induced foreign investment. Inflation may also be influenced in several ways.

If one accepts that, ceteris paribus, immigration lowers wages or results in an increase in labour productivity, average unit costs will fall. If the additional immigrant-induced demand is concentrated on goods produced under increasing cost conditions, prices will rise. There will be an adverse effect on government borrowing as the demand for public services by immigrants exceed their contributions to finance these services. Generally, there will be inflationary pressure if the net effect of immigration on increasing aggregate demand (including the effect of remittance-induced exports) exceeds the increase of aggregate supply, especially as the economy approaches full capacity. The effects of immigration on inflation depend on many factors, including the sectoral distribution of migrants in
employment, their consumption, age and family structures, their incomes, local savings, remittances and tax payments. Jones and Smith (1970) have concluded that New Commonwealth immigration had probably had a negligible effect on inflation in the UK.

On the other hand, the additional demand caused by immigration will increase imports. Exports also could increase as a result of remittance-induced imports into labour exporting countries. Furthermore, migrants returning to their countries and used to the consumption habits of the LIC could have a favourable feedback effect on the LIC's exports.

It should be stressed that both the effects of migration on the countries of origin and destination and the determinants of migration constitute the two fields of interest for students of migration. However, this thesis is concerned only with the latter. An investigation of the consequences of migration could be the subject of another study. Thus we are restricted to a general presentation of these possible effects along with estimates and conclusions from previous studies. Lack of data makes impossible the estimation of these effects, due to Greek emigration to West Germany, on both countries. Next the effects of out-migration on the labour exporting countries are considered.

1.3 The Effects of Emigration on the Sending Countries

The effects of emigration on the labour exporting countries depend on whether or not the introduction of a labour export policy sets the foundations for sustained economic growth, providing a comparatively costless solution to the unemployment and foreign exchange problems, or whether it condemns the country to a permanent existence as an under-developed satellite of a prosperous metropolitan area. To which extreme a country converges depends on certain key factors: (Paine, 1974; MacMillen, 1982).
1. the occupational composition of emigrants (in particular how many are unemployed and how many are skilled industrial workers) as this will determine the magnitude of output loss;
2. the propensity to save and to remit earnings while abroad;
3. the acquisition of new skills abroad and the extent of their subsequent utilisation on return;
4. the proportion of repatriated earnings invested in producer goods on return;
5. the proportion of repatriated earnings spent on imported commodities on return;
6. the change which expenditure from repatriated earnings brings to the price level;
7. the impact which employment abroad has on actual and potential trade between the host and the exporting country;
8. the proportion of migrants who settle permanently abroad.

These factors are examined in the next sections under the headings of 'Emigrants', 'Returnees' and 'Remittances'.

1.3.1 Emigrants

A proportion of emigrants were employed in industry before their departure. For the years 1971-1972 the percentages were 67 for Spain, 46 for Portugal, 30 for Greece, 26 for Yugoslavia and 23 for Turkey (OECD, 1978). Emigrants from Yugoslavia had received more education than the average Yugoslav worker. The OECD's 1976 economic survey for Turkey reports that Turkish emigrants tended to be the better educated, trained and informed part of the labour force which tends to be in short supply. As Paine (1974) states, the loss of skilled workers from Turkey has led to an increase of wage rates, discouraged training by firms and the premature substitution of capital for labour. Emigration of the more skilled would seem to indicate that manpower policies in labour exporting countries have been inadequate.
Emigration may increase regional inequalities within a labour exporting country. Government policy in Yugoslavia and Turkey gives preferential treatment to those who wish to migrate from less developed (rural) areas. The loss in human capital, due to migration, may cause the position of less developed regions to deteriorate, relative to other regions, in the long term if appropriate regional policies are not applied. Emigration may stimulate rural-urban migration. Workers leaving the cities for employment abroad make room for rural migrants. It will also increase relative inequality if it is concentrated amongst those in the centre of the size distribution of income. This will be the case if the very poor cannot afford to move and the rich don't need to seek better opportunities abroad. However, this effect will be smaller if low wage workers move to the centre of the distribution through up-grading (MacMillen, 1982).

These considerations indicate that emigration cannot simply be regarded as a safety valve which allows surplus unemployed labour to leave the sending countries. Labour-intensive development in the sending countries (Newland, 1979) and more vigorous and comprehensive regional policies would help to reduce the pressure to emigrate (OECD, 1975).

1.3.2 Returnees

The return of migrants more skilled than on their departure has been considered as one of the main economic advantages to labour exporting countries of temporary emigration. Reports and surveys published by the Working Party on Migration (OECD), as well as information collected by the International Labour Office, have shown that return flows have had little positive effect on the economies of the countries of origin. The reasons for this are: Firstly, the number of skilled jobs taken by foreigners is relatively small. In 1972, 26 per cent of all foreign workers in France and 16-18 per cent of those in Germany were classified as skilled. Secondly, the term 'semi-skilled' usually means no more than attendance at a short initiation course. Thirdly, evidence indicates skilled workers
have the greatest chance of being integrated into the labour importing countries and remaining there (OECD, 1975). A study on Yugoslav migration to West Germany covering the period 1962-1971 indicates that Yugoslav manufacturing industry lost permanently half of the skilled emigrants. There has also been a net loss of skilled manpower from Portugal (Porto, 1981).

On the other hand, problems concerning the re-integration of returnees into productive activities in the labour exporting countries arose even before the large-scale return of migrant workers happened in the second half of the 1970s. In a report concerning international migration, the OECD (1975) claims that the fundamental constraint is on the demand side: the shortage of employment opportunities. For example (OECD, 1977), in Yugoslavia, because of the lack of suitable employment, returning skilled migrants have tended to enter the private services sector where the opportunities for using their acquired skill may not be particularly high. There have been problems of recognition by Yugoslav employers of qualifications acquired abroad. In Greece, returning migrants over 45 years old have been allowed to attend training courses designed for the 18-45 year age group (van Gend, 1977). In the context of the European Communities, a common vocational training policy would be beneficial because skilled returning migrants would possess qualifications more easily comparable with those of workers training in their homeland (O'Grada, 1970).

A migrant may not be willing to undertake the same job on his return as he did in the LICs. Partly as a result of cultural assimilation and social integration while abroad, a worker will be reluctant to seek a job on his return which was regarded as a low status position in the host country (Piore, 1979). Research which took place in four villages in Southern Italy (King, 1980) indicates that most of the returnees set up small businesses in various service trades. Because they had been landless agricultural workers prior to their departure, this was regarded as an improvement in their social position. However, the future of these enterprises is uncertain because of the continuous decline of the local population due to rural-urban migration. Paine (1974) also reported that in the case
of Turkey only a few returnees set up productive enterprises which could create new employment opportunities.

Finally, as Paine (1979) argued, mass repatriation may be politically disadvantageous to the governments of labour exporting countries. Migrants used to living under different conditions abroad, may increase criticism of the home country's policies and increase demands for improvements in domestic conditions. In the long run, this may be the most important result of migration.

1.3.3 Remittances

For some labour exporting countries, especially Greece, Portugal, Turkey and Yugoslavia, emigrants' remittances have been very significant in relation to their Gross National Product and to their trade. The recorded volume of migrants' remittances to selected European Mediterranean countries between 1960 and 1981 is shown in Table 1.3. Only in the case of Italy was the volume of remittances significant in 1960. Being members of the European Economic Community, Italian workers enjoyed rights of free entrance to most European immigration countries. The amounts transferred increased rapidly in the sixties and early seventies as the demand for foreign labour grew. The rate of increase in remittances averaged more than 25% a year, so that by 1973 they were running at more than US$ 1 billion in the case of Italy, Spain and Turkey, and three-quarters of a billion dollars in the case of Portugal and Greece. The economic difficulties in the 1973-1974 period led host countries to impose restrictions on immigration resulting in a reduction in the average annual rates of growth in remittances. In Portugal, the rate declined by about one-third, in Turkey and Greece by around two-thirds, while in Spain it declined from 27.5% to -1.6%. Only in the case of Italy, whose nationals were unaffected by the immigration restrictions imposed by EEC host countries, did the rate during the period 1974-1981 remain practically the same as during the 1960-1973 period.

The effects of worker remittances on the sending countries will depend heavily on their usage. If they increase savings and these
### Table 1.3

Migrant's Nominal and Real Remittances in Absolute Terms and Percentage Rates of Growth

<table>
<thead>
<tr>
<th>Periods</th>
<th>Portugal Nominal</th>
<th>Portugal -R</th>
<th>Spain Nominal</th>
<th>Spain -R</th>
<th>Italy Nominal</th>
<th>Italy -R</th>
<th>Greece Nominal</th>
<th>Greece -R</th>
<th>Turkey Nominal</th>
<th>Turkey -R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>0.05</td>
<td>0.12</td>
<td>0.06</td>
<td>0.19</td>
<td>0.38</td>
<td>1.00</td>
<td>0.09</td>
<td>0.20</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1973</td>
<td>0.74</td>
<td>0.99</td>
<td>1.19</td>
<td>1.64</td>
<td>1.54</td>
<td>1.91</td>
<td>0.74</td>
<td>0.92</td>
<td>1.18</td>
<td>1.65</td>
</tr>
<tr>
<td>1981</td>
<td>2.85</td>
<td>2.30</td>
<td>0.99</td>
<td>0.61</td>
<td>3.35</td>
<td>2.20</td>
<td>1.08</td>
<td>0.75</td>
<td>2.49</td>
<td>1.91</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Periods</th>
<th>Average growth rate %</th>
<th>Average growth rate %</th>
<th>Average growth rate %</th>
<th>Average growth rate %</th>
<th>Average growth rate %</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-73</td>
<td>25.6</td>
<td>18.9</td>
<td>27.5</td>
<td>20.1</td>
<td>13.0</td>
</tr>
<tr>
<td>74-81</td>
<td>17.6</td>
<td>12.3</td>
<td>-1.60</td>
<td>-11.1</td>
<td>13.7</td>
</tr>
<tr>
<td>60-81</td>
<td>22.9</td>
<td>16.7</td>
<td>16.4</td>
<td>8.19</td>
<td>13.3</td>
</tr>
</tbody>
</table>

Rn. : nominal remittances (in billions US dollars)
R  : real remittances at 1975 prices and exchange rates (billion US$)

**Source**: Straubhaar, 1985

**Note**: It should be noted that only money remitted by means of direct bank or postal transfers can be recorded with any degree of reliability. There are no figures on undeclared cash sent by post or taken home by the workers themselves.
savings are used for capital formation, then employment and the growth rate of output should be raised (Newland, 1979). If, instead, remittances are spent immediately on consumer goods then, because of domestic supply limitations, the result will be an increase in the level of prices and/or imports (Chandavarkar, 1980). Many of the incentives imposed by sending countries to attract remittances carry preferential conditions regarding usage which are likely to raise consumption and import expenditure. The OECD (1978) reports that in most cases remittances have been spent on imported goods, on house construction in areas with limited development prospects and on service activities with little future, having a marginal effect on employment creation.

Experience suggests (OECD, 1978; Paine, 1974; Fakiolas, 1980) that there is a need for more appropriate financial frameworks and institutions, in the countries of origin, through which remittances could be channelled into socially more productive uses in order for the less desirable effects to be avoided.

1.4 Post-War Migratory Movements into West Germany and Their Effects

1.4.1 The First Wave of Migrants

By 1945 approximately 8,000,000 foreigners worked in the German Reich. Of these, 6,000,000 were civilian forced labourers recruited from the occupied areas and about 2,000,000 were prisoners of war. Without this system of compulsory work, the German war economy would not have been able to provide food and armaments until 1945.

The collapse of the Third Reich released these 8,000,000 foreign workers. At the same time, approximately 8,000,000 German nationals expelled from the former German eastern districts flooded into West Germany. The inflow of expellees came to an end by the late 1940s. In addition, the immigration of about 3,000,000 political refugees from the German Democratic Republic between 1950 and the building of the Berlin wall in 1961 raised the number of expellees and refugees to almost 14,000,000 by 1965 (Owen Smith, 1983). This number represented over 22 per cent of the total population. Of
these about 6.5 million (4.7 million expellees and 1.8 million refugees) were workers.

It was in 1949 when Chancellor Konrad Adenauer, referring to Germany, said, "... There are 28.9 million men and 36.2 million women ... for every 100 men of thirty there are more than 300 unmarried women of twenty-six or under" (Owen Smith, 1983). The reason for the low male/female ratio was not only the number of males killed in the Second World War, but also the fact that, because of the low birth rate, total population did not increase at the natural rate during the hostilities and after. The result of this difference was still observable in the 1976 population pyramid where females over 55 exceeded males over 55 years old (Figure 1.8). The first migratory flow into West Germany helped the country's economic recovery providing labour necessary to the growth in aggregate demand. Kindleberger (1967) considers the elastic labour supply as being the single most important factor in Germany's post-war development. Without this mass flow of migrants, the rapid rate of growth in output achieved would not have been possible. During the 1950s income per head was rising rapidly, while an enormous expansion in housing cured the great shortage of accommodation which occurred at the end of the war, especially in the industrial areas. At the same time, a smooth integration of immigrants was taking place, based on the 1951 Act on the Legal Status of Homeless Foreigners (Hammar, 1985). This seems to support the argument that this kind of integration is more likely to happen during periods of economic expansion.

A characteristic of the first migratory flow, in common with the second flow, is the high degree of labour mobility. More importantly, the refugees from East Germany possessed skills above the average level and had a relatively high level of education, most having at least completed secondary education. They brought with them new techniques and new ideas. Their competition with the indigenous population resulted in the lowering of wages and, hence, an increase on the rate of return of invested capital.
Figure 1.8
Total and Working Population by Age, Sex and Nationality, 1976

Source: Owen Smith, 1983
West Germany benefited greatly from the fact that the expenses of child rearing and education of the immigrants had been borne in the country of origin (Blitz, 1974) or, as Ergun (1975) states, this inflow of migrants constituted a value added for the country. As the First Secretary of the German Democratic Republic, Walter Ulbricht, stated in 1962 after the building of the Berlin Wall, the loss suffered by his country because of migration to the FRG amounted to DM 30 billion, or approximately DM 10,000 per person at 1962 prices (Owen Smith, 1983; Blitz, 1974; Stolper, 1967). Blitz (1977) also reports that the outlay on education and bringing-up in the GDR of the 1.5 million refugees who reached the FRG by 1957 represents a total of DM 22.5 million.

On the other hand, immigration imposes costs on the receiving countries. Firstly, additional capital equipment has to be obtained. Secondly, additional cost concerning the social infrastructure of the receiving country (roads, hospitals, schools, transportation, housing ...) is imposed. Thirdly, there is also an increase in the tax burden because of the need for more social security benefits consumed by immigrants. As far as it concerns this first migratory flow, the economic recovery and expansion of the 1950s (mainly in the second part of the 1950s) concealed the tax burden problem. The fourth cost is concerned with the effects on the balance of payments. Because of the food shortage which occurred in the late 1940s, West Germany had recourse to imports. However, since some of the expellees' industries were export intensive or were substituting imports, the balance of payments was not affected negatively as soon as an equilibrium and later a surplus was established (Owen Smith, 1983).

1.4.2 The Second Wave of Migrants

It was the year 1955 when the reservoir of easily recruitable German workers began to dry up (Kraus, 1985). From 1961, when the Berlin Wall stemmed migration of refugees from the east, requests for the recruitment of foreign labour began first from agriculture and then from industry. At that time (1961), the West German economy
confronted a labour shortage caused by the so-called 'economic miracle'. As Table 1.4 indicates, the economy had entered a phase of excess demand for labour. In addition, the potential of German manpower declined through changes in the age structure. Entry into the labour force was delayed because education periods lengthened, while the age of retirement was reduced. The reconstruction of the German army after 1955 was another factor leading to increasing demands for foreign workers. Finally, there was also the low indigenous birth rate. According to an estimate by the Institut für Arbeitsmarkt- and Berufsforschung der Bundesanstalt für Arbeit (Institute of Labour Market and Profession Research in the Federal Office of Labour), German manpower potential declined by two million between 1961-1974. This decline has been equalised by the immigration of more than two million foreigners. This influx was initiated through recruitment agreements with nations around the Mediterranean (Owen Smith, 1983).

Though foreigners were not recruited in large numbers during the 1955-1961 period, important decisions for the future of immigration were made. The first bilateral recruitment agreement with Italy was made in 1955. Furthermore, the labour unions changed their attitude and consented to the employment of migrants on prescribed conditions. By the end of July 1960 the number of foreign workers in the Federal Republic of Germany was 280,000, of which 45 per cent were Italians. Around the same time, recruitment agreements were signed with Spain (1960), Greece (1960) and Turkey (1961). This marked the beginning of the 'uncontrolled expansion' of immigrant labour which lasted until recruitment stopped in November 1973. During this period the number of immigrant workers rose continuously to a peak of 2.3 million. Additional recruitment agreements were made with other labour exporting countries: Portugal (1964), Tunisia (1965) and Morocco (1963 and 1966). These agreements empowered the Federal Labour Office to set up recruitment bureaux in the countries concerned. In April 1965 the most influential immigration regulation was signed, the Aliens Act, which is still in force today (Hammar, 1985). This Act includes terms under which foreigners are permitted to take up residence in the Federal Republic of Germany. This Act
### Table 1.4

#### The Labour Market

<table>
<thead>
<tr>
<th>Year</th>
<th>Total population in mill.</th>
<th>Working population</th>
<th>Unemployed, short-time workers, vacancies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Self-employed and assisting family members</td>
<td>Wage and salary earners</td>
</tr>
<tr>
<td></td>
<td>in mill.</td>
<td>in mill.</td>
<td>in mill.</td>
</tr>
<tr>
<td>1950</td>
<td>50.2</td>
<td>20.4</td>
<td>6.4</td>
</tr>
<tr>
<td>1951</td>
<td>50.5</td>
<td>20.9</td>
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<td>50.9</td>
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</tr>
<tr>
<td>1953</td>
<td>51.4</td>
<td>21.8</td>
<td>6.2</td>
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<tr>
<td>1954</td>
<td>51.9</td>
<td>22.4</td>
<td>6.1</td>
</tr>
<tr>
<td>1955</td>
<td>52.4</td>
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<td>6.1</td>
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<tr>
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<td>59.9</td>
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<td>1968</td>
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</tr>
<tr>
<td>1979</td>
<td>61.4</td>
<td>25.5</td>
<td>3.6</td>
</tr>
<tr>
<td>1980</td>
<td>61.6</td>
<td>25.8</td>
<td>3.5</td>
</tr>
</tbody>
</table>


Source: Dresdner Bank, 1981

Note the increase during the 1960-65 period.
was intended to make immigration of labour a manoeuvrable resource easily controlled and regulated for the solving of problems generated by labour shortages.

During the 1966-1967 recession the number of foreigners employed dropped by 320,000 (Tables 1.5, 1.6). After the economic recovery in 1967 the number of foreign workers again rose rapidly. The employment rate among foreigners at that time stayed at about 66 per cent, well above the corresponding rate among the German population. Because of the continual shortage of labour, West Germany signed an agreement with Yugoslavia in 1968 for the recruitment of Yugoslav workers. After that the composition of the immigrant population started to change. The proportion of Italians decreased, while the number of Yugoslavs and, after 1969, the number of Turks, rose. At the beginning of the 1970s Turks constituted about 13 per cent of the total number of foreigners in the Federal Republic of Germany. By 1980 this proportion was 28.5 per cent (Table 1.7).

The recruitment of foreign workers did not result in an expansion of total employment but instead a substitution of immigrants for German workers. In this process of substitution, immigrants took over the least skilled and most strenuous jobs. This substitution facilitated an increasing number of German youths to receive a better and longer education without generating shortages in the labour market.

The main sectors where immigrants were employed include industrial production (especially metal processing, mechanical engineering and textiles), construction, mining and services. The oil embargo and the world economic crisis in 1973 put an end to the recruitment of foreign labour. It was hoped that the number of foreign workers would decrease considerably. Their number dropped after 1973 from 2.6 million to 1.87 million in 1978, a drop of about 700,000. However, this reduction was overlapped by the process of 'family reunification'. Because of family reunifications and a higher birth rate, the foreign population only dropped from 4.1 million to 3.9 million in 1967-77 and has been rising since then (to 4.6 million
Table 1.5

Migrant Employees in the FRG

<table>
<thead>
<tr>
<th>Year</th>
<th>Total (Annual Averages) (000s)</th>
<th>Of which females (per cent)</th>
<th>Percentage of total employed labour force</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>279</td>
<td>15.5</td>
<td>1.3</td>
</tr>
<tr>
<td>1961</td>
<td>507</td>
<td>n.a.</td>
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</tr>
<tr>
<td>1962</td>
<td>629</td>
<td>18.1</td>
<td>3.1</td>
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<tr>
<td>1966</td>
<td>1,244</td>
<td>25.5</td>
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<tr>
<td>1967</td>
<td>1,014</td>
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<td>1968</td>
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<tr>
<td>1970</td>
<td>1,807</td>
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<td>8.5</td>
</tr>
<tr>
<td>1971</td>
<td>2,218</td>
<td>28.7</td>
<td>9.8</td>
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<tr>
<td>1972</td>
<td>2,285</td>
<td>29.4</td>
<td>10.5</td>
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<tr>
<td>1973 (est.)</td>
<td>2,450</td>
<td>11.0</td>
<td></td>
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<tr>
<td>1974</td>
<td>2,331</td>
<td>31.1</td>
<td>11.2</td>
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<td>1975</td>
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<td>31.4</td>
<td>9.6</td>
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<td>1,872</td>
<td>31.2</td>
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<tr>
<td>1978</td>
<td>1,857</td>
<td>31.0</td>
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<td>1979</td>
<td>1,924</td>
<td>30.8</td>
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<tr>
<td>1980</td>
<td>2,018</td>
<td>31.0</td>
<td>9.6</td>
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Source: Owen Smith, 1983 (p.159).
<table>
<thead>
<tr>
<th>Year</th>
<th>Total foreigners</th>
<th>Greek</th>
<th><em>Resident population</em></th>
<th><em>Number employed</em></th>
<th>Italian</th>
<th><em>Resident population</em></th>
<th><em>Number employed</em></th>
<th>Yugoslav</th>
<th><em>Resident population</em></th>
<th><em>Number employed</em></th>
<th>Spanish</th>
<th><em>Resident population</em></th>
<th><em>Number employed</em></th>
<th>Turkish</th>
<th><em>Resident population</em></th>
<th><em>Number employed</em></th>
</tr>
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<tbody>
<tr>
<td>1955</td>
<td>485</td>
<td>80</td>
<td>4</td>
<td>1</td>
<td>26</td>
<td>8</td>
<td>21</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1961</td>
<td>686</td>
<td>549</td>
<td>52</td>
<td>42</td>
<td>225</td>
<td>197</td>
<td>16</td>
<td>62</td>
<td>44</td>
<td>7</td>
<td></td>
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<tr>
<td>1966</td>
<td>1,314</td>
<td>140</td>
<td>343</td>
<td>242</td>
<td>574</td>
<td>382</td>
<td>515</td>
<td>423</td>
<td>286</td>
<td>190</td>
<td>318</td>
<td>196</td>
<td>178</td>
<td>131</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>1,807</td>
<td>2,595</td>
<td>399</td>
<td>250</td>
<td>622</td>
<td>450</td>
<td>673</td>
<td>535</td>
<td>286</td>
<td>190</td>
<td>318</td>
<td>196</td>
<td>178</td>
<td>131</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1975</td>
<td>4,090</td>
<td>2,039</td>
<td>391</td>
<td>196</td>
<td>601</td>
<td>292</td>
<td>678</td>
<td>416</td>
<td>247</td>
<td>125</td>
<td>1,077</td>
<td>543</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>4,450</td>
<td>2,070</td>
<td>298</td>
<td>133</td>
<td>618</td>
<td>309</td>
<td>632</td>
<td>357</td>
<td>180</td>
<td>87</td>
<td>1,462</td>
<td>592</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1981</td>
<td>4,630</td>
<td>1,917</td>
<td>299</td>
<td>122</td>
<td>625</td>
<td>285</td>
<td>637</td>
<td>336</td>
<td>177</td>
<td>81</td>
<td>1,546</td>
<td>584</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1982</td>
<td>4,667</td>
<td>2,038</td>
<td>301</td>
<td>129</td>
<td>602</td>
<td>296</td>
<td>632</td>
<td>350</td>
<td>174</td>
<td>82</td>
<td>1,580</td>
<td>652</td>
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</table>

Source: Hammar, 1985 (p.171).
Table 1.7

Migrant Employees by Nationality

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percentage</td>
</tr>
<tr>
<td>Turkey</td>
<td>528,414</td>
<td>22.5</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>465,611</td>
<td>19.8</td>
</tr>
<tr>
<td>Italy</td>
<td>409,448</td>
<td>17.5</td>
</tr>
<tr>
<td>Greece</td>
<td>268,408</td>
<td>11.4</td>
</tr>
<tr>
<td>Spain</td>
<td>179,157</td>
<td>7.6</td>
</tr>
<tr>
<td>Portugal</td>
<td>68,994</td>
<td>2.9</td>
</tr>
<tr>
<td>Morocco</td>
<td>15,261</td>
<td>0.7</td>
</tr>
<tr>
<td>Tunisia</td>
<td>11,124</td>
<td>0.5</td>
</tr>
<tr>
<td>(sub-total)</td>
<td>1,946,417</td>
<td>82.9</td>
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<tr>
<td>Other nationalities</td>
<td>400,383</td>
<td>17.1</td>
</tr>
<tr>
<td>Total</td>
<td>2,346,800</td>
<td>100.0</td>
</tr>
</tbody>
</table>

in 1981). At the same time the employment rate among foreigners dropped from about 67 per cent to about 42 per cent — even lower than among Germans. Employment was lowest among the Turks (40 per cent) and highest among the Italians (50 per cent) and the Yugoslavs (56 per cent). The decline in the number of immigrant workers is not due solely to return migration but is also due to increased unemployment among the immigrant population.

During the 1974–75 recession, the fear that unemployment might result in a loss of residence rights discouraged foreign workers from registering as unemployed. They tried to find employment in other sectors (Sciller, 1975). The continuation of the recession, however, eventually forced immigrants to register as unemployed (Paine, 1974). From 16,000 foreigners registered as unemployed in 1973, the number increased to 67,000 by 1974 and up to 133,000 by 1975. Between 1976 and 1979 an annual average of 81,500 immigrants were unemployed (Table 1.8). By 1980 and 1981 the unemployment rate among immigrants was 12 and 14 per cent respectively (Table 1.8). The main reason for this high level of unemployment is that migrants generally possess low levels of education and training. As a result they hold the most unpleasant, unsocial and insecure jobs (Owen Smith, 1983).

The recruitment stop changed the composition of the foreign population through the increase in family immigration. This development had not been anticipated and official immigration policy reacted late and reluctantly. The first official attempt to deal with the social implications of long-term immigration was in 1973 when the government presented the "Programme for the Employment of Immigrant Labour". Today the first generation of immigrants can no longer be considered as 'guestworkers'. About 15 per cent (709,100) of the total foreign population have been living in the FRG for more than fifteen years. About 37.8 per cent (1,274,000) has been living there between 10-15 years, 14.5 per cent (654,900) have lived there from 8 to 10 years, while 13.9 per cent (442,700) have been there from 6 to 8 years. From the above we can conclude that two-thirds of the foreign worker population have been living for more
### Table 1.8

**Structural Characteristics of Unemployment**

<table>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total unemployment</td>
<td>Thousands</td>
<td>557</td>
<td>1,005</td>
<td>898</td>
<td>917</td>
<td>865</td>
<td>737</td>
</tr>
<tr>
<td>Rate of unemployment</td>
<td>Percent</td>
<td>2.4</td>
<td>4.4</td>
<td>3.9</td>
<td>4.0</td>
<td>3.8</td>
<td>3.2</td>
</tr>
<tr>
<td>(Of which: Males)</td>
<td>Percent</td>
<td>2.0</td>
<td>3.8</td>
<td>3.0</td>
<td>3.0</td>
<td>2.7</td>
<td>2.2</td>
</tr>
<tr>
<td>(Females)</td>
<td>Percent</td>
<td>3.2</td>
<td>5.5</td>
<td>5.5</td>
<td>5.3</td>
<td>5.5</td>
<td>4.8</td>
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<tr>
<td>Unemployment by gender</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Absolute</td>
<td>Thousands</td>
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<td>135</td>
<td>80</td>
<td>84</td>
<td>90</td>
<td>77</td>
</tr>
<tr>
<td>Per cent of total</td>
<td>Percent</td>
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<td>8.8</td>
<td>9.2</td>
<td>10.4</td>
<td>10.5</td>
</tr>
<tr>
<td>Rate of unemployment</td>
<td>Percent</td>
<td>2.8</td>
<td>5.8</td>
<td>3.8</td>
<td>4.3</td>
<td>4.6</td>
<td>3.9</td>
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<td>Age of unemployed</td>
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<tr>
<td>Under 20</td>
<td>Per cent</td>
<td>12.5</td>
<td>11.5</td>
<td>11.4</td>
<td>11.6</td>
<td>10.6</td>
<td>9.3</td>
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<tr>
<td>20 to 49</td>
<td>Per cent</td>
<td>68.3</td>
<td>71.3</td>
<td>69.2</td>
<td>69.2</td>
<td>68.4</td>
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<td>50 and over</td>
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<td>Average duration of unemployment</td>
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<tr>
<td>White collar, total</td>
<td>Thousands</td>
<td>183</td>
<td>340</td>
<td>383</td>
<td>381</td>
<td>343</td>
<td>302</td>
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<tr>
<td>Under 3 months</td>
<td>Percent</td>
<td>58.9</td>
<td>45.4</td>
<td>42.1</td>
<td>40.9</td>
<td>40.9</td>
<td>42.5</td>
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<tr>
<td>Over 1 year</td>
<td>Percent</td>
<td>40.0</td>
<td>7.8</td>
<td>14.3</td>
<td>16.5</td>
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<td>16.5</td>
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<tr>
<td>Blue collar, total</td>
<td>Thousands</td>
<td>373</td>
<td>666</td>
<td>515</td>
<td>530</td>
<td>521</td>
<td>518</td>
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<tr>
<td>Under 3 months</td>
<td>Percent</td>
<td>56.5</td>
<td>40.2</td>
<td>40.9</td>
<td>42.0</td>
<td>40.7</td>
<td>43.2</td>
</tr>
<tr>
<td>Over 1 year</td>
<td>Percent</td>
<td>57.5</td>
<td>10.6</td>
<td>20.6</td>
<td>20.0</td>
<td>22.0</td>
<td>22.1</td>
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<tr>
<td>Short-time workers</td>
<td>Thousands</td>
<td>265</td>
<td>639</td>
<td>94</td>
<td>158</td>
<td>109</td>
<td>77</td>
</tr>
<tr>
<td>Unemployed/vacancies</td>
<td>Ratio</td>
<td>1.9</td>
<td>4.3</td>
<td>3.9</td>
<td>3.9</td>
<td>3.4</td>
<td>2.3</td>
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<td>Participation rates</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>Percent</td>
<td>56.6</td>
<td>55.5</td>
<td>54.9</td>
<td>54.9</td>
<td>54.7</td>
<td>54.9</td>
</tr>
<tr>
<td>Females</td>
<td>Percent</td>
<td>38.7</td>
<td>38.8</td>
<td>38.6</td>
<td>38.7</td>
<td>38.7</td>
<td>39.2</td>
</tr>
</tbody>
</table>

Source: OECD Survey, West Germany, 1982.
than six years in the FRG and 48.4 per cent (2,239 million) have been there for more than eight years (Kraus, 1985). According to theoretical calculations based on alternative assumptions on the migratory balance, the foreign population in the year 2000 is estimated to be between 5.5 and 7.8 million persons. (10)

The importance of foreign workers for the German economy is made clear if we examine their distribution according to occupation. Of all employees in German manufacturing, 26.8 per cent are foreigners. The proportion in hotel and catering is 22.1 per cent, in the textiles industry 19.5 per cent, in the plastics industry 19.5 per cent, in the auto industry 18.8 per cent, in the iron and steel industry 15.1 per cent and in mining 9 per cent. In her report on 11 May 1982 the Commissioner of the Federal Government for Foreign Problems stated,

"... As all industrialized nations in Europe, the Federal Republic of Germany cannot do without foreign employees. National product and exports cannot be maintained at their present level without the aid of foreign workers."

(Kraus, 1985)

Related to this is the argument that, due to the demographic development in the FRG, in the near future there will arise a severe shortage of new skilled workers and employees in the service branches. It is also recognised that contributions by foreign workers to the social insurance system have been an important element to its financing. Blitz (1974) demonstrates that for the period 1957-1973 the FRG has benefited greatly from immigration because the child rearing and educational costs of immigrants, as in the first wave, were borne abroad.

In terms of the previous analysis concerning the effects of immigration on labour importing countries, a number of points can be made. A limited investigation concerning the effects of the employment of foreign workers on the growth rate of West Germany for the 1960-1970 period found that foreign workers added 0.8 percentage points to the growth rate in 1970 (direct production effect) (Völker, 1973). Another study reveals that in industries that hired
foreign workers, indigenous workers suffered a decline in wage rates relative to those of indigenous workers in all other industries (Bain and Panga, 1972). In the early 1970s in West Germany remittances (Figure 1.9) represented over 25 per cent of the average disposable income, while for unaccompanied married men it was 45 per cent (Blitz, 1974). It would appear unlikely that the savings rate of immigrants was more than that of their indigenous counterparts (dynamic effects).

In general, immigrants consumed less social services than their indigenous counterparts. But the transformation from temporary to permanent residence after the 1973 crisis with "family reunification" caused many problems to the authorities and to the foreign population. Most of the foreign workers do not want to return home. In addition, according to EEC law and German law, about half of all foreigners over sixteen have a guaranteed right of residence (Hammar, 1985). More than 80 per cent of foreign workers have a 'secured status' working permit. After this development, the use of the social services by foreign children and youths has become more and more significant.

In order to tackle all these problems a committee was set up in 1975 at the Federal Chancellory to formulate some guidelines for immigration policy. It demanded that priority must be given to social rather than economic aspects of immigration. But at the same time these guidelines demonstrated once again the inconsistent nature of German immigration policy, by demanding the integration of immigrant families and a stronger promotion of return migration (Hammar, 1985). Until now, in all its decisions the Federal Government has officially emphasised that the FRG is not an "immigration country". Recent measures have been taken primarily in order to stop the further immigration of youths and elderly family members, although in reality these measures aim to stop further immigration of Turks and asylum-seekers. It is said that in Turkey some 700,000 to 900,000 family members are waiting to be reunited with their relatives in the Federal Republic of Germany. The problem will get worse if the association agreement
Figure 1.9

F.R.G
Home Remittances of foreign Workers

of Turkey with the EEC becomes active. (It has been frozen since 1981.) A revision of the agreement concerning the freedom of residence will be needed. Since the residence of immigrants is not yet recognised as a permanent phenomenon, it is not surprising that official policies, which lack long-term planning, are oriented towards the labour market interests of the German Economy.

However, there is an opposite argument to the necessity for labour imports which supports the development of the economy through transformation of the industrial structure towards capital-intensive manufacturing. Supporters of this argument use the example of Japan after the Second World War (Kraus, 1985). Immediately after the end of the war, Japan made efforts to transform its industrial structure by a reduction of labour-intensive manufacturing. Japan systematically transferred labour-intensive manufacturing to Korea, Taiwan and South-East Asia. Japanese capital aid together with technical aid in the form of joint enterprises promoted this restructuring. In this way, supporters assert, one country can reach high rates of output growth and capital formation, avoiding the negative consequences of labour immigration, while potential migrants can be employed without leaving their country.

1.5 Greek Migratory Flows and Their Characteristics

1.5.1 The Background of Greek Migration

Since the beginning of the twentieth century, Greece has been experiencing substantial outflows of its nationals. Whether or not this tendency is the result of a tradition going back to the spirit of Odysseus (Vlachos, 1974) the fact remains that for Greece emigration has been a demographic variable of great significance. Between 1910-1929 around 400,000 Greeks emigrated, almost all of them to the United States (Table 1.9). During the same period more than half of them returned. It is interesting to notice that over 70 per cent of those emigrating to the United States during the second half of the 1930s were re-emigrants who had waited for the passing of the Great Depression (Fillias, 1967). It is worth mentioning that, for political reasons, the largest immigration of refugees in the
<table>
<thead>
<tr>
<th>Periods</th>
<th>Transoceanic Emigration</th>
<th>European Emigration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>USA</td>
<td>Other Countries</td>
</tr>
<tr>
<td>1821-1899</td>
<td>15,919</td>
<td>15,914</td>
<td>5</td>
</tr>
<tr>
<td>1900-1921</td>
<td>402,538</td>
<td>383,993</td>
<td>18,545</td>
</tr>
<tr>
<td>1922-1940</td>
<td>92,734</td>
<td>63,076</td>
<td>29,658</td>
</tr>
<tr>
<td>1946-1954</td>
<td>68,473</td>
<td>25,209</td>
<td>43,264</td>
</tr>
<tr>
<td>1955-1959</td>
<td>86,409</td>
<td>42,083</td>
<td>62,326</td>
</tr>
<tr>
<td>1960-1964</td>
<td>106,845</td>
<td>18,946</td>
<td>87,899</td>
</tr>
<tr>
<td>1965-1969</td>
<td>142,767</td>
<td>49,308</td>
<td>93,459</td>
</tr>
<tr>
<td>1970-1974</td>
<td>80,168</td>
<td>38,747</td>
<td>41,421</td>
</tr>
<tr>
<td>1975-1977</td>
<td>22,803</td>
<td>11,774</td>
<td>11,029</td>
</tr>
<tr>
<td>1821-1977</td>
<td>1,018,656</td>
<td>631,050</td>
<td>387,606</td>
</tr>
</tbody>
</table>

Source: National Statistical Service of Greece (NSSG), 1985
history of the country occurred from Asia Minor in 1922. With the completion of the population exchange between Greece and Turkey (1924), almost 1.3 million refugees were added to the Greek population. This event, coupled with an increase in the birthrate, caused the population to expand from slightly above 5 million to over 7.3 million by 1940 - an increase of nearly 50 per cent in less than 20 years (Table 1.10).

The 1940s was one of the more tumultuous periods of modern Greek history, commencing with the German occupation and continuing in the Civil War. During this time Greece experienced high degrees of social mobilisation and saw the expectations and aspirations of its people rise sharply so that Polyzos (1949) (Fillias, 1967) warned of an "unprecedented migration flow from all social levels, if serious social and economic changes do not occur". Such changes never happened and the socio-economic expectations of Greeks were not met. Greece did not participate in the economic 'miracle' taking place elsewhere in Europe. The absence of social, political and economic initiatives, together with chronic unemployment and under-employment, made the situation worse. Under these conditions, a short-term recruitment agreement was signed with France in 1954 and with Belgium in 1957. By the end of the decade over 15,000 Greek workers had emigrated to Belgium, the major European destination of Greek workers at that time. However, the overall direction of Greek emigrants was still transoceanic. In fact, almost three out of four Greek emigrants were leaving for transoceanic countries, Australia, Canada and the United States (see Figure 1.10).

By 1959, the Federal Republic of Germany started to receive Greek emigrants for settlement. With the bilateral recruitment agreement in 1960, West Germany became the main destination of Greek worker outflow towards Europe. During the 1960s and early 1970s, more than two-thirds of Greek emigrants went to Western Europe. Since 1955 more than 750,000 people migrated to Western Europe, of which 640,000 migrants (84%) went to West Germany, 30,000 (4%) to Belgium and about the same number to Italy (29,000). The other European countries (Austria, France, Sweden, Switzerland, Holland,
<table>
<thead>
<tr>
<th>Census Year</th>
<th>1861</th>
<th>1870</th>
<th>1879</th>
<th>1889</th>
<th>1896</th>
<th>1907</th>
<th>1920</th>
<th>1928</th>
<th>1940</th>
<th>1951</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>1,096.8</td>
<td>1,457.9</td>
<td>1,679.5</td>
<td>2,187.2</td>
<td>2,433.8</td>
<td>2,632</td>
<td>5,016</td>
<td>6,204.7</td>
<td>7,344.9</td>
<td>7,632.8</td>
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<table>
<thead>
<tr>
<th></th>
<th>1961</th>
<th>1971</th>
<th>1981</th>
<th>1985*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>8,388.6</td>
<td>8,768.6</td>
<td>9,471</td>
<td>10,028</td>
</tr>
</tbody>
</table>

*estimation.

The restrictions taken by the United States of America (1922) radically reduced migration. In the following period up to the Second World War, emigration was rather limited, as the trans-oceanic countries were selective, accepting only some skills necessary for the development of their economy.
Great Britain) attracted small numbers of migrants (Table 1.11). During the 1960-1973 period the Greek workers in the FRG constituted between 11 and 15 per cent of that country's foreign work force. Late in 1973, however, recruitment stopped and the Greek share in the German foreign work force dropped below 10 per cent, where it has been fluctuating ever since. (12)

Table 1.12 indicates the number of newly entering Greek workers in the FRG and the proportion of the recruited new entrants (in brackets) for the period 1960-1970. The proportion of recruited workers after 1961 is always above 54% (with the exception of 1967 which was recession year for the FRG), reaching a peak of 78-79 per cent in 1969-1970. We can also see the decrease in the number of newly entering workers for the years 1966, 1967 and 1968 (before and during the recession) as well as the decrease in the number of employed Greek workers in 1967. After that year, the number of employed workers increased gradually to reach a peak of 269,689 in 1972 and then decreased again reaching a low of 108,800 in 1983. This is indicated in Table 1.13. Since 1959 emigration has mainly oriented towards Europe (60%), Canada (20%) and Australia (13%). The peak of emigration flows into Europe is observed during the periods 1962-1965 and 1969-1970, with an annual average number of 108,000 and 92,000 migrants respectively.

The two waves of massive emigration during the periods 1900-1914 and 1960-1974 (Figure 1.10) strongly distorted the demographic development of the country. The demographic impact of transoceanic emigration at the beginning of the century up to the First World War was not widely felt because of the massive inflow of more than 1.2 million refugees from Asia Minor (1922-1924). The refugee population covered the demographic gaps caused by emigration but the national economy was burdened with the cost of settlement of refugees. Since the average number of migrants (70,000 per annum in the period 1960-1974) was about equal to the excess of births over deaths, and the bulk of these migrants originated from rural areas, the demographic stagnation of Greece, together with the distortion of the age pyramid of the rural population (Figure 1.11) may be directly linked with both

50.
Table 1.11

Migrants' Distribution by Time Periods and Countries of European Destination 1955-77

<table>
<thead>
<tr>
<th>Period</th>
<th>G.Britain</th>
<th>Austria</th>
<th>Belgium</th>
<th>France</th>
<th>W.Germany</th>
<th>Switzerland</th>
<th>Italy</th>
<th>Holland</th>
<th>Sweden</th>
<th>Soviet Union</th>
<th>Other Countries</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1955-1959</td>
<td>1,765</td>
<td>5,514</td>
<td>15,041</td>
<td>1,550</td>
<td>7,964</td>
<td>1,039</td>
<td>5,895</td>
<td>370</td>
<td>64</td>
<td>229</td>
<td>743</td>
<td>40,174</td>
</tr>
<tr>
<td>1960-1964</td>
<td>4,075</td>
<td>2,653</td>
<td>10,607</td>
<td>3,596</td>
<td>240,176</td>
<td>8,077</td>
<td>9,235</td>
<td>1,425</td>
<td>387</td>
<td>123</td>
<td>616</td>
<td>280,970</td>
</tr>
<tr>
<td>1965-1969</td>
<td>4,895</td>
<td>951</td>
<td>2,005</td>
<td>2,867</td>
<td>215,443</td>
<td>3,669</td>
<td>8,143</td>
<td>1,382</td>
<td>1,978</td>
<td>29</td>
<td>481</td>
<td>241,843</td>
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<tr>
<td>1970-1974</td>
<td>2,713</td>
<td>311</td>
<td>1,191</td>
<td>1,295</td>
<td>153,117</td>
<td>1,153</td>
<td>3,076</td>
<td>762</td>
<td>1,710</td>
<td>10</td>
<td>431</td>
<td>165,769</td>
</tr>
<tr>
<td>1975-1977</td>
<td>1,614</td>
<td>123</td>
<td>577</td>
<td>1,062</td>
<td>21,441</td>
<td>411</td>
<td>2,585</td>
<td>358</td>
<td>861</td>
<td>23</td>
<td>540</td>
<td>29,595</td>
</tr>
</tbody>
</table>

Total 15,062 9,552 29,421 10,370 638,141 14,349 28,934 4,297 5,000 414 2,811 758,351

Source: National Statistical Service of Greece (NSSG), 1981
Table 1.12

Number of Newly Entering Greek Workers in the FRG (first row),
the Proportion of Recruited New Entrants (in brackets) and
Number of Employed Greek Workers at Mid-Year (second row) in thousands

<table>
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</thead>
<tbody>
<tr>
<td>Greeks</td>
<td>1.5</td>
<td>2.5</td>
<td>23.4</td>
<td>36.6</td>
<td>47.6</td>
<td>58.0</td>
<td>65.1</td>
<td>61.8</td>
<td>39.7</td>
<td>7.6</td>
<td>37.3</td>
<td>65.1</td>
<td>64.0</td>
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<tr>
<td>(% recr.)</td>
<td>-</td>
<td>-</td>
<td>(41)</td>
<td>(58)</td>
<td>(67)</td>
<td>(70)</td>
<td>(62)</td>
<td>(68)</td>
<td>(68)</td>
<td>(26)</td>
<td>(65)</td>
<td>(79)</td>
<td>(78)</td>
</tr>
<tr>
<td></td>
<td>2.8</td>
<td>4.1</td>
<td>13.0</td>
<td>40.8</td>
<td>69.1</td>
<td>106.2</td>
<td>143.9</td>
<td>181.7</td>
<td>196.2</td>
<td>146.8</td>
<td>136.2</td>
<td>174.3</td>
<td>229.4</td>
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Source: Böhning, 1972 (p.34)
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Greek employees in FRG (thousands)</td>
<td>261.6</td>
<td>269.7</td>
<td>255.2</td>
<td>234.0</td>
<td>203.6</td>
<td>178.8</td>
<td>162.5</td>
<td>146.8</td>
<td>140.2</td>
<td>133.0</td>
<td>123.8</td>
<td>115.6</td>
</tr>
</tbody>
</table>

Source: German Statistical Yearbooks (various years)
Table 1.13

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
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<td>261.6</td>
<td>269.7</td>
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<td>178.8</td>
<td>162.5</td>
<td>146.8</td>
<td>140.2</td>
<td>133.0</td>
<td>123.8</td>
<td>115.6</td>
</tr>
</tbody>
</table>

Source: German Statistical Yearbooks (various years)
international and, less documented but obviously significant, internal migration (urbanisation). From Figure 1.11, one may compare the urban and rural population of Greece (thousands) by sex and age group as estimated for the year 1975. Due to intense emigration and urbanisation, the pyramid of the rural population is reduced to a skeleton-like structure. Certain departments suffered depopulation as is evident in the available data of the last four censuses (see Tables 1.14 and 1.15) and the urban population became over-concentrated in the capital city. (One may also compare Figure 1.11 with that depicting the West German population pyramid, Figure 1.8.)

Greek emigration to the Federal Republic of Germany is the main concern of this study. This is because of the great number of people involved in this procedure (over 85 per cent of total emigration to West Europe for the period 1960-1982) and the availability and quantity of relevant data. This is in contrast to the small number of people involved and the poor data concerning emigration to other Western European countries.

Curve 1 in Figure 1.12 depicts the evolution of Greek emigration to West Germany for the period from 1960 to 1982. We can observe the peak periods 1963-1965 and 1969-1971. From 1971-1979 the number of emigrants decreased continuously falling below 20,000 in 1975, which was less than the corresponding numbers for the recession year of 1967. Figure 1.12 is based on German statistical data for various years (Ministry of Labour and Federal Statistical Service of West Germany). Greek official statistical data (NSSG) concerning the emigration flow covers the period 1960-1977. In September 1977, the authorities stopped the registration of emigrants for political reasons.

Figure 1.13 offers a comparison of the two flows based on German and Greek statistics for the period 1960-1977. The Greek statistics on movements to the Federal Republic of Germany show considerably fewer migrants than the German figures, particularly since 1967. The difference is due to the source of statistics and
<table>
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<tbody>
<tr>
<td>Total</td>
<td>7,632,801</td>
<td>8,388,553</td>
<td>8,768,641</td>
<td>9,740,417</td>
<td>100.00</td>
</tr>
<tr>
<td>Greater Athens</td>
<td>1,378,586</td>
<td>1,852,709</td>
<td>2,540,241</td>
<td>3,027,331</td>
<td>31.08</td>
</tr>
<tr>
<td>Stevea, Evia</td>
<td>908,433</td>
<td>970,949</td>
<td>992,077</td>
<td>1,099,841</td>
<td>11.29</td>
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<tr>
<td>Peloponnesus</td>
<td>1,129,022</td>
<td>1,096,390</td>
<td>986,912</td>
<td>1,012,528</td>
<td>10.40</td>
</tr>
<tr>
<td>Ionian Islands</td>
<td>228,597</td>
<td>212,573</td>
<td>184,443</td>
<td>182,651</td>
<td>1.88</td>
</tr>
<tr>
<td>Epirus</td>
<td>330,543</td>
<td>352,604</td>
<td>310,334</td>
<td>324,541</td>
<td>3.33</td>
</tr>
<tr>
<td>Thessaly</td>
<td>624,342</td>
<td>689,927</td>
<td>659,913</td>
<td>695,654</td>
<td>7.14</td>
</tr>
<tr>
<td>Macedonia</td>
<td>1,705,434</td>
<td>1,896,112</td>
<td>1,890,684</td>
<td>2,121,953</td>
<td>21.79</td>
</tr>
<tr>
<td>Thrace</td>
<td>336,954</td>
<td>356,555</td>
<td>329,582</td>
<td>345,220</td>
<td>3.54</td>
</tr>
<tr>
<td>Aegean Islands</td>
<td>528,766</td>
<td>477,476</td>
<td>417,813</td>
<td>428,533</td>
<td>4.40</td>
</tr>
<tr>
<td>Crete</td>
<td>462,164</td>
<td>483,258</td>
<td>456,642</td>
<td>502,165</td>
<td>5.20</td>
</tr>
</tbody>
</table>

Source: National Statistical Service of Greece (NSSG), 1981

Table 1.15
Evolution of the Urban-Rural Population in Greece, 1907-1971

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population</th>
<th>Urban Population</th>
<th>Semi-urban area</th>
<th>Rural area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Greater Athens</td>
<td>Greater Salonika</td>
<td>Rest of urban</td>
</tr>
<tr>
<td>1907</td>
<td>4,716</td>
<td>250</td>
<td>-</td>
<td>771</td>
</tr>
<tr>
<td>1928</td>
<td>6,205</td>
<td>802</td>
<td>244</td>
<td>1,008</td>
</tr>
<tr>
<td>1940</td>
<td>7,460</td>
<td>1,124</td>
<td>254</td>
<td>1,151</td>
</tr>
<tr>
<td>1951</td>
<td>7,633</td>
<td>1,379</td>
<td>302</td>
<td>1,259</td>
</tr>
<tr>
<td>1961</td>
<td>8,385</td>
<td>1,853</td>
<td>381</td>
<td>1,394</td>
</tr>
<tr>
<td>1971</td>
<td>8,769</td>
<td>2,540</td>
<td>557</td>
<td>1,524</td>
</tr>
</tbody>
</table>

Population in thousands

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population</th>
<th>Urban Population</th>
<th>Semi-urban area</th>
<th>Rural area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1907</td>
<td>4,716</td>
<td>250</td>
<td>-</td>
<td>771</td>
</tr>
<tr>
<td>1928</td>
<td>6,205</td>
<td>802</td>
<td>244</td>
<td>1,008</td>
</tr>
<tr>
<td>1940</td>
<td>7,460</td>
<td>1,124</td>
<td>254</td>
<td>1,151</td>
</tr>
<tr>
<td>1951</td>
<td>7,633</td>
<td>1,379</td>
<td>302</td>
<td>1,259</td>
</tr>
<tr>
<td>1961</td>
<td>8,385</td>
<td>1,853</td>
<td>381</td>
<td>1,394</td>
</tr>
<tr>
<td>1971</td>
<td>8,769</td>
<td>2,540</td>
<td>557</td>
<td>1,524</td>
</tr>
</tbody>
</table>

Percentage distribution

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population</th>
<th>Urban Population</th>
<th>Semi-urban area</th>
<th>Rural area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1907</td>
<td>100</td>
<td>5.3</td>
<td>-</td>
<td>16.4</td>
</tr>
<tr>
<td>1928</td>
<td>100</td>
<td>12.9</td>
<td>3.9</td>
<td>16.3</td>
</tr>
<tr>
<td>1940</td>
<td>100</td>
<td>15.1</td>
<td>3.4</td>
<td>15.4</td>
</tr>
<tr>
<td>1951</td>
<td>100</td>
<td>18.1</td>
<td>3.9</td>
<td>16.5</td>
</tr>
<tr>
<td>1961</td>
<td>100</td>
<td>22.1</td>
<td>4.5</td>
<td>16.6</td>
</tr>
<tr>
<td>1971</td>
<td>100</td>
<td>29.0</td>
<td>6.3</td>
<td>17.4</td>
</tr>
</tbody>
</table>

Source: Siampos, 1980
Figure 1.12

MIGRATION FLOWS

Legend

- ▲ emigration
- × return migration

Source: German Ministry of Labour.
EMIGRATION TO W. GERMANY

Legend
△ German data
× Greek data

Sources: German Ministry of Labour; NSSG.
the definitions of emigrants used (Table 1.16). On the other hand, the pattern of annual fluctuations in the two series is remarkably similar.

Figure 1.12 also depicts the evolution of return migration flow of Greek migrants from West Germany to Greece for the same period, 1960-1982. Starting with a very low number of returnees in 1960 (curve 2), numbers rise to reach a peak in 1967. Between 1966-1968 returnees exceed emigration but numbers fall until 1969. Since then, numbers have risen again to reach a peak in 1976 but have fallen continuously after that year until 1981. It is interesting to note that in 1981 a rise in emigration flow resulted in net emigration, but in 1982 net repatriation to Greece is re-established. Curve 2, in Figure 1.12, is also based on German statistics (Ministry of Labour, and Federal Statistical Service of West Germany). Greek official statistical data cover only the 1968-1977(13) period, therefore German statistics have been preferred.

1.5.2 Place of Origin of Emigrants

The place of origin of migrants varies per geographical region. Figure 1.14 depicts the official division of the country into ten regions. During the 1955-1959 and 1975-1977 periods the Athens region contributed 24 per cent to the total migratory flow, while during the 1960-1974 period its contribution fell to 16 per cent. In contrast, Macedonia during the 1955-1959 period contributed only 16 per cent but after 1960 its contribution increased significantly reaching a peak of 36 per cent in the 1970-1974 period. Among the rest of the regions, Peloponnesus and Thrace are the most important in terms of contribution to the migration outflow, as Table 1.17 shows.

Table 1.18 shows the distribution of European emigration by geographical region of origin. It is obvious that the contribution of regions differs between emigration to Europe (Table 1.18) and to all destinations (Table 1.17) for each time period respectively. The most characteristic differences are observed in the regions of
Table 1.16
Sources of Statistics of International Migration Flows
and Definitions of Immigrants and Emigrants

<table>
<thead>
<tr>
<th>Country</th>
<th>Sources of migration &quot;flow&quot; statistics</th>
<th>Definitions and notes on practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Immigrants</td>
</tr>
<tr>
<td>Federal Republic of Germany</td>
<td>Population Registers</td>
<td>Arrivals across the frontier to establish residence in the country for a stay of at least eight weeks.</td>
</tr>
<tr>
<td>Greece</td>
<td>Frontier control</td>
<td>Nationals returning after being abroad for more than one year and intending to reside in Greece for at least a year. Excludes returning Greek seamen, regardless of the duration of their stay abroad.</td>
</tr>
</tbody>
</table>

The division of the country into ten geographical regions has been made by the Statistical Service of Greece.

1. Greater Athens
2. Sterea Hellas - Evia
3. Peloponnesus
4. Ionian Islands
5. Epirus
6. Thessaly
7. Macedonia
8. Thrace
9. Aegean Islands
10. Crete
### Table 1.17

**Emigration to all Destinations, 1955-1977**  
**Distribution of Emigrants by Geographical Region of Origin**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Greater Athens</td>
<td>34,641</td>
<td>24.09</td>
<td>59,795</td>
<td>15.00</td>
<td>67,555</td>
<td>17.36</td>
<td>39,538</td>
<td>15.83</td>
<td>13,518</td>
<td>23.63</td>
</tr>
<tr>
<td>Sterea Hellas - Evia</td>
<td>4,794</td>
<td>3.33</td>
<td>12,852</td>
<td>3.24</td>
<td>17,198</td>
<td>4.42</td>
<td>10,920</td>
<td>4.37</td>
<td>2,891</td>
<td>5.05</td>
</tr>
<tr>
<td>Peloponnesus</td>
<td>20,510</td>
<td>14.27</td>
<td>39,516</td>
<td>9.97</td>
<td>43,515</td>
<td>11.18</td>
<td>18,747</td>
<td>7.50</td>
<td>4,071</td>
<td>7.11</td>
</tr>
<tr>
<td>Ionian Islands</td>
<td>2,620</td>
<td>1.82</td>
<td>9,898</td>
<td>2.50</td>
<td>12,484</td>
<td>3.21</td>
<td>5,183</td>
<td>2.07</td>
<td>1,110</td>
<td>1.94</td>
</tr>
<tr>
<td>Epirus</td>
<td>2,582</td>
<td>1.80</td>
<td>24,275</td>
<td>6.12</td>
<td>24,409</td>
<td>6.27</td>
<td>17,584</td>
<td>7.04</td>
<td>2,919</td>
<td>5.10</td>
</tr>
<tr>
<td>Thessaly</td>
<td>2,347</td>
<td>1.63</td>
<td>16,778</td>
<td>4.23</td>
<td>21,466</td>
<td>5.52</td>
<td>19,764</td>
<td>7.91</td>
<td>2,500</td>
<td>4.37</td>
</tr>
<tr>
<td>Macedonia</td>
<td>23,163</td>
<td>16.11</td>
<td>125,824</td>
<td>31.75</td>
<td>135,290</td>
<td>34.76</td>
<td>89,594</td>
<td>35.87</td>
<td>16,442</td>
<td>28.75</td>
</tr>
<tr>
<td>Thrace</td>
<td>16,194</td>
<td>11.26</td>
<td>28,755</td>
<td>7.26</td>
<td>25,211</td>
<td>6.48</td>
<td>19,295</td>
<td>7.73</td>
<td>3,146</td>
<td>5.50</td>
</tr>
<tr>
<td>Aegean Islands</td>
<td>10,459</td>
<td>7.28</td>
<td>21,701</td>
<td>5.58</td>
<td>22,513</td>
<td>5.78</td>
<td>12,002</td>
<td>4.80</td>
<td>2,752</td>
<td>4.81</td>
</tr>
<tr>
<td>Crete</td>
<td>2,202</td>
<td>1.53</td>
<td>11,646</td>
<td>2.93</td>
<td>10,620</td>
<td>2.73</td>
<td>8,471</td>
<td>3.39</td>
<td>1,285</td>
<td>2.25</td>
</tr>
<tr>
<td>Not declared</td>
<td>24,251</td>
<td>16.88</td>
<td>45,260</td>
<td>11.43</td>
<td>8,950</td>
<td>2.29</td>
<td>8,698</td>
<td>3.49</td>
<td>6,576</td>
<td>11.49</td>
</tr>
<tr>
<td>Total</td>
<td>143,763</td>
<td>100.00</td>
<td>396,300</td>
<td>100.00</td>
<td>389,211</td>
<td>100.00</td>
<td>249,796</td>
<td>100.00</td>
<td>57,210</td>
<td>100.00</td>
</tr>
</tbody>
</table>

**Source:** National Statistical Service of Greece (NSSG), 1981
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Emigrants</td>
<td>%</td>
<td>Number of Emigrants</td>
</tr>
<tr>
<td>Greater Athens</td>
<td>15,812</td>
<td>9.54</td>
</tr>
<tr>
<td>Sterea Hellas - Evia</td>
<td>5,605</td>
<td>3.38</td>
</tr>
<tr>
<td>Peloponnesus</td>
<td>6,221</td>
<td>3.75</td>
</tr>
<tr>
<td>Ionian Islands</td>
<td>2,725</td>
<td>1.64</td>
</tr>
<tr>
<td>Epirus</td>
<td>16,098</td>
<td>9.71</td>
</tr>
<tr>
<td>Thessaly</td>
<td>16,097</td>
<td>9.71</td>
</tr>
<tr>
<td>Macedonia</td>
<td>72,618</td>
<td>43.81</td>
</tr>
<tr>
<td>Thrace</td>
<td>18,166</td>
<td>10.96</td>
</tr>
<tr>
<td>Aegæan Islands</td>
<td>3,233</td>
<td>1.95</td>
</tr>
<tr>
<td>Crete</td>
<td>6,007</td>
<td>3.62</td>
</tr>
<tr>
<td>Not declared</td>
<td>3,187</td>
<td>1.93</td>
</tr>
<tr>
<td>Total</td>
<td>165,769</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: National Statistical Service of Greece (NSSG), 1981
Macedonia and Peloponnesus. Macedonia contributes 44 per cent to European emigration against 36 per cent to all destinations for the 1970-1974 period and 41 per cent against 29 per cent respectively for the 1975-1977 period. Peloponnesus presents the opposite trend. Its contribution to all destinations emigration is 7.5 per cent against 3.8 per cent to Europe during the 1970-1974 period and 7.1 per cent against 3.0 per cent respectively during the 1975-1977 period. Comparing the data presented in both Tables 1.17 and 1.18, one may conclude that migrants originating from the northern regions of Greece (Macedonia-Epirus-Thrace-Thessaly) prefer European migration relative to transoceanic destinations. The reason for this is the proximity of Northern Greece to Western Europe and the ease of transportation. For example, the cost of a journey from Macedonia to West Germany was almost equal to that from Macedonia to Athens during the seventies.

Table 1.19 depicts the distribution of migrants according to the classification of regions into urban, semi-urban and rural during the 1971-1977 period. As one may observe, emigration from urban areas increased from 34.8 per cent in 1971 to 41.1 per cent in 1977. The contribution of rural areas decreases from 51.9 per cent in 1971 to 34.9 per cent in 1977. Finally, emigration from semi-urban regions decreases from 10.6 per cent to 7.4 per cent during the 1971-1977 period. This development is explained by the mass internal migration, 'urbanisation', which took place during the sixties and seventies (Papageorgiou, 1973; Kasimati, 1984). A great number of Greeks first moved from rural areas to urban centres and then went abroad. Unger did research in 1980 among 600 return migrants from West Germany and he proved that the regions which suffer large out-migration had above the average:

(i) increase of population during the fifties
(ii) percentage of people over 65 years old
(iii) number of illiterate people
(iv) unemployment and under-employment
(v) employment in the primary sector.

They also had a lower than average percentage of employers and employees.
<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Urban</th>
<th>Semi-urban</th>
<th>Rural</th>
<th>Not declared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>People</td>
<td>%</td>
<td>People</td>
<td>%</td>
<td>People</td>
</tr>
<tr>
<td>1971</td>
<td>61,745</td>
<td>21,473</td>
<td>6,851</td>
<td>10.6</td>
<td>32,019</td>
</tr>
<tr>
<td>1972</td>
<td>43,397</td>
<td>15,583</td>
<td>4,083</td>
<td>9.4</td>
<td>22,157</td>
</tr>
<tr>
<td>1973</td>
<td>27,525</td>
<td>10,758</td>
<td>2,411</td>
<td>8.6</td>
<td>12,576</td>
</tr>
<tr>
<td>1974</td>
<td>24,448</td>
<td>10,786</td>
<td>2,147</td>
<td>8.8</td>
<td>9,523</td>
</tr>
<tr>
<td>1975</td>
<td>20,330</td>
<td>9,713</td>
<td>1,594</td>
<td>7.8</td>
<td>7,373</td>
</tr>
<tr>
<td>1976</td>
<td>20,374</td>
<td>9,539</td>
<td>1,613</td>
<td>7.9</td>
<td>6,999</td>
</tr>
<tr>
<td>1977</td>
<td>16,510</td>
<td>6,786</td>
<td>1,217</td>
<td>7.4</td>
<td>5,757</td>
</tr>
</tbody>
</table>

Source: National Statistical Service of Greece (NSSG), 1981
Based on the above, he classifies regions according to the number of migrants during 1960-1980 relative to their population. Thesprotia was first followed by Serres, Drama, Preveza, etc.

1.5.3 Demographic Characteristics of Emigrants

The sex composition of migrants presents a familiar development over time. In the early years of emigration migrants consisted of young adult workers, mostly men, who moved abroad seeking a job. In later years the composition of migrants changed with the inclusion of wives and family members joining migrant workers in the countries of settlement. Table 1.20 shows the demographic characteristics of emigrants for the 1955-1977 period. The percentage of males per 100 migrants concerning emigration to all destinations was 62 for the 1955-1964 period and 55 for 1965-1974. The corresponding percentages concerning European emigration are 73.5 for the 1955-1964 period and 57 for 1965-1974. The percentage for the 1975-1977 period is 60 for both total and European emigration.

As far as the age distribution of emigrants is concerned, the greatest proportion of migrants belong to the 15-44 age group, the most productive age group (Table 1.20). The proportion varies between 89 per cent and 71 per cent during the 1955-1977 period. This constitutes one of the main losses of the sending country, since it loses the most dynamic and healthy component of its population. Figure 1.15 depicts the emigration of Greek labour force as a percentage of emigrants' population to West Germany during the 1960-1982 period. During the 1960s labour force emigration varies between 96 per cent and 70 per cent of the total emigrant population, while after 1971 it decreased, reaching a minimum of 20 per cent in 1976. Since it has risen again to reach a peak of 35 per cent in 1981.

67.
Table 1.20

Demographic Characteristics of Emigrants, 1955-1977

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of emigrants</td>
<td>143,769</td>
<td>396,300</td>
<td>389,211</td>
<td>249,796</td>
<td>57,214</td>
</tr>
<tr>
<td>Average number each year</td>
<td>28,754</td>
<td>79,260</td>
<td>77,842</td>
<td>49,959</td>
<td>19,041</td>
</tr>
</tbody>
</table>

*Distribution by sex*

(a) Men

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>88,841</td>
<td>249,586</td>
<td>213,460</td>
<td>139,411</td>
<td>34,282</td>
</tr>
<tr>
<td>Men %</td>
<td>61.8</td>
<td>63.0</td>
<td>54.8</td>
<td>55.8</td>
<td>59.9</td>
</tr>
<tr>
<td>Women</td>
<td>54,928</td>
<td>146,714</td>
<td>175,751</td>
<td>110,385</td>
<td>22,932</td>
</tr>
<tr>
<td>Women %</td>
<td>38.2</td>
<td>37.0</td>
<td>45.2</td>
<td>44.2</td>
<td>40.1</td>
</tr>
</tbody>
</table>

*Distribution by age*

(a) 0-14 years

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14 years</td>
<td>18,772</td>
<td>23,533</td>
<td>45,047</td>
<td>40,362</td>
<td>6,973</td>
</tr>
<tr>
<td>0-14 years %</td>
<td>13.0</td>
<td>5.9</td>
<td>11.6</td>
<td>16.2</td>
<td>12.2</td>
</tr>
<tr>
<td>15-44 years</td>
<td>112,679</td>
<td>352,520</td>
<td>314,205</td>
<td>189,588</td>
<td>40,547</td>
</tr>
<tr>
<td>15-44 years %</td>
<td>78.4</td>
<td>89.0</td>
<td>80.7</td>
<td>75.9</td>
<td>70.9</td>
</tr>
<tr>
<td>45-over</td>
<td>12,318</td>
<td>20,247</td>
<td>29,959</td>
<td>19,354</td>
<td>9,694</td>
</tr>
<tr>
<td>45-over %</td>
<td>8.6</td>
<td>5.1</td>
<td>7.7</td>
<td>7.9</td>
<td>16.9</td>
</tr>
</tbody>
</table>

Source: National Statistical Service of Greece (NSSG), 1981
1.5.4 Economic Activity of Males

During the 1959-1964 period, similar arguments were about 50 per cent, with the exception of the first years, when the proportion increased to about 52 per cent. However, the proportion of the active male population and workers increased continuously, and the percentage of those groups was highest in 1970. Thereafter, the percentage of working men and workers increased to 54 per cent in 1975.

In summary, the percentage of working men and workers increased continuously during the period under consideration. However, the percentage of working men and workers exceeded 50 per cent only in the years 1970 and 1975. The percentage of working men and workers in 1970 was 53 per cent, and it increased to 54 per cent in 1975. The percentage of working men and workers in 1975 was 54 per cent, and it decreased to 53 per cent in 1976.

Figure 1.15

EMIGRATION
L.FORCE AS PERCENTAGE OF POPULATION

Legend
△ total population
× l. force

Source: German Ministry of Labour.
1.5.4 Economic Activity of Emigrants

During the 1955-1977 period the proportion of economically active migrants was about 50 per cent of the total migrant population, with the exception of the five-year period 1960-1964 when the proportion was increased to 67.4 per cent. This difference is due to the mass emigration towards West Germany during the first half of the sixties (Table 1.21). The distribution by professional groups indicates that almost all migrants were previously farmers and workers. The percentages of migrants belonging to the above two categories prior to their departure vary. For example, during 1955-1964 there were fewer farmers, while between 1965-1969 they exceeded workers (1965-1969). During the 1970-1974 period both categories approached 40 per cent. After 1974 the percentage of workers exceeded that of farmers.

Available data concerning the occupational distribution of migrants in the receiving countries are not satisfactory. Small surveys regarding different nationalities reveal that most migrants are employed in manufacturing in low status jobs. Castles and Kosack (1973) reveal that 83 per cent of Greek men workers in West Germany were employed in manufacturing in 1969 (Table 1.22). The same percentage (84 per cent) of women workers were also employed in manufacturing. Research undertaken by the Greek Embassy in Bonn (1978) among 2,000 Greek migrant workers, concludes that 80 per cent of them were semi-skilled or unskilled workers. Other nationalities have similar percentages of semi-skilled or unskilled workers (Paine, 1974; Völker, 1973; Bohning, 1975). This fact, in relation to the small percentage of semi-skilled and unskilled German workers, confirms the argument that foreign workers covered not only the great shortage of labour generally but mainly the sectors in which Germans were unwilling to be employed.
Table 1.21

Economic Characteristics of Emigrants, 1955-1977

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of People</td>
<td>%</td>
<td>Number of People</td>
<td>%</td>
<td>Number of People</td>
</tr>
<tr>
<td><strong>1. Migrants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Economically active migrants</td>
<td>143,769</td>
<td>100.0</td>
<td>396,300</td>
<td>100.0</td>
<td>389,211</td>
</tr>
<tr>
<td>(b) Non-active migrants</td>
<td>72,147</td>
<td>50.2</td>
<td>267,246</td>
<td>67.4</td>
<td>198,831</td>
</tr>
<tr>
<td><strong>2. Economically active</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution by profession:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Technical professions</td>
<td>72,147</td>
<td>100.0</td>
<td>267,246</td>
<td>100.0</td>
<td>198,831</td>
</tr>
<tr>
<td>(b) Administrative and managerial workers</td>
<td>3,511</td>
<td>4.9</td>
<td>5,153</td>
<td>1.9</td>
<td>4,041</td>
</tr>
<tr>
<td>(c) Clerical workers</td>
<td>1,305</td>
<td>1.8</td>
<td>2,199</td>
<td>0.8</td>
<td>3,285</td>
</tr>
<tr>
<td>(d) Sales workers</td>
<td>21,767</td>
<td>30.2</td>
<td>54,182</td>
<td>20.3</td>
<td>99,087</td>
</tr>
<tr>
<td>(e) Agricultural workers</td>
<td>30,950</td>
<td>42.8</td>
<td>178,004</td>
<td>66.6</td>
<td>77,087</td>
</tr>
<tr>
<td>(f) Technicians</td>
<td>3,083</td>
<td>4.3</td>
<td>6,972</td>
<td>2.6</td>
<td>5,595</td>
</tr>
<tr>
<td>(g) Services</td>
<td>8,508</td>
<td>11.8</td>
<td>13,464</td>
<td>5.0</td>
<td>3,232</td>
</tr>
</tbody>
</table>

Source: National Statistical Service of Greece (NSSG), 1981
Table 1.22

Greek Employees in West Germany
by Occupation and Sex, 1969

<table>
<thead>
<tr>
<th>Employees</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>100,261</td>
<td>7,080</td>
</tr>
<tr>
<td>% in industry</td>
<td>83.4</td>
<td>84.4</td>
</tr>
</tbody>
</table>

**Industrial branches**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallurgy</td>
<td>41.9</td>
<td>27.4</td>
</tr>
<tr>
<td>Construction</td>
<td>6.0</td>
<td>-</td>
</tr>
<tr>
<td>Textile</td>
<td>9.0</td>
<td>17.6</td>
</tr>
<tr>
<td>Electrical equipment</td>
<td>10.7</td>
<td>21.4</td>
</tr>
<tr>
<td>Other manufacturing</td>
<td>15.8</td>
<td>18.0</td>
</tr>
<tr>
<td>Other sectors</td>
<td></td>
<td>7.8</td>
</tr>
<tr>
<td>Public services</td>
<td></td>
<td>4.7</td>
</tr>
<tr>
<td>Private services</td>
<td></td>
<td>3.1</td>
</tr>
</tbody>
</table>

*Source: Castles and Kosack, 1973 (p.72)*
1.5.5 Education Level of Emigrants

There is almost a complete lack of data concerning the education level of Greek emigrants. The only information covering the 1963-1965 period is given by the Ministry of Labour. According to this data (Table 1.23) about 90 per cent of the male emigrants are illiterate or graduates of primary school. In particular, the percentage of illiterates varies between 6 per cent and 13 per cent for this period. The educational level of women is even lower.

The research undertaken by Unger (1980) provides almost the same results. It indicates that 70 per cent of those questioned were graduates of primary school, 10 per cent graduates of high school and 20 per cent illiterate. It is obvious that the educational level of emigrants was very low compared with the rest of the Greek population. This is a very important element for the economic and social position of migrants in the host country. Without education and technical skills the majority of them had to accept low status jobs.

1.5.6 The Morphology of Repatriation

As we have already seen, the return migration flow started with low numbers in 1960 and continued to increase reaching a peak during the 1967-1968 period, providing net repatriation for this period. It also exceeded emigration during the 1973-1980 period. Unfortunately, the National Statistical Service of Greece provides data on return migration only for the 1968-1977 period, during which 237,500 people returned, 50 per cent of them from West Germany. The percentage of males was 55 per cent, almost the same as that of emigrants during the period 1965-77. However, in age distribution there are differences between emigrants and repatriated migrants (Table 1.24). The biggest percentage (64 per cent) of repatriated migrants is in the 15-44 age group, but the corresponding percentage of emigrants belonging to this group is higher, approaching 81 per cent. About 19 per cent of repatriated migrants are over 45 years old, while only 7 per cent of emigrants belong to this category. 60 per cent
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>2,524</td>
<td>3,777</td>
<td>1,747</td>
<td>1,477</td>
<td>643</td>
<td>834</td>
<td>952</td>
<td>173</td>
<td>779</td>
</tr>
<tr>
<td>Primary school graduates</td>
<td>33,779</td>
<td>32,861</td>
<td>10,918</td>
<td>35,911</td>
<td>25,758</td>
<td>9,553</td>
<td>28,411</td>
<td>15,788</td>
<td>12,623</td>
</tr>
<tr>
<td>Technical school graduates</td>
<td>526</td>
<td>497</td>
<td>29</td>
<td>638</td>
<td>593</td>
<td>45</td>
<td>284</td>
<td>272</td>
<td>12</td>
</tr>
<tr>
<td>Secondary school graduates</td>
<td>2,902</td>
<td>2,174</td>
<td>728</td>
<td>2,318</td>
<td>1,882</td>
<td>436</td>
<td>1,609</td>
<td>1,205</td>
<td>404</td>
</tr>
<tr>
<td>University graduates</td>
<td>95</td>
<td>71</td>
<td>24</td>
<td>62</td>
<td>48</td>
<td>14</td>
<td>68</td>
<td>60</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>39,826</td>
<td>32,380</td>
<td>13,446</td>
<td>40,406</td>
<td>28,924</td>
<td>10,882</td>
<td>31,324</td>
<td>17,498</td>
<td>13,826</td>
</tr>
</tbody>
</table>

Source: Kollarou and Mousourou, 1980
Table 1.24
Demographic and Economic Characteristics of Returning Migrants

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of People</td>
<td>%</td>
<td>Number of People</td>
</tr>
<tr>
<td>1. Distribution by sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Men</td>
<td>37,015</td>
<td>100.0</td>
<td>121,657</td>
</tr>
<tr>
<td>b. Women</td>
<td>19,655</td>
<td>53.1</td>
<td>66,710</td>
</tr>
<tr>
<td></td>
<td>17,360</td>
<td>46.9</td>
<td>54,947</td>
</tr>
<tr>
<td>2. Distribution by age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 0-14 years</td>
<td>37,015</td>
<td>100.0</td>
<td>121,657</td>
</tr>
<tr>
<td>b. 15-44 years</td>
<td>23,515</td>
<td>63.5</td>
<td>78,442</td>
</tr>
<tr>
<td>c. 45-over</td>
<td>7,488</td>
<td>20.2</td>
<td>21,426</td>
</tr>
<tr>
<td>3. Distribution by activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Active</td>
<td>19,385</td>
<td>52.4</td>
<td>66,224</td>
</tr>
<tr>
<td>b. Non-active</td>
<td>17,630</td>
<td>47.6</td>
<td>55,433</td>
</tr>
<tr>
<td>From Active:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Free and technical professions</td>
<td>1,420</td>
<td>7.3</td>
<td>4,137</td>
</tr>
<tr>
<td>b. Administrative and managerial workers</td>
<td>268</td>
<td>1.4</td>
<td>562</td>
</tr>
<tr>
<td>c. Clerical workers</td>
<td>547</td>
<td>2.8</td>
<td>1,842</td>
</tr>
<tr>
<td>d. Sales workers</td>
<td>1,257</td>
<td>6.5</td>
<td>2,999</td>
</tr>
<tr>
<td>e. Agricultural workers</td>
<td>745</td>
<td>3.9</td>
<td>2,332</td>
</tr>
<tr>
<td>f. Technicians</td>
<td>13,590</td>
<td>70.1</td>
<td>48,476</td>
</tr>
<tr>
<td>g. Services</td>
<td>776</td>
<td>4.0</td>
<td>2,478</td>
</tr>
<tr>
<td>h. Non-stated professions</td>
<td>782</td>
<td>4.0</td>
<td>3,398</td>
</tr>
<tr>
<td>4. Distribution by region of origin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Overseas countries</td>
<td>37,015</td>
<td>100.0</td>
<td>121,657</td>
</tr>
<tr>
<td>b. European countries</td>
<td>9,890</td>
<td>26.7</td>
<td>34,946</td>
</tr>
<tr>
<td>(West Germany)</td>
<td>22,742</td>
<td>61.4</td>
<td>78,580</td>
</tr>
<tr>
<td>c. Mediterranean countries</td>
<td>2,513</td>
<td>6.8</td>
<td>3,575</td>
</tr>
<tr>
<td>d. Non-stated</td>
<td>1,870</td>
<td>5.1</td>
<td>4,556</td>
</tr>
<tr>
<td>5. Distribution by place of destination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Greater Athens</td>
<td>5,436</td>
<td>30.0</td>
<td>31,179</td>
</tr>
<tr>
<td>b. Sterea Hellas-Evia</td>
<td>517</td>
<td>2.9</td>
<td>3,985</td>
</tr>
<tr>
<td>c. Peloponnesus</td>
<td>1,528</td>
<td>8.4</td>
<td>8,225</td>
</tr>
<tr>
<td>d. Ionian Islands</td>
<td>350</td>
<td>1.9</td>
<td>2,284</td>
</tr>
<tr>
<td>e. Epirus</td>
<td>747</td>
<td>4.1</td>
<td>5,897</td>
</tr>
<tr>
<td>f. Thessaly</td>
<td>683</td>
<td>3.8</td>
<td>6,724</td>
</tr>
<tr>
<td>g. Macedonia</td>
<td>5,285</td>
<td>29.1</td>
<td>40,510</td>
</tr>
<tr>
<td>h. Thrace</td>
<td>938</td>
<td>5.2</td>
<td>6,604</td>
</tr>
<tr>
<td>i. Aegean Islands</td>
<td>779</td>
<td>4.3</td>
<td>5,438</td>
</tr>
<tr>
<td>j. Crete</td>
<td>316</td>
<td>1.7</td>
<td>2,931</td>
</tr>
<tr>
<td>k. Non-stated</td>
<td>1,553</td>
<td>8.6</td>
<td>7,880</td>
</tr>
</tbody>
</table>

Source: National Statistical Service of Greece (NSSG), 1981
of the repatriated migrants were economically active; 80 per cent of these were workers or technicians.

It is interesting to note the professional evolution of the repatriated workers. From sociological research (Kollarou and Mousourou, 1980) among 500 repatriated migrants from West Germany it appears that 33 per cent of them are housewives, 28 per cent are employed in the agricultural sector, 20 per cent are employers, 13 per cent are unemployed, and only 6 per cent are workers in industry. From the same research we have another piece of information: 46 per cent of those questioned have the same occupation which they had before emigration.

Surveys show that the emigration-return migration scheme does not contribute substantially to the acquisition of skills. However, it contributes to the adjustment of a large part of the labour force to the working conditions and to the urban life of an industrialised society. The proportion of returning migrants settling in urban areas decreased from 51.5 per cent in 1971 to 43 per cent in 1975 (Table 1.25). About 22 per cent of the repatriated workers settled in the area of Greater Athens during the 1968-1977 period. About 55 per cent preferred rural areas where they could work as unskilled workers. From Unger's (1980) research it appears that the regions which mostly attract the repatriated migrants are:

(i) Regions which suffered little decrease of population during the sixties.

(ii) Regions which have a semi-urban character.

(iii) Regions which have a small proportion of illiteracy and are not experiencing high unemployment.

(iv) Regions which have a better social structure (health service, schools, other services).

According to the above criteria, the regions which attract the most immigrants are: Drama, Thesprotia, Evros, ...; at the bottom of the table are Cyclades, Fokida, Arcadia. From a comparison of the origin of emigrants and the place of settlement of returnees, it appears that regions which experienced great emigration have had
Table 1.25

Return Migration of Greeks by Areas of Settlement

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Number</th>
<th>Urban Number</th>
<th>Urban %</th>
<th>Semi-Urban Number</th>
<th>Semi-Urban %</th>
<th>Rural Number</th>
<th>Rural %</th>
<th>Non-declared Number</th>
<th>Non-declared %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>24,709</td>
<td>12,715</td>
<td>51.5</td>
<td>2,018</td>
<td>8.2</td>
<td>8,629</td>
<td>34.9</td>
<td>1,347</td>
<td>5.4</td>
</tr>
<tr>
<td>1972</td>
<td>27,522</td>
<td>13,323</td>
<td>48.4</td>
<td>2,364</td>
<td>8.6</td>
<td>9,728</td>
<td>36.3</td>
<td>2,107</td>
<td>7.6</td>
</tr>
<tr>
<td>1973</td>
<td>22,285</td>
<td>10,163</td>
<td>45.6</td>
<td>1,794</td>
<td>8.1</td>
<td>8,154</td>
<td>36.6</td>
<td>2,174</td>
<td>9.7</td>
</tr>
<tr>
<td>1974</td>
<td>24,476</td>
<td>10,939</td>
<td>44.7</td>
<td>2,210</td>
<td>9.0</td>
<td>9,835</td>
<td>40.2</td>
<td>1,492</td>
<td>6.1</td>
</tr>
<tr>
<td>1975</td>
<td>34,214</td>
<td>14,740</td>
<td>43.1</td>
<td>3,028</td>
<td>8.8</td>
<td>14,926</td>
<td>43.6</td>
<td>1,520</td>
<td>4.4</td>
</tr>
<tr>
<td>1976</td>
<td>32,067</td>
<td>14,915</td>
<td>46.5</td>
<td>2,876</td>
<td>8.9</td>
<td>12,286</td>
<td>38.4</td>
<td>1,990</td>
<td>6.2</td>
</tr>
<tr>
<td>1977</td>
<td>12,572</td>
<td>6,350</td>
<td>50.5</td>
<td>1,013</td>
<td>8.0</td>
<td>4,049</td>
<td>32.2</td>
<td>1,160</td>
<td>9.2</td>
</tr>
</tbody>
</table>

*Source:* National Statistical Service of Greece (NSSG), 1981
large numbers of immigrants. These characteristics of return migration have the following effects:

(a) It adds to the unequal composition of the population by age caused by out-migration.
   The repatriated migrants over 45 years old distort the age distribution of the total population.

(b) If return migration continues at the same or higher rate the already existing unemployment problem will deteriorate.
   From the Kollarou and Mousourou research (1980), it emerges that unemployment among immigrants is higher now than at the time of emigration.
   By all indications we may assume that the repatriated workers have acquired low skills (usually a few days training on the job) or they remain unskilled which means that they cannot cover the needs in skilled technical personnel of the country.

(c) The remittances will be decreased.

(d) The country must face the problem of reintegration of migrants and especially of their children.

1.6 The Push and Pull Factors of Greek Emigration and Return Migration

The developments above pose the following questions:
(a) What were the causes for the mass Greek emigration? (b) Why did large scale net emigration turn into net repatriation in such a short time?

The main reasons advanced for mass emigration to West Germany, as with emigration to other Western European countries, are classified as the push factors (high unemployment and low wages in Greece) and the pull factors (full employment, unfilled vacancies in low skill jobs and high wages in the receiving country). On the part of Greece, the 'push' factors consist of:
(a) High unemployment and under-employment during the first two decades of the post-war period. The proportion of unemployment was 6.5 per cent and 5.7 per cent according to the censuses of 1951 and 1961 respectively. Figure 1.16 shows the unemployment ratios for Greece and West Germany for the period 1960-1982. Official statistical data on unemployment ratios for Greece cover the period 1974-1982. Because of this lack of data for the previous years we have used estimations of unemployment ratios, which have been derived by backwards extrapolation and present a considerably high level of forecasting accuracy (Karavitis, 1986). Estimates for the years 1961, 1971 coincide with the figures derived by the censuses. From 1960 up to 1974 the unemployment rate in Greece exceeds its counterpart in West Germany. The same difference is observed during the 1980-1981 period.

(b) The defective ratio of wages between Greece and West Germany was about 1 to 3. Figure 1.17 shows the evolution of wages in Greece and West Germany expressed in US dollars for the period 1960-1982 for manual workers. It concerns minimum wages for Greece (collectively agreed) and average wages for West Germany. The other two figures (Figures 1.18 and 1.19 (national income per capita, in market prices and GDP per capita in market prices)) show the same gap in the development of these variables between Greece and West Germany. It is evident that since 1960 the gap is continuously increasing.

(c) Short distance from West Germany.

(d) Worse working conditions in Greece when compared to those prevailing in West Germany.

(e) Regional inequalities within Greece which are also responsible for the unremitting movement of Greek population from the countryside to the peripheries of the largest cities (see Appendix A1).
Figure 1.16

UNEMPLOYMENT

Legend
△ F.R.G
× GREECE

UNEMPLOYMENT RATIO

0 2 4 6 8

YEARS

Sources: Dresdner Bank (various years); Karavitis, 1986.
Figure 1.17

Wages in U.S $ 1960–1982
daily

Legend

△ FRG
× GREECE

Sources: Babanasis, 1982; Statistiches Taschenbuch, 1985.
Figure 1.18

National income per head in market prices

Legend

△ FRG
× GREECE

Sources: Dresdner Bank; Bank of Greece.
GDP per head, current market prices

Source: Dresdner Bank; Bank of Greece.
(f) Encouragement of the emigration to Western Europe and assistance by the Greek government.

On the part of West Germany, the 'pull' factors are:

(a) High demand for foreign labour, because of rapid economic development and the shortage in some occupations.\(^{(15)}\)

(b) A preference for Greeks (and other Mediterranean workers) by West German enterprises.

(c) The operation in Greece of a recruiting office of the German Committee for Migration.

The reversal of the migratory flow was caused by the significant socio-economic developments which took place in Greece and West Germany. Economic and social progress in Greece has been faster than in the developed countries of Western Europe. In the last thirty years real wages have risen by an average of 4.5 per cent annually, working hours have been reduced by about 11 per cent, while working conditions have been improved considerably. Also, the rapidly expanded social security system now covers all sections of the population. Figure 1.20 indicates the wage index (base year 1975) for hourly (real) earnings in manufacturing for the period 1960-1982 for both Greece and West Germany. The same development is presented in Figure 1.21 which indicates the wage index for nominal minimum wages (collectively agreed) in Greece and wages (collectively agreed) in West Germany for the same period. From both figures the faster increase in Greek wages relative to West German wages is also obvious. However, the big gap in nominal/real earnings remains and increases as we have already seen.

As the pattern of migration was transformed from temporary to more permanent, immigrants claimed larger shares of public goods and services. This development, associated with the economic recession, led the receiving country to a reversal of its immigration policy. Migrants, facing restrictions and a growing unemployment rate which
Figure 1.20

HOURLY EARNINGS IN MANUFACTURING
1975=100

YEARs

Legend
△ F.R.G
× GREECE

Sources: Bank of Greece; Statistisches Taschenbuch (various years)
Figure 1.21

Wage index, manual
1976=100

Legend

△ FRG
× GREECE

Sources: Babanasis, 1982; Statistisches Taschenbuch, 1985.
exceeded the unemployment rate of the indigenous population (Figure 1.22) after 1973, decided to return home, creating the mass repatriation flow of the last decade.

1.7 Assessing the Costs of Greek Emigration

One of the possible benefits of emigration to sending countries is the relief from unemployment (although this only really happens if it claims the unskilled and unemployed labour). Given the way the system has evolved, however, the advanced industrial countries recruit the better educated and qualified and the most dynamic, healthy and productive part of the LDC's applicants for emigration. Furthermore, and more significantly, through what has been described as a "skimming off" and a "double selection out" process (Baucic, 1974), in addition to the outright rejection of between 30 per cent to 40 per cent of the applicants, importers after the initial year abroad only renew the contracts of the 'best' among foreign workers. This 'selectivity' of the labour importers causes severe hardships to the sending countries. It is obvious that qualified workers are badly needed and there is a severe shortage in the less developed countries. Sending countries have also made a very substantial investment in the upbringing and education of qualified workers on which they have no return. Finally, because of the limited supply, some of the positions held by emigrating qualified workers are likely to be taken by less qualified workers.

During the peak of Greek emigration, 80 per cent of her newly trained apprentices emigrated within six months of the completion of their training courses (Filias, 1975). In Turkey, authorities have expressed considerable concern for the cost of training workers who eventually emigrate (Paine, 1974). All sending countries are disturbed by the depletion of their meagre supplies of qualified workers and, as Berry and Soligo (1972) state, "The emigration of skilled workers whose education has been paid for by non-emigrants will lower the welfare of the latter group". An ILO report (1973/74) concludes that, "labour migration ... does virtually nothing to help the development of the sending countries. In fact, in some ways
Unemployment in F.R.G.

Legend

- Germans
- Greek migrants

Sources: Dresdner Bank; Statisches Jahrbuch (FRG).
the situation comes near to being development aid in reverse".

On the other side, the vision that large numbers of trained migrants returning home after relatively short periods abroad will help the economic metamorphosis of the mother country is consistently proving to be just an illusion. In reality, the majority of those who return either have failed to make an adjustment to the new environment ("return of failure", Cerase, 1974), or not only have they failed to acquire new skills but they have acquired skills which are irrelevant to the home countries, which usually lack heavy and advanced industries. Some of the remaining returnees opt for marginal tertiary activities in large urban centres, aggravating the senders' already severe structural and sectoral distortion. The rest, dismayed by the low salaries and social esteem still accorded to industrial occupations and frequently shunned by employers who prefer local workers (presumably less mobile), feel compelled to either join others in marginal service activities or re-emigrate.

Research (16) among return migrants in the islands of Rhodes and Corfu during the period 1971-1973 confirms the above. The majority of migrants in the sample have not acquired any occupational skills or vocational training abroad. Only a few of them have learned a craft, for example, in the building trade. The non-acquisition of vocational training by migrants is due to the fact that the German government and the firms which employ them do little about such training. In Rhodes and Corfu the industrial experience of returnees is of no use to them, due to the lack of industry in these two areas and also because the only kind of employment migrants do not seem to consider after return is industrial work. This is because they consider it to be of low status. However, their experience abroad, their fair knowledge of the language, as well as their apprenticeship to a craft, has helped a significant number of returnees in Corfu and Rhodes to obtain better paid jobs in tourism and construction. Thus, the expectation that returning emigrants will have acquired the occupational skill to effect the economic metamorphosis of their countries has been little more than a myth. As in its 1975 report, the OECD concluded, "... in general emigration per se does not improve
the quality of the labour force in the sending country".

Another benefit to the sending countries from emigration is the remittances of emigrants. However, the controversy surrounding the assessment of the effects of remittances and transfer of savings is not easily resolved. Although everyone concedes that they constitute an excellent source of needed foreign currency and play a crucial role in the sending countries' balance of payments, some of their economic consequences are rather distressing. From 1960 to 1971 the total sums sent by Greeks living abroad and for which there is no future foreign exchange liability correspond to about eight per cent of GDP. These were equivalent to slightly more than the foreign exchange earnings from total merchandise exports (OECD, Economic Survey, Greece, 1978) (Figure 1.23). But remittances and transferred funds are usually expended injudiciously, in a manner which, from society's view is uneconomical, unproductive and often wasteful. The report from the research in Rhodes and Corfu notes that the main uses of the migrants' savings are:

(a) To enlarge, modernise, build or buy a house, sometimes in urban areas, but, more frequently, in the area of origin.

(b) To buy land.

(c) To buy agricultural and other kinds of machinery.

(d) To set up a small business or commercial establishment (shop, bar, restaurant).

(e) To buy cars and motorcycles for private or business use.

For those who tried to establish a small business there is little chance that they will be successful, so one can say that in these two areas the productivity of the migrants' savings when invested is very small.

Apart from such under-utilisation of the productive potential of remitted or repatriated wealth, however, the infusion of such substantial sums of hard currency into the labour sending economies has a variety of negative, though unforeseen and unintended, consequences.
Figure 1.23

REMITTANCES OF GREEK MIGRANTS IN W. GERMANY

Source: Bank of Greece.
In Greece the remittances, which the OECD estimates to have raised domestic demand by about one third, have been an important cause of cost inflation since the early 1970s.\(^{(18)}\) The high proportion of the funds used for property purchases and new housing construction greatly contributed to an increase in real estate prices and this led to pressure for higher wages and salaries. Furthermore, the high rate of return in real estate and the associated speculation has diverted capital and entrepreneurial initiative away from productive ends ... notably manufacturing activities (OECD, 1978).

The favourable 'arithmetic' effect of remittances in financing visible trade deficits in the short run is one of the benefits to the sending countries. This should not disguise the fact that dependence on remittances as a major source of foreign exchange may have serious disadvantages, especially in the longer term. Firstly, the volume of remittances cannot be guaranteed. The economies of LECs could be seriously disrupted when economic recession in LICs cause large falls in remittances. Secondly, large-scale emigration and the associated remittances have fostered complacency and have delayed the introduction of those economic policies which are desirable for long-term development. In Greece they have "masked the need to deal fully with the structural problems of industry and give rise to a wider-based industrial sector, better product diversity and a faster pace of endogenous growth" as an OECD (1981) report states.

Another little noticed but significant social, economic, and political consequence of migration arises from a provision routinely included in most bilateral agreements. Under such a provision the sending country is obliged to accept all returning emigrants - regardless of the reason for their release. Since migrants are usually perceived by labour receivers as an economic commodity, the sender's apprehensions that the importer may decide to dump the migrants on their respective countries of origin, thus in effect exporting their unemployment, seem to gain more substance. An area of emigration liabilities involves the demographic erosion of populations as we have already seen. Finally, another source of costs resulting from out-migration concerns the problems the migrants'
children (second generation migrants) face growing between two different cultures and languages (OECD, 1967).

1.8 Assessing the Expected Benefits of Emigration

As we have already stressed, remittances and transferred savings are two crucial variables for the economic development of the sending country. Unfortunately, in the case of Greece, remittances have not been used in productive activities. They have failed to create employment and increase output, except for marginal cases where remittances and transferred savings were used in the tourism industry creating employment opportunities and contributing to an increase of per capita income of a few regions.

A second group of gains is the significant savings the country of origin realises from the relief from maintaining some of its unemployed and creating new jobs. Generally, it may benefit from the relief of some of the pressure on the domestic labour market and the social welfare infrastructure (Zolotas, 1966).

A third expected gain of emigration appears to be based on a disputed argument. It asserts that emigration will result in a decline in consumption and a relief of inflation pressure. The evaluation of this assertion requires that we have to distinguish between short- and long-term effects of emigration. In the short term, emigration tends to reduce aggregate demand and, provided that there is enough labour supply, does not increase wages in the sending country. In the long term, however, remittances tend to fuel demand for goods (most of them imported) while some seasonal shortages in certain types of skill may cause wages to rise (Böhning, 1976).

A usually overlooked advantage of emigration is the substantial though temporary relief of the sending country from some of the socio-political pressures for their immediate developmental transfer into the ranks of the 'developed' nations. Since the group with the highest employment difficulties are the young persons who are trying
to enter the labour market, emigration, whether it draws directly on them or, by drawing on the other groups, provides the opportunity for employment for this highly volatile group, offers the sending country an important indirect benefit (Slater, 1977).

Of course, one of the most important benefits from emigration to the sending countries is the relief of unemployment. In order for this to happen, emigration must absorb either the unemployed or people with skills easily replaced by others. If this does not happen, the country may suffer a decline in production and income as a result of the loss of its most productive and most skilled labour force. Unfortunately, conclusions on the relief of unemployment in Greece due to emigration cannot be made because of lack of data concerning unemployment for most of the time period examined (1960-1974). However, several economic studies (Paine, 1974; Krane, 1975; Straubhaar, 1985) have concluded that there is no significant correlation between emigration and unemployment. Potential migrants are more likely to be employed and they cannot easily be replaced by another group of similarly skilled workers.

Another equally significant benefit is the gain in human capital from the skills acquired by returning migrants while abroad (Kaysser, 1972). Empirical observation reveals that the great majority of emigrants are in low status jobs which require no skills, and in some cases they undergo a training course for only a few days before starting their new jobs. A survey conducted in 1977 among 200 returned migrants from West Germany residing in Athens shows that most of the migrants (80 per cent) had no marketable skills when they left Greece and even more (85 per cent) reported that they had failed to acquire such skills in West Germany. Of the 30 who had acquired skills, only 13 had been able to find employment utilising them (Comitas and Bernard, 1978). Reports from other Mediterranean countries also indicate that the number of skilled returned migrants is very low, supporting the argument that the most skilled migrants have remained in the host countries and making the argument of expected benefit for the sending countries a doubtful one (Stahl, 1982).
Footnotes

(1) Firstly to the USA and Canada, and then to Australia.

(2) From 1903-1917 one per cent of Greece's population was migrating every year to the USA (National Statistical Service of Greece, 1981).

(3) This was the case in the Federal Republic of Germany during the 1948-1961 period when immigration was taking place from East Germany (Owen Smith, 1983).

(4) In the event of unemployment, while foreign workers do have a production effect, the welfare effect becomes 'negative'. The recipient economy only receives the profits from the production of the employed immigrants. However, if that production had been generated by unemployed residents, it would have received the profits and the wages paid to the residents.

(5) Because of the different approaches used in the above reported studies, direct comparisons of results are difficult and sometimes conflicting. Empirical results should be considered as orders of magnitude only.

(6) The model used assumes a closed economy.

(7) In France between 1962-1966 the net yield on capital rose more in those sectors where migrants represented ten per cent or more of the labour force than in those with a lower proportion (Bouguignon and Gallais Hamonno, 1977).


(9) A number of these foreigners did not return home.

(10) FRG Statistical Service, 1983.
(11) Note that because of the civil war (1947) a number of political refugees went to the Soviet Union and Eastern European countries. According to recent data (Center of Planning and Economic Research, 1985) there are 53,500 political refugees of whom about 19,500 have returned.

(12) Emigration policies of the Greek government and the moderation of the country's unemployment are also noteworthy considerations.

(13) September 1977.

(14) Unfortunately, the available data from the National Statistical Service of Greece cover only this period.

(15) See Table 1.4 and Figures 1.18 and 1.19.


(17) The reason is the continuous decline in the population of the rural areas, at least until 1981.

(18) It is also responsible for an increase in imports.
APPENDIX A1

The unremitting movement of Greek population from the countryside to the urban centres, called astyphilia (runaway urbanisation), is due to conditions endemic to most less-developed countries, such as: limited amounts of arable land and the consequent small amount of arable land per active farmer; low rates of return on agricultural labour; inadequate mechanisation of agriculture; socio-economic and cultural isolation leading to deterioration of the countryside; and the lack of health and social services in small towns and villages (Fragos, 1975; Fillias, 1967).

Another feature that is of great relevance to the study of Greek out-migration is the imbalance in the country's regional development. Evangelides (1975) concluded that Athens exhibits very incongruent social, economic and cultural levels of development compared to the rest of Greece, thus constantly reinforcing the latter's independence on Athens and contributing to the persistent penetration of the periphery's social values and cultural institutions by those of Athens. This condition has been further aggravated by the consistent focusing of most technical innovations and significant industrial initiatives in the Athens region, a situation that precludes the effective diffusion of economic development to the periphery and compounds the periphery's stagnation (Papapeorgiou, 1975). The severity of this uneven development becomes evident when regional data on employment and per capita income are examined (Tables A1.1, A1.2, Figure A1.1). Uneven development is at the very centre of internal and subsequent international migration. In fact, the former is one of the strongest accelerators of the latter because it exacerbates many of the conditions that fuel international migration (Papademetriou, 1979).
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>East Sterea and Islands</td>
<td>3.38</td>
<td>5.29</td>
<td>8.85</td>
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<td>Central and West Macedonia</td>
<td>1.76</td>
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<td>-10.44</td>
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<td>Crete</td>
<td>-1.78</td>
<td>-4.57</td>
<td>-6.27</td>
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<td>Epirus</td>
<td>-2.20</td>
<td>-6.38</td>
<td>-8.43</td>
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<tr>
<td>Thrace</td>
<td>-1.63</td>
<td>-7.89</td>
<td>-9.39</td>
</tr>
<tr>
<td>Aegean Islands</td>
<td>-6.37</td>
<td>-12.94</td>
<td>-18.48</td>
</tr>
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Source: Ministry of National Economy, 1979
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<tr>
<th>Regions</th>
<th>1970</th>
<th>1974</th>
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<tbody>
<tr>
<td>East Sterea and Islands (Greater Athens)</td>
<td>36,644</td>
<td>65,095</td>
</tr>
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<td>Central and West Macedonia</td>
<td>27,305</td>
<td>54,852</td>
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<td>Peloponnesus and West Sterea</td>
<td>24,293</td>
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<td>Thessaly</td>
<td>22,378</td>
<td>46,180</td>
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<tr>
<td>East Macedonia</td>
<td>21,438</td>
<td>44,939</td>
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<tr>
<td>Crete</td>
<td>22,516</td>
<td>46,637</td>
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<tr>
<td>Epirus</td>
<td>18,924</td>
<td>40,031</td>
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<tr>
<td>Thrace</td>
<td>17,808</td>
<td>36,674</td>
</tr>
<tr>
<td>Aegean Islands</td>
<td>21,944</td>
<td>38,437</td>
</tr>
</tbody>
</table>

Source: Ministry of National Economy, 1979
The division of the country into nine economic regions has been made by the Ministry of National Economy and differs from that made by the Statistical Service of Greece (Figure 1.14).

1. East Sterea and Islands
2. Central and West Macedonia
3. Peloponnesus and West Sterea
4. Thessaly
5. East Macedonia
6. Crete
7. Epirus
8. Thrace
9. Aegean Islands
2.1 Introduction

This chapter aims to provide the necessary theoretical background for the modelling of migration. The consideration of the economic philosophy of Classical, Neo-classical, Keynesian, Marxian and Human Capital theories gives the opportunity to identify migration in the context of each theory. Because of the different approaches followed by each philosophy in defining migration, the determinants as well as the expected effects of migration vary from one theory to another. The chapter is concluded with a critique which discusses the weakness of each approach and thus establishes the framework for modelling migration.

2.2 The Classical School

The term 'classical' and the related terms of 'classical political economy' or 'classical school' are used with different meaning by various authors. Marx first used the terms 'classical political economy' and 'classical authors' in his Capital (Vol.I) (1867). These authors, according to Marx, analysing the value of goods, distinguish the use value of goods, which comes from the required amount of labour for their production, from the exchangeable value which corresponds to the amount of 'social labour' embodied in the goods (Theocharis, 1979). The list of classical authors, according to Marx, starts in England with Sir W. Petty, includes Steuart and Adam Smith, and comes up to D. Ricardo. In France, it starts from Boisguillebert, includes Physiocrats, and it proceeds through to Sismonodi (Doumas and Pouliopoulos, 1926). Other authors such as Malthus, Say and J.S. Mill, who are usually referred to as 'classical' do not belong in this category, according to Marx.

According to Keynes, the term 'classical school' covers those authors who follow David Ricardo and accept Say's law (Keynes, 1936). The classical formulation of Say's law states that supply calls forth
its own demand. In other words, according to Mill, the act of production itself creates a level of income sufficient to purchase all that has been produced. The aggregate value of income payments is identical to the value of all things produced for sale, so the income is sufficient to demand all that is supplied. Therefore, according to Keynes, among the classical authors are included J.S. Mill, A. Marshall and Edgeworth, also Pigou because of his views which are contained in his book, The Theory of Unemployment (1933). In contrast, authors such as Malthus, who recognises the possibility of the existence of insufficient total demand, are not included among the 'classical authors'.

In general, the established view is that the term 'classical' must be used to describe a group of British economists which starts from Adam Smith and comes up to John Stuart Mill. We shall follow this latter view. The basic kernel of the classical school consists of two authors: Adam Smith and David Ricardo (Blaug, 1985; Theocharis, 1979).

2.2.1 The Economic Philosophy of Classicists

Classical economics is fundamentally the economics of producer capitalism, which began in England and Western Europe and spread to other areas of the world. The Industrial Revolution brought important changes in economic and social structures as small shops were replaced by large units of production and animals and men by machines. The cities grew and the farms were enlarged. The increased productivity of agriculture provided labour for the factories and food for the non-agricultural population. These events mixed with English economic theory (mercantilism), French economic theory (physiocracy) and English political theory, had an important influence on the formation of classical political economy.

The main economic problem for the classicists, as it had been for the mercantilists, was to find the best way to increase the wealth of a nation. By the early part of the nineteenth century some new economic problems concerning the distribution of income had appeared
which classical theory attempted to explain. One difference between the classical school and that of most mercantilists was the assumption that for the most part competitive markets exist and within these markets factors of production move freely to advance their economic advantage. Another was the assumption that a natural order exists in society which is superior to any arrangements devised by man. It was believed that there is a natural harmony in society which rules the economic relationships and the adaptation towards the natural order can be achieved only with the existence of free competition. Man is rational and driven by self-interest. If left alone he will follow his own self-interest, and in promoting his own self-interest he promotes that of society. The government should not interfere in this process and should therefore follow a policy of *laissez-faire*.

The key to understanding how harmony and good come from self-interest and conflict is in the activities of the capitalists. The capitalists view the market for final goods and produce the goods which people desire in order to increase their revenues. Capitalists will bid for the various factors of production, offering higher prices for the more productive thus channelling labour and land into those areas where their efficiency is greater. Consumers direct the economy by their money votes in the market and changes in their desires are shown in rising and falling prices, and thus in rising and falling profits. In the terminology of modern economics, an optimum allocation of resources occurs in competitive markets without government intervention. Free markets will result in a maximum per capita income at a given point in time and a maximum rate of growth in per capita income over time. The role of government was restricted to provide for national defence, build and maintain roads and schools, administer justice and keep vital records. Smith recognises the government provision of goods whose social benefits are great but which are not supplied by the private sector because supplying them is not sufficiently profitable (Smith, 1937).
2.2.2 The Basic Macro-economic Ideas of Classicists

As we already know, the centre of analysis of the classical school is the idea of economic growth. The major question was, what determines the wealth of a nation? What we today call the income of a nation. Smith says that the wealth of a nation depends upon: (i) the productivity of labour, and (ii) the proportion of labourers who are usefully or productively employed. Since he assumes that the economy will automatically achieve full employment of its resources, he examines only those factors that determine the capacity of the nation to produce goods and services. But after a long discussion, despite his first suggestions, he concludes that capital is the chief determinant of the wealth of nations.

Smith's own summary of this reasoning (Smith, 1937) is:

"The annual produce of the land and labour of any nation can be increased in its value by no other means, but by increasing either the number of its productive labourers, or the productive powers of those labourers who had before been employed. The number of its productive labourers, it is evident, can never be much increased, but in consequence of an increase of capital or of the funds destined for maintaining them. The productive powers of the same number of labourers cannot be increased, but in consequence either of some addition and improvement to those machines and instruments which facilitate and abridge labour; or of a more proper division and distribution of employment. In either case additional capital is almost always required."

The result of this reasoning is clear: the present wealth of a nation depends upon capital accumulation, which determines the division of labour and the proportion of the population engaged in productive labour. Smith also concludes that capital accumulation also leads to economic development.

The second macro-economic prospect was that they accepted Say's law. In England, the people most responsible for popularising Say's law were a small group of political economists associated with the famous economist David Ricardo. But what is described as Say's law had been developed during the classical period to a whole series of relative prospects on that thesis with major contributions by J.B. Say and James Mill (Baumol, 1977; Theocharis, 1979). These
prospects can be classified into two categories:

(i) Prospects which are described as Say's Identity.
(ii) Prospects which are described as Say's Equality.

Say's Identity states that the supply of a quantity of goods automatically means demand of another group of goods of equal value at the market. Under these conditions excess supply of goods cannot exist. The total nominal value of the supplied goods is always equal to the total nominal value of the demanded ones.

Say's Equality states that short periods of excess supply can exist thus unemployment can appear but it supports the view that there are sufficient powers which will equalise aggregate demand to aggregate supply.

James Mill, Say and other classical economists presented three arguments to claim that competition in the capitalist system always restores full employment at equilibrium (by equilibrium they mean that supply equals demand). First, they asserted that if supply of goods was temporarily greater than demand, this imbalance would quickly be cured by competition. Under competitive conditions the excess supply of output would cause prices to drop. At the new lower prices, demand would automatically rise to equal the supply. Second, it was claimed that all income not spent for consumption would always be invested. If more money were saved than invested, competition among lenders would cause the rate of interest to fall. Furthermore, a lower rate of interest stimulates investment, which rises until it equals savings. Thus the total spending for consumption and investment would always rise to equal the total amount of goods produced. The third and final classical argument is that, even if prices do not drop and the supply of goods is temporarily excessive, this causes only temporary unemployment. The unemployment causes competition among workers, which leads to lower wages. The lower wages stimulate capitalists to demand more labour, which restores full employment.
Therefore the classical economists concluded that the capitalist system would automatically restore full employment with stable prices after any temporary dislocation. The above presuppose that all buyers and sellers have perfect information, act rationally, are able to move without cost and meet no monopoly barriers in any market (Sherman and Evans, 1984).

From the above it is obvious that money has a neutral role according to classical economists. Its role is to make easier the transactions. For them it is without meaning to hold money as a reserve of value.

2.2.3 Basic Micro-economic Ideas of the Classical School

The micro-economic ideas of classical economists are concentrated around two closely related poles. The first pole emanates from the classical theory of value and the second pole is the law of diminishing returns of land. The classicists (with the exception of Say, who stresses the demand side) assert that the major factor for the determination of the value of goods comes from the side of supply and consists of production cost.

With respect to the first pole, the production cost is determined differently by various classical authors. For a group which follows Ricardo the production cost, and therefore the source of value, consists of the human labour consumed for the production of the good. Capital is considered as accumulated labour and the part which is spoiled during production is described as another form of labour. Land is not considered to contribute to the value of the good because the value is estimated from the marginal production and for the classicists of this group there is no return on land at the limit. For another group which follows Smith, the production cost, and therefore the source of value, consists of the amount of the various co-operated factors which are consumed for the production of the good. These factors are labour physical resources and capital to which Say added the entrepreneur (Theocharis, 1979). The value of each good is compared with the value of other goods and in this way
the relative values are found. The relative values expressed in money terms give the equilibrium prices of goods which classicists name 'natural prices'. The market price of a good is determined according to existing supply and demand conditions and it may be different to the natural price. However, the profits or losses which are created will rapidly lead to the adaptation of production and to the return of the market price in the equilibrium level.

The second pole is the law of diminishing returns to land. The principle of diminishing returns states that if one factor of production is steadily increased while the others are held constant the rate at which the total product increases will eventually diminish (Landreth, 1976). The classicists suggest that despite technical progress the restricted area of arable land leads to a diminishing return of the cultivated land. The law of diminishing returns will play a major role in the development of classical economic theory. This law is the basis of the Population theory of Malthus and of Ricardo's theory on differential returns of land.

2.2.4 Classical Thoughts on Emigration

The classical economists considered emigration as part of their concern in the policies for Ireland and the colonies. The situation which confronted successive British governments in Ireland was an extremely daunting one. A population of more than 8,000,000 (before the famine) was largely composed of landless peasants living at a very low level of physical subsistence (the main dietary item was the potato).

The land question was crucial. The classical economists saw that landless peasants without capital were bidding rents far above their economic level in order to survive. Many of them (Torrens, Ricardo, Senior, McCulloch) saw the introduction of English large-scale capitalist farming into Ireland as the solution. Other economists (J.S. Mill, Scrope) were strongly in favour of the substitution of peasant proprietorship for the landlord-tenant relationship, at least for parts of the island.
Writers of both groups tended also to favour emigration as a solution to Ireland's problems. Population had outrun both capital and subsistence. J.S. Mill regarded this as a very "second best" solution. In the third edition of his Principles, Mill wrote,

"Self-supporting emigration ... has, for the present, reduced the population down to the number for which the existing agricultural system can find employment and support ... justice requires that the actual cultivators should be enabled to become in Ireland what they will become in America - proprietors of the soil which they cultivate."

Classical economists had also been concerned with the colonies and colonial policy. They had to confront a series of problems concerning the costs of control and the real gains which the mother country was to receive from them. The question was, if the mother country should either wholly integrate the colonies into the United Kingdom or emancipate them (O'Brien, 1975). With the growth of concern over the population problem, a new belief came in favour of colonies as an outlet for surplus population. Many economists (McCulloch, Torrens, Senior) expressed their support for state-financed emigration.

On the other hand, Malthus, Ricardo and James Mill worried about the expenditure of capital on the emigration scheme that would leave the population/capital ratio and wages in the same position as before. This view was, however, met by the argument that even in this case labour was being transferred from a margin of low to a margin of high productivity, thus enabling capital accumulation to proceed quickly and repair the loss. Torrens, in private communication with Horton, writes,

"Now for a Classical Economist the obvious answer to this kind of argument would have been to invoke the law of diminishing returns if the emigrant were transferred from a margin of low to a margin of high productivity, then certainly someone would gain at both ends; and if as would seem to follow from the classical theory of Value and Distribution the immediate gain was to the capitalists then it was arguable that further accumulation would take place and funds destined for the maintenance of labour
Both Torrens and J.S. Mill made use of this argument.

Clearly, we may conclude that most classical economists saw emigration as a means to solve the problems of over-population, unemployment and poverty. They recognised that the migrants would be much more productive in their new land and thus there would be gains for them and for the mother country. They expected that the level of physical subsistence of the total population would be increased but they preferred to use emigration as a "second best" tool after other measures had failed to provide a solution.

2.3 The Neo-classical School

In the period following Ricardo, classical economic theory and the capitalistic system itself were under criticism by humanists and socialists. These criticisms disputed the classical presumption that laissez-faire was an ideal governmental policy. One of the most important post-Ricardian developments was the contradiction between Ricardo's theory and the actual operation of the British economy. In particular, increases in population happened along with a rise in the income of the masses, while empirical evidence refuted Malthus' (1798) population theory.

In the period 1870 to 1900 a new set of analytical tools was forged which gave micro-economics much of its present content. The last quarter of the nineteenth century was so important in the development of modern economics that some writers of the history of economic thought call this period the "marginal revolution" (Theocharis, 1980; Backhouse, 1985). The new analytical tool, marginal analysis, was the application of differential calculus to the behaviour of the household, the firm, and to price determination in the market. In the early 1870s three economists (Jevons-Menger-Walras) independently applied marginal analysis to demand theory and they developed the concept of marginal utility. By the 1890s a
number of economists developed the concept of marginal productivity of factors. In 1890, Alfred Marshall (1842-1924), who can be recognised as an originator of this new analysis, used all these concepts to develop a complete theory of household, firm and markets (Rees, 1979). The neo-classical school starts basically from Marshall and the authors who follow the 'Marshallian Tradition' are considered to belong to the neo-classical school. The characterisation of Marshall's analysis as 'neo-classical' is due to his effort to combine the classical tradition with marginal analysis and this is the reason why he is considered as the father of neo-classicism (Landreth, 1976; Lekachman, 1964).

Since the neo-classical school partly relies on classical analysis, important similarities are to be expected but there are also important differences. As we have seen, the centre of classical analysis is the idea of Economic Growth. Its basic object of consideration is the evolution through time of aggregate variables as income or its distribution. The purpose of micro-economic theory for the classical school is to assist macro-economic analysis. The classical approach is thus "macrodynamically" (Theocharis, 1980; Schumpeter, 1954). In contrast, the neo-classical school concentrates its analysis on the micro-economic field. Thus, orthodox economic theory from 1870 to 1930 ignored macro-economic questions. Within the area of micro-economic theory, the new analysis was principally applied to the way in which competitive markets allocated scarce resources among alternative uses. Furthermore, neo-classical analysis is static in contrast with the time horizon which the classicists consider. Another difference between the classical and neo-classical school is that while the former combines theory with policy ("political economy"), the neo-classical authors try to present the theory as pure science which is applicable independently of space and time.
2.3.1 Neo-classical Theory of Migration

The neo-classical theory of migration is based on the proposition that the labour supply is oriented toward employment which maximises the net benefits of the 'consumer-worker'. Under the strictest assumptions of short-run neo-classical-static equilibrium theory, the existence of real wage differentials among regions provides the only inducement for economic migration to take place (Richardson, 1969). The short run is defined in the usual manner, that is autonomous investment is not allowed sufficient time to affect the size of the capital stock.

The important assumptions of the neo-classical model are:

1. Individualism of the worker. The behaviour of every member of a household is independent from the behaviour of other members of the household. Households produce only in the labour market.

2. Utilitarian behaviour of the worker. Workers have perfect knowledge of the conditions which prevail at the labour market (in time and space) and the information costs are zero. Workers move automatically at zero cost, attracted by marginal differences in wages between labour markets. Each worker can choose between zero wage (voluntary unemployment) and the wage which prevails at the labour market. Non-income factors, like psychic income, influence the worker's preferences (Richardson, 1978).

3. Competition in product and labour markets. Competition exists in both the product and the labour market. There is a large number of producers (employers) and of consumers (workers) and no-one can influence the market (labour-product) by their actions.

The increase of labour supply at market (1) is possible either by a wage increase or by a benefit (psychic income) increase from employment at region (1) (Figure 2.1). It is assumed that the
Figure 2.1

\[ \frac{w_1 + u_1}{w_2 + u_2} \]

Labour supply $s_1$
Labour supply $s_2$
cross elasticity of demand between wage and psychic income equals one, therefore the equilibrium condition between two alternative employments is:

\[ w_1 + u_1 = w_2 + u_2 \quad \text{or} \quad w_1 - u_2 = w_2 - u_1 \]

where: \( w_i \) = real wage and \( u_i \) = non-income factors (i : 1, 2).

Thus, for similar jobs under different conditions (\( u_1 \neq u_2 \)), equalisation of wages is by assumption impossible. At the macro-economic level, the integration implies: (Branson, 1973)

(a) Homogeneity of labour \( L = \sum E_i \) and therefore of psychic income.

(b) Homogeneity of capital \( K = \sum K_i \) and therefore of work conditions.

(c) Homogeneity of regions and therefore of condition of place of settlement. All regions face the same aggregate demand function.

The difference in wages because of different employment conditions is impossible. If \( u_1 = u_2 \) for each worker, the equilibrium condition is \( w_1 = w_2 \) and thus

\[ \frac{s_1}{s_2} = \frac{w_1}{w_2} \quad (s_i : \text{labour supply}; \ i : 1, 2) \]

Therefore: migration from region (i) to (j) is a function of the wage ratio:

\[ m_{ij} = f \left( \frac{w_i}{w_j} \right) \quad \text{(Eq. 2.1)} \]

The neo-classical theory of migration is based on the Heckscher-Ohlin theorem. But here one of the assumptions has been reversed (Ohlin, 1933). Thus, inter-regionally there is perfect mobility of the production factors, and zero mobility of products (Mundell, 1957). From the side of cost production we assume that there exist:
A. A production function with all the neo-classical properties assumed.

\[ Y = a_0 L^{a_1} K^{a_2} \]  

(Eq. 2.2)

where:  \( a_0 > 0; \ a_i > 0; \ L > 0; \ K > 0 \) and

\[ a_1 + a_2 = 1 \]  (constant returns of scale)

The marginal product of labour is determined from the capital labour ratio:

\[ \frac{\partial Y}{\partial L} = a_o a_1 L^{-1} a_2 K = a_o a_1 L^{-1} (1-a_1) K^{-(1-a_1)} \]

\[ \Rightarrow \frac{\partial Y}{\partial L} = a_o a_1 \frac{K^{(1-a_1)}}{L} = a_o a_1 \frac{K}{L}^{1-a_1} \]  

(Eq. 2.3)

In the case of perfect competition we have \( \frac{\partial Y}{\partial L} = w \),

where \( (w) \) is the real wage rate.

Substituting into Eq. 2.2, we get the following demand function for labour:  (Kintis, 1973)

\[ w = a_o a_1 \frac{K}{L}^{1-a_1} \]  

(Eq. 2.4)

It is also assumed that

\[ \frac{\partial^2 Y}{\partial L^2} = a_1 \frac{(a_1-1)}{L} \frac{Y}{L} < 0 \]  

(Eq. 2.5)

and thus  \( a_1 < 1, \ a_2 < 1 \).

This is in accordance with the fundamental neo-classical theorem according to which: the marginal physical product of each factor is a decreasing function of its quantity employed.

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B. Homogeneous production functions between two regions are assumed.

C. Zero transport costs are assumed as well as zero information costs in order to ensure the direct movement of labour everywhere its marginal productivity is higher.

D. Equivalent production functions exist in all areas in order to isolate the effect of different technology on the \( \frac{K}{L} \) ratio (Richardson, 1969).

Given that migration is assumed to be a function of the wage difference between two regions, the effects of demand for labour \( D_L = MPL \cdot P = W \) or \( MPL = \left( \frac{W}{P} \right) = D_L \) through the product prices (when labour is needed for its production) are isolated assuming equivalent demand functions for the products respectively. Equivalent functions of demand and production determine equivalent prices of similar product and therefore the differentiation of \( P_i \) and \( P_j \) is impossible. According to the above, between two regions (i) and (j):

\[
\begin{align*}
\bar{s}_i &= f\left( \frac{W}{P} \right)_i \quad \text{(Eq. 2.6)} \\
\bar{s}_j &= f\left( \frac{W}{P} \right)_j \quad \text{(Eq. 2.7)}
\end{align*}
\]

for a given difference \( \left( \frac{W}{P} \right)_j - \left( \frac{W}{P} \right)_i \), the labour supply function between the two regions will be:

\[
\bar{s}_j - \bar{s}_i = f\left( \frac{W}{P} \right)_j - f\left( \frac{W}{P} \right)_i \quad \text{(Eq. 2.8)}
\]

Towards the region where there is a positive wage difference. Under equilibrium, we have:

\[
MPL_i = MPL_j = f\left( \frac{W}{P} \right)_i = f\left( \frac{W}{P} \right)_j = f\left( \frac{K}{L} \right)_i = f\left( \frac{K}{L} \right)_j
\]
Based on the above assumptions, the model expects movement of labour from the region with lower $\frac{K}{L}$ to the region with higher $\frac{K}{L}$ until their equalisation, i.e.

$$MPL_i = MPL_j, \left(\frac{K}{L}\right)_i = \left(\frac{K}{L}\right)_j$$

The assumption about homogeneous labour supply has as a reasonable consequence the homogeneity of the labour force and therefore it presupposes a permanent constant relation between labour force and population. As a consequence, migration of labour force and migration of population are equivalent in the neo-classical model of migration.

2.3.2 Consequences of Migration under the Neo-classical Point of View

According to neo-classical economic theory (Salvatore, 1982), inter-regional flows of labour and capital should benefit both origin and destination regions. The reasoning is as follows. Suppose we had two regions that were completely isolated (no inter-regional factor mobility or trade), that we had only two homogeneous factors (L and not K) and that one region had a much higher $\frac{K}{L}$ ratio than the other; then the first region would have a higher marginal productivity of labour and therefore lower returns on capital than the second region (assuming that the same technology is used in both regions).

If we allowed for perfect mobility of factors, difference of the ratio $\frac{K}{L}$ will cause two opposite streams of migration. Labour will flow in and capital will flow out in region one. As a result of these resource flows, the supply of L would increase and the demand (or productivity of L) would fall in region one. These would cause the return to labour to fall and the return to capital to rise in region one. In region two the exact opposite would take place. This would continue until the return to the homogeneous factor labour and capital was exactly the same in region one and in region two. In other words, migration of the two factors will stop when:

$$w_1 = w_2 \text{ and } r_1 = r_2 \text{ and therefore } \frac{K_1}{L_1} = \frac{K_2}{L_2}$$

where: $w_{1,2}$: return to labour

$r_{1,2}$: recompense of capital
The result is that the more developed region is assured of an adequate supply of labour as well as an outlet for some of its capital to be invested in the less developed (and capital poorer) region where returns on capital might be higher. The poorer region also benefits by being relieved of its surplus labour and from receiving capital inflows. These cause its real wages, incomes and standard of living to rise. Additional benefits to the less developed region result from emigrants' remittances and by the skills acquired by returning migrants.

Moving further, the neo-classical theory concludes that migration of factors may lead to the equalisation of per capita incomes between the two regions. Defining the product of the region \((X)\) as:

\[
X = rK + wL \Rightarrow \frac{X}{L} = \frac{rK}{L} + \frac{wL}{L} = \frac{rK}{L} + w
\]

and given the equilibrium conditions \(w_1 = w_2\), \(r_1 = r_2\) and \(\frac{K_1}{L_1} = \frac{K_2}{L_2}\), and the assumption of labour force homogeneity which enables us to consider a permanent relation between labour force and population \((N)\) of each region, we may write:

\[
\frac{X_1}{L_1} = \frac{X}{L_2} \Rightarrow \frac{X_1}{N_1} = \frac{X_2}{N_2}
\]

which means that a reasonable consequence of the neo-classical theory is the equalisation of per capita incomes between the two regions.

The opposite point of view to neo-classical theory is held by Myrdal (1957), Hirschman (1958) and others. According to them, the net effect of the operation of the market mechanism is detrimental to the development of an under-developed region. In Myrdal's words:

"...migration, capital movements and trade are rather the media through which the cumulative process evolves upwards in the lucky regions and downward in the unlucky ones. In general if they have positive results for the former, their effects on the latter are negative."
With regard to emigration, Hirschman states:

"... Northern progress may denude the South (the poor region) of its key technicians and managers as well as the more enterprising young men ... It becomes almost a certainty that the South will lose to the North first and foremost its more highly qualified people."

The movement of capital also has a deleterious effect on the less developed regions: (Myrdal, 1957)

"Capital movements tend to have a similar effect of increasing inequality. In the centres of expansion increased demand will spur investment ..., in the other regions the banking system, if not regulated to act differently, tends to become an instrument for siphoning off the savings from the poorer regions to the richer and more progressive ones where returns on capital are high and secure."

Opposing these harmful Backwash and Polarisation Effects, there might be some beneficial Spread Effects on the poorer region emanating from the possible investments in the region and the absorption of some of the unemployment, which may raise the marginal productivity of labour and per capita consumption levels of the region. However, both Myrdal and Hirschman believe that the overall effect of the inter-regional movement of labour (and capital) is deleterious to the development of the poorer and less dynamic region.

Both neo-classical analysis and the diametrically opposite views held by Myrdal and Hirschman have a number of serious short-comings. Neo-classical analysis is based on several implicit assumptions which usually do not hold completely and sometimes not even approximately in the real world, as will be shown below. Myrdal's and Hirschman's theory faces even more serious short-comings than the neo-classical theory. The thesis that emigration of all workers whether employed or unemployed, skilled or unskilled, is detrimental to the development of the poor region, the ignorance of the additional burden of sustaining unemployed or under-employed workers for the region, and the lack of any indication of the steps or techniques to be followed in order to apply the theory to concrete
cases make doubtful the validity of their theory.

2.3.3 Critique of the Neo-classical Model

The neo-classical model predicts that under a regime of inter-regional real wage differences, the labour force will migrate from low wage regions to high wage regions. This conclusion is based on several crucial assumptions.

First, the framework of the model is static. But migration is a dynamic phenomenon and it is related to all possible changes of economic variables in both regions of origin and destination. An improvement of the model regarding this assumption is discussed in Chapter Three.

Second, the assumption of perfect knowledge of labour market conditions is in contrast with reality and the uncertainty with which the worker views his future. Distance between regions of origin and destination, lack of information, or the high cost of acquiring this information concerning the conditions prevailing in the labour market at the region of destination, make perfect knowledge almost impossible.

Also, the assumption about zero transportation costs is obviously not realistic. Transportation costs play a significant role in the migration decision, limiting the number of possible destination areas only to those which are a certain distance away from the region of origin.

Fourth, the assumption of perfect competition prevailing in both labour and product markets is not a realistic one. The existence of internal economies of scale in production allows the existence of monopolistic conditions and prevents the creation of full employment conditions. The existence of external economies has, as a result of the concentration of firms and population in certain areas, created conditions of disequilibrium between regions. The existence of non-continuous production functions eliminates the
possibility of factor substitution for a given change of their relative prices, obstructing the full employment of factors. The heterogeneity of labour is an additional reason for the existence of a non-competitive labour market. There are differences in the quality of labour supply between regions due to differences in skills and in the composition of the labour force by age and sex.

Finally, wage differences between regions may not be the reason for migration in the case of unemployed people, where the acquisition of a job is the first target of the potential migrant. Many people also migrate for reasons unrelated to wage differentials, searching for a good climate or a nice, quiet environment (Cebula, 1979).

2.4 The Keynesian Model of Migration

The title 'Keynesian' does not attribute the paternity of the model to Keynes (Blaug, 1985; Weintraub, 1981). The title derives from the theoretical thought of the Keynesian economists who identified structural unemployment, which constitutes the main explanatory variable of migration. Post-Keynesians (such as Joan Robinson, Michael Kalecki, Piero Sraffa, Sidney Weintraub) see the institutions of capitalism themselves leading to recessions and depressions as well as to inflation. The investigation of these internal mechanisms of the system which lead to our major problems of inflation and involuntary unemployment (declared impossible by Say's law) is central to the work of this school of thought. The post-Keynesians assert that John Maynard Keynes also agrees with their position (Arestis and Scouras, 1985).

John Maynard Keynes attacked Say's law in detail using the respectable academic tools of the classical and neo-classical economists. In his most famous book written at the depths of the Great Depression, Keynes (1936) showed that the equilibrium level of the economy might be either at a point of heavy unemployment or at excessively full employment and inflation (Demopoulos, 1977). Keynes (and later Keynesians) agreed that if certain institutional
forces fixed wages at a level that was too high (above what would be the equilibrium level), unemployment might occur. In the original Keynesian analysis this was not the only potential cause of unemployment. Keynes, in his comment on Pigou's (1933) model, rejects the classical version of the demand for labour. He agrees with the classical economists that the demand for labour is partially determined by the real-wage rate and productivity, but he concedes that it is also partially determined by the demand for output. Thus, where the classical economists say that labour demand is a function of labour marginal productivity, Keynes says that it is also a function of aggregate demand. Although the productivity of labour has a considerable impact upon the demand for labour equally, if not more important, is the role of the expectations of businessmen about sales of the products that are manufactured by labour. If expectations about sales are optimistic (and there exist falling inventories), entrepreneurs will tend to increase the demand for labour. If forecasts of future prospects are rapidly reversed, the demand for labour might suddenly collapse.

Neo-classical economists conclude that the appearance of unemployment means that the workers are getting a wage above the market level. The workers could be fully employed if they would accept a lower wage. Keynes, however, does not concede that lower wages will restore full employment. In the classical model, the nominal aggregate demand is a monetary phenomenon, determined by the product of money times velocity in the equation of exchange. Keynes did not accept this view; he believes that money is either spent or held for liquidity purposes (Demopoulos, 1977; Branson, 1973). Aggregate demand is determined by the level of spending by businesses, the government and consumers. Since the income of the latter group is determined mostly by wages earned, any variation in the wage rate will affect aggregate demand. Under the right circumstances it would cause aggregate demand to drop. Lowering wages will not necessarily cure unemployment: it might cause unemployment to rise.
In fact, there are two separate effects. Lower wages for all workers will increase product per unit of labour cost, so it will increase employment if output demanded remains the same. This effect is discussed by all neo-classical economists and by all business people as an argument for lowering wages. But lower wages for all workers will also reduce output demanded, which will reduce employment if productivity remains the same. Keynes said that if the demand effect is greater, the net effect of a reduction in wages will be a reduction in employment (which will further reduce aggregate wages and aggregate demand). Keynes emphatically argued that, in considering the behaviour of the economy, one must always consider the impact of aggregate demand. Coming back to our model, we may conclude that the main assumption is that wages are inelastic downwards or that the aggregate demand, for reasons except inelastic wages, is inadequate to ensure full employment in one or more regions.

2.4.1 The Case of Rigidity in Money Wage Rates

Given that migration considered in the framework of economic development is a long-term phenomenon, the problem that arises is if the prices of goods and services of the production factors can be considered inelastic in the long term so that excess labour supply is possible to exist in the long term. The percentage of excess labour supply at a given wage level above the equilibrium level between supply and demand of labour is defined as involuntary unemployment (Demopoulos, 1977). In Figure 2.2, unemployment is defined as the quantity \( Q_D Q_S \) or \( \frac{S-D}{S} > 0 \). In this case the real supply curve is \( W_1 AS \).

The usual explanations for the existence of the portion \( W_1A \) which is characterised by infinite elastic labour supply, are imperfections of the labour markets, which include among others the following: (Branson, 1973)
Figure 2.2

Diagram showing money wage and employment relationships.
(a) Imposition of the views of the labour unions in regard to the wage level.

(b) The money illusion which prevails among workers and results in a denial of the compression of nominal wages downwards.

(c) Insufficient operation of the price mechanism regarding the distribution of information about the existing wage level and the prospect of changing it.

The latter problem is connected with the existence of a time lag between the alteration of the labour market conditions and the adaptation of labour supply to these conditions. We must note that it is doubtful if unemployment, which is determined by the above factors, may constitute an explanatory variable of migration, given that these factors may only affect the labour market in the short run. The reasons for this situation are: First, long time unemployment weakens the power of labour unions to impose their views. Second, the money illusion cannot continue for a long time while income is decreased because of unemployment. Third, the time needed for the labour supply to be adapted to changes of labour market conditions cannot be too long.

2.4.2 The Case of Structural Imperfections and Dynamic Alterations in the Labour Market

The case of structural imperfections concerns the structure of product markets (a). The case of alterations concerns alterations of active demand and of technology (b, c).

(a) The existence of monopolies at the product market connects the demand for labour not to the marginal product of labour but to the marginal revenue from the product of labour. According to Figure 2.3, given a wage level \( W_1 \), employment is \( OL_1 \) and not \( OL_2 \) because the demand for labour curve is not the marginal product of labour curve, but the curve of the marginal revenue from labour (Layard and Walters, 1978). For the given wage level \( W_1 \), employment is \( OL_1 \) and not \( OL_2 \). For labour supply \( W_1E \), unemployment is equal to \( L_1L_2 \).
Figure 2.3
(b) A decrease of active demand has meaning in the long run because of the decrease, for example, of external demand for the product of the region. The decrease of employment and the existence of unemployment has meaning also in the case of elastic wages downwards for a given portion of the labour supply curve. In this case, a decrease of wages means a decrease of active demand too, at a percentage bigger than that of wages and therefore the creation of unemployment \[ L_1 E \] (Figure 2.4). We must notice that a necessary presupposition for the creation of unemployment is the existence of the infinitely elastic portion of supply in the labour supply curve.

(c) In this case a decrease of the demand for labour is due to a change of the production technology which becomes more capital intensive technology. Thus we have a result of both a shift of the labour demand curve and a change of the slope of the curve (Figures 2.5 and 2.6).

The existence of structural unemployment which corresponds to the above three cases (monopolistic structure of the product market, dynamic decrease of active demand and change of technology) is consistent with the long-term character of migration (Stonier and Hague, 1972). The assumption of unemployment is therefore possible to be formulated in a model which determines migration as the following:

\[
m_{ij} = f \left( \frac{U_j - U_i}{d_{ij}} \right)
\]

(Eq. 2.9)

where: \( w_{ij} \) is the migration of the labour force, while unemployment is stated as a percentage of unemployed to the total labour force. The term \( d_{ij} \) concerns the distance (d) between place of origin (i) and place of destination (j). Destination constitutes an approximate variable of the following: First, the degree of uncertainty which confronts the worker making the decision to migrate or not; and where to regarding the employment opportunities in the potential destination regions. Second, the transportation cost of those unemployed between region of origin (i) and region (regions) of destination (j). Third, the cost regarding the acquisition of...
Figure 2.4
Figure 2.5

money wage

W₁

employment

D₁

D₂

D₃

S

0
information in relation to the employment possibilities at the region of destination (j). The prediction of the direction of migration according to the above model will be a move from regions with high unemployment rates to regions with low unemployment rates.

2.4.3 Consequences of Emigration - the Keynesian Point of View

In contrast to the neo-classical theory, emigration may have negative effects on the economic development of the region of origin or even the region of destination as a result of the different assumptions which Keynesian theory accepts. More specifically, Keynesian theory accepts: (a) that equilibrium is possible even under conditions of permanent under-employment (Keynes, 1936); (b) money is not neutral and therefore it influences not only the equilibrium of nominal (money) variables but also the equilibrium of the real variables (production, employment, real wages); and (c) that the interest rate is determined by the institutional structure of the money market and thus by the liquidity preference and the money supply and not merely from the demand for investments and the supply of savings (Sherman and Evans, 1984).

(a) Effects on the region of destination

The first effect on the economic environment of the region of destination will be an increase of its population and of total active demand. The raising of the demand for goods (mainly durable goods: houses, equipment ...) and services, in relation to the given supply in the short term, will press upwards the prices of these goods. The disequilibrium in the goods market may be covered by an increase of prices in the short term or even in the long term if new investment effects aiming to increase production are not undertaken. In the first case, a rise in prices will decrease the real wage and as a result labour unions will demand an 'indexation' of nominal wages, so that money wages keep up with prices, turning the initial inflationary pressures into a cost inflation pressure: a situation which will have unfortunate consequences for the region's economic development.
The above developments are based on the assumption that new investments are not going to be undertaken. If we reject this assumption then the initial increase in prices will have different results. Suppose firms want to increase their production and investment on capital equipment if economic conditions are favourable. If we accept that the re-establishment of nominal wages following the increase in prices is taking place with a time lag, then firms during the initial period would achieve an increase of their profits, having a strong incentive to invest more and raise production. An increase of the demand for labour will be satisfied by the excess labour supply of migrants.

From the above analysis it is apparent that the movement of labour, if it is accompanied by the proper conditions for an increase of investments, will allow an increase of production and employment with slight rises of prices and nominal wages. This conclusion is valid to a greater extent for the developed regions (countries) which face a shortage in the labour market, a situation which obstructs the continuous high rates of economic development.

In particular, we may depict the labour market of a developed region (country) in Figure 2.7 where, under inelastic supply of labour ON, the product is ABN and it is divided between the share Ow1BN enjoyed by the workers (wages) and Aw1B enjoyed by firms (profits). In the case where the region (country) intends to increase fixed capital, shifting the curve MPL1 to the position MPL2, the profits of firms under inelastic labour supply will be CDw2, less than profits CEw1 accrued if labour supply is elastic due to the inflow of migrants (Lewis, 1970; Kindleberger, 1967). Thus, given the assumption that profits are invested while wages are spent for consumption purposes, the continuous inflow of migrants means labour supply becomes completely elastic ensuring under successive increases of fixed capital, constant real wages (w1) and continuous increases of profits (Reppas, 1978).
Figure 2.7

Diagram shows a graph with the real wage on the y-axis and labor on the x-axis. The graph includes two lines labeled MPL₁ and MPL₂, indicating different marginal product levels. Points N₁ and N₂ mark the labor levels corresponding to the real wages w₁ and w₂, respectively.
(b) **Effects on the region of origin**

Migration outflows will cause a decrease of under-employment without influencing production. This will result in an increase of per capita income and a decrease of the average propensity to consumption, which will leave more room for savings. In the case where savings are used to finance productive investments there will be an increase of production and real wages which in relation to the decrease of labour supply will have favourable effects on the economic development of the region.

In contrast, if savings are kept in order to cover the decrease of disposable income which has been created due to the cost of movement of migrants, or used up for consumption of imported goods, the region would be led to economic stagnation. In addition, the above developments, favourable or not, will be influenced negatively from the short-run decline in total local consumption because of the decline in total population. The diminution of the local market will create unfavourable predictions which may result in a cancellation of future investments or the movement of already functioning firms.

The above analysis is based on the assumption of a homogeneous labour force which could not be accepted. It is natural to find workers with different productivity, for example because of differences in age or knowledge. In most cases migrants consist of the most productive part of the labour force of a region (under-developed) since they are the ones who can survive the great competition in the labour markets of the developed regions. If the more productive workers migrate then production will decline as the quantity of the indigenous labour force is reduced. Consequently, the per capita income may remain unaffected or even decrease, limiting the possibilities for the creation of savings and investment.

We can conclude that the migration of unemployed or under-employed labour from an under-developed region may have positive results for its development under the following assumptions:
(a) the majority of migrants do not consist of the high productivity labour force, a situation which affects production negatively; and

(b) the derived savings from a potential increase in per capita income are used in development investment.

2.4.4 Critique of the Model

The Keynesian model expands the neo-classical one introducing the market's imperfections. Like the neo-classical, it is a static (short-term) model which tries to explain a dynamic phenomenon like migration. It stresses the side of demand and ignores the supply side as a cause for migration. At the same time it ignores the micro-economic side of the economic and social behaviour of the migrant. The model does not contribute too much regarding:

(a) the prediction of the direction of migration given the relation \( m = f(U) \). Unemployment rates are usually taken to represent differences in the excess supply conditions for labour between regions or in a much looser sense, the probability of a given migrant finding a job in the various regions. However, by itself it is an inadequate proxy for these purposes. The following arguments support this contention: First, it cannot be inferred that regions with relatively low levels of unemployment are also regions of relatively abundant employment opportunity. Second, there is reason to expect that unemployment rates serve as effective proxies for several other structural influences, such as imbalances in industrial composition and social infrastructure which will themselves play an important role in the migration decision (Oliver, 1964). It is doubtful, therefore, that a strong statistical association between migration and unemployment can be strictly interpreted to mean that migrants are responding solely to differential job opportunities.

(b) The prediction of the results of migration in the place of origin or destination given that unemployment is a result not a
cause of the structural lack of balance between regions.

2.5 Marxian Theories

Marx was first a philosopher who felt that his job was not only to interpret and analyse society, but also to promote changes in society, which he considered as desirable. Since Marx is associated with the economic systems of socialism and communism, people often assume that he wrote about these systems. Marx wrote about capitalism. His major work is entitled Das Kapital or Capital, and in the literature produced by him and his collaborator, Frederick Engels, there are only a few references to how a socialist or communist economy is to be organised (Landreth, 1976; Hutchison, 1981). Marx's economic theory is an application of his theory of history to the capitalist economy. His theory of history is derived from the philosophy of another German, Hegel. Paul M. Sweezy (1942), one of the most important American Marxist economists, has suggested that Marxian economics is the economics of capitalism. In other words, he believed that to understand the capitalistic system the proper theoretical model is the Marxian one, an opinion with which few orthodox economists would agree.

Marx's system is a mixture of philosophical, sociological and economic analysis. He applied his theory of history to the society and economy of his time in order to discover the laws of motion of capitalism and to point out the contradictions of the system between the forces and relations of production. He was concerned with long-run trends in the economy (Oser and Blanchfield, 1975). In his analysis of the economics of capitalism, Marx uses, with a few exceptions, the basic tools of classical economics, particularly Ricardian theory. He assumes:

(1) a labour cost theory explaining relative prices,
(2) neutral money,
(3) constant returns in manufacturing and diminishing returns in agriculture,
(4) perfect competition,
(5) rational economic man.

He rejects Richardian assumptions of fixed coefficients of production, full employment and the Malthusian population doctrine (Theocharis, 1980; Blaug, 1985).

(a) Commodities and classes

Marx believes that one of the major characteristics of capitalism is the separation of labour from the ownership of the means of production. Capitalism is then a society of two classes: the capitalists, and those who sell only their labour in the market, the proletariat. Classical economic theory, as well as orthodox micro-economic theory which followed, starts its analysis by examining the price of commodities. Marx, however, was not really interested in developing a theory of relative prices. He was interested in wages which he considered as the most crucial element in the capitalist system. One of the characteristics of capitalism is that commodities are produced by the capitalists not for their use value but for their exchange value. To understand capitalism, therefore, requires an understanding of the exchange relationships that develop between owners of commodities, the most important being between the capitalist and the proletariat.

(b) Labour theory of value

Marx initially considers use value or utility as a common element among all commodities, but he rejects this possibility. He then considers labour as the common element and concludes that it is the amount of labour time necessary to produce commodities that determines their relative prices. According to Marx, the only social cost of producing commodities was labour. He disregarded the differing skills of labour and conceived of the total labour available to society for commodity production as a homogeneous quantity, which he called abstract labour. The relative prices of commodities reflect amounts of this abstract supply of labour measured in clock hours necessary to produce the goods. This
results in the skilled labour problem, that labour of varying skills will have varying outputs. Marx meets this problem by measuring the amount of labour required to produce a commodity which is defined as the time taken by a workman possessing the average degree of skill possessed by labour at the time. Labour with skill greater than the average is reduced to the average by measuring the greater productivity and making an appropriate adjustment.

Another problem which arises from a labour theory of value is accounting for the influence of capital goods on relative prices. Marx assumes that capital is stored-up labour. The labour time required to produce a commodity is then the number of hours of labour immediately applied added to the number of hours required to produce the capital destroyed in the process. Difficulties are also caused by the differing fertilities of land. Equal amounts of labour time will produce varying outputs when applied to land of different fertilities. Marx meets this problem by adopting Ricardo's theory of differential rent: the greater productivity of labour on land of superior fertility is absorbed by the landlord as a differential rent (Landreth, 1976).

The value of a commodity can be broken down into three parts:

\[ \text{Value} = C + V + S \]

Constant capital (C) is defined as the expenditures of the capitalists for raw materials and depreciation charges on fixed capital. Variable capital (V) is defined as wages and salary expenditures. Surplus value (S) is a residual obtained by subtracting constant and variable capital outlays from the gross receipts of the capitalists. According to Marx, variable capital outlays, where business is profitable, result in receipts greater than those outlays. This is his fundamental assumption that only labour creates value. Labour is the only commodity with the ability to create surplus value (Lekachman, 1964; Landreth, 1976).
Marx calls the ratio of surplus value to variable capital outlays the rate of surplus value or the rate of exploitation:

\[
\text{Rate of exploitation} = S' = \frac{S}{V}
\]

The rate of profit is given by the ratio of surplus value to total capital outlays:

\[
\text{Rate of profit} = P = \frac{S}{C+V}
\]

The organic composition of capital (Marx's term for the capital intensity of a firm or industry) is given by a ratio of constant capital outlays to total capital outlays:

\[
\text{Organic composition of capital} = Q = \frac{C}{C+V}
\]

(Landreth, 1976),

Marx, analysing capitalism, formulated certain principles which have become known as Marxian laws (Blaug, 1985). The Marxian laws of capitalism include the following: a reserve army of the unemployed; a falling rate of profit; business crises; increasing concentration of industry; and increasing misery among the proletariat. These can be commented on in more detail.

(i) The reserve army of the unemployed

Marx rejected Malthusian population theory (Malthus, 1798). In classical analysis this theory had been essential in explaining the existence of profits. In the Marxian model increased capital accumulation will increase the amount of variable capital. As wages rise, what keeps surplus value and profits from decreasing to zero? Marx's answer to this question is his concept of the reserve army of unemployed. There was always an excess supply of labour in the market, which had the consequence of depressing wages and generating value and profits. The reserve army was recruited from several sources. Direct recruitment when machines replace men in the production process. Indirect recruitment results from the entry of new members into the labour force. This reserve army of
the unemployed keeps down wages in the competitive labour market. Marx's assumption of long-run persistent technological unemployment rejects Say's law predicting full employment of resources.

(ii) Falling rate of profit

In the Marxian model the rate of profit varies directly with the rate of surplus value and inversely with the organic composition of capital:

\[ P = S' (1-Q) \]

Assuming that the rate of surplus value remains unchanged over time any increase in the organic composition of capital will result in a falling rate of profit. Marx assumed that competition in commodity and labour markets will increase the organic composition of capital and lead to a fall in profit rates.

(iii) The origin of business crises

Although he never develops the explanations of the source and nature of the business cycle clearly, he offers three distinct explanations: the falling rate of profit; the uneven introduction of new technology; and disproportionalities that develop in one sector of the economy and spread to cause a decrease in the general level of economic activity (Sherman and Evans, 1984).

(iv) The concentration and centralisation of capital

Although the basic Marxian model assumes perfectly competitive markets, Marx was aware of the growing size of the firm and of monopoly power. He concluded that this phenomenon derives from the increasing concentration and centralisation of capital. Marx believed that larger firms would be able to achieve economies of scale and produce at lower average costs than smaller firms. Competition between the larger and the smaller firms will result in the elimination of the smaller firms and the growth of monopoly. Marx's view is that capital accumulation, economies of scale, the growth of credit markets and the dominance of the corporation in business organisation would lead to the concentration and central-
isation of capital into few hands. This is an example of the contradictions inherent in the capitalist system which will lead to the ultimate destruction of capitalism (Theocharis, 1979; Landreth, 1976).

(v) Increasing misery of the proletariat

Another contradiction of capitalism which will lead to its collapse is the increasing misery of the proletariat. Three separate interpretations of this doctrine have been offered. Absolute increasing misery of the proletariat implies that the real income of the mass of society decreases with the development of capitalism. Relative increasing misery means that the proletariat's share of national income declines over time. A final interpretation is that it concerns non-economic aspects of life. With the evolution of capitalism, the quality of life declines as men become chained to the industrial process (Landreth, 1976; Blaug, 1985).

Regarding migration, Marxistic theory is consistent with the last three cases of structural imperfections and dynamic changes in the labour market of the Keynesian model. The differences, according to the Marxistic view, are:

(a) The labour supply curve is infinitely elastic over all its length and determines the minimum wage needed for the reproduction of the labour class (Figure 2.8).

(b) The decrease in demand for labour because of technological changes is an inevitable consequence of the capitalistic organisation of production.

Furthermore, the concentration of economic activity in space, because of economies of scale, is a reasonable consequence of the theory and results in the monopolistic structure of the labour market and a further decrease in the demand for labour. The prediction regarding the direction of migration, according to the Marxist view, is that it occurs from periphery towards urban centres.
Figure 2.8
The assumptions and the structure of the Marxistic model regarding the evolution of the capitalistic economy provide predictions of the effects of emigration on the regions of destination and origin. The cause of emigration is unemployment due to technological change. In brief, the competition between the firms will lead them:

(a) into a continuous concentration in space, in order to decrease the production cost (scale economies); and

(b) into a continuous application of technological capital intensity innovations which will decrease the labour cost and raise the profits.

A concentration of firms in space has, as a result, the continuous increase of unemployment in the place of origin. Application of technological innovations has as a result an increase of unemployment in the places of destination but at a lower rate for the creation of the reserve labour force.

As far as a critique of the model is concerned, we think that it must consider the whole theory and not only this part concerning migration, something which is not within the scope of this thesis.

2.6 The Human Capital Model of Migration

2.6.1 The Historical Roots of the Concept of Human Capital

It is necessary to consider human capital theory because it represents an alternative/complementary explanation of the costs/revenue of migration.

In recent years, economists have devoted great effort to develop and quantify the concept of 'human capital' and to apply it, through the concept of investment in the formation of human capital, to such activities as education, medical care and migration. However, the concept of human capital is by no means new. Economists who considered human beings or their skills as capital include such well-known names in the history of economic thought as Petty, Smith,
Most of these economists held that human beings should be included in the concept of capital for three reasons: (a) the cost of rearing and educating human beings is a real cost; (b) the product of their labour adds to the national wealth; and (c) expenditure on a human being that increases its product will, *ceteris paribus*, increase national wealth (Kiker, 1966).

Although Adam Smith did not specifically define the term capital, he included in his category of fixed capital the skills and useful abilities of human beings. The skill of a man, he said, may be regarded as a machine which has a cost and returns a profit.

Jean Baptiste Say (1821) asserted that since skills and abilities are acquired at a cost and tend to increase productivity, they should be regarded as capital. This was also the contention of John Stuart Mill, William Rocher and Walter Bagehot (Greedy and O'Brien, 1984).

These economists, who define capital as produced means of production, do not explicitly include human beings as capital. J.S. Mill (1909) asserted:

"The human being himself I do not class as wealth. He is the purpose for which wealth exists. But his acquired capacities, which exist only as a means and have been called into existence by labour, fall rightly, as it seems to me, within that designation."

His reason for not explicitly including the man himself may be found in their interest in distribution and production.

In contrast, J.R. McCulloch (1870) clearly defined human beings as capital. Senior (1939) occasionally treated the human being himself as capital, with a maintenance cost incurred with the expectation of obtaining a future yield. Léon Walras (1954) included all human beings in the concept of capital and the value of these human beings is determined like that of any other capital
good.

 Whether or not we define skills and/or the acquirer of them as capital is relatively unimportant. The distinction between skills and the person is important. Economists, when faced with policy questions, have consistently recognised both that skills require prior effort and continuous maintenance, and that to deny this analogy between humans and conventional capital in practice means a misuse of resources.

 Finally, Alfred Marshall (1961) admitted that an estimate of the capital value of man might be useful; he also admitted that investment in education will increase national wealth, but he disregarded the notion as "unrealistic" since human beings are not marketable.

2.6.2 The Modern Theory of Human Capital

 The essence of the modern theory was articulated by Irving Fisher (1906) who regarded 'capital' as anything that yields a stream of income over time and 'income' as the product of capital. However, it is only in the last thirty years that Human Capital theory has been elaborated in detail. Recent theoretical and empirical work has proceeded along three lines:

 (a) Human capital has been incorporated into the theory of economic growth (Schultz, 1962; Denison, 1962).

 (b) The concept of human capital has been applied to the analysis of the distribution of income (Becker, 1975; Psacharopoulos, 1973, 1982).

 (c) The third line of development of Human Capital theory has been a decision-making theory that can be applied to analyse behaviour in situations where activities undertaken primarily affect future rather than present wellbeing (Bowles, 1970).
Our focus is on human capital theory as decision theory. The decision to migrate can be analysed as an investment in human capital and the only underlying assumptions are that migration represents purposive behaviour, the costs of which are borne in the present as a means of enjoying returns anticipated in the future. A more rigorous formulation of the above is: (Barnum and Sabot, 1976) Migration may be viewed in a cost returns framework so that for an individual to migrate his expectations must be that the costs, money and non-money of migration are equal, or less than, the difference in the present discounted values of the streams of benefits in the source and receiving areas. Therefore migration depends: Firstly, on the difference between costs and benefits which the migrant realises between alternative places of settlement; and, secondly, on the relative cost-benefit differences from other competitive or complementary investments in human or other capital (Lewis, 1982).

The analysis is based on the usual cost-benefit analysis where the present value of an investment depends on the discounted value at period \( t \) of the difference between the benefits and costs of the investment, i.e.

\[
NPV = \frac{\sum_{i=0}^{t} B - \sum_{i=0}^{t} C}{(1+r)^t} \tag{Eq. 2.10}
\]

where: \( NPV \) : net present value of the return of the investment
\( B \) : benefits
\( C \) : costs
\( r \) : discount rate
\( t \) : time period

According to the above, migration may be regarded as a function of:

\[
mij = f(NPV_j) = \frac{\sum_{i=0}^{t} (B_j - B_i) - C_{ij}}{(1+r)^t} \tag{Eq. 2.11}
\]

where: \( B_i, B_j \) net-benefit at place of origin and at place of destination
\( C_{ij} \) : the cost of movement from place \( i \) to place \( j \)
\( r \) : the discount rate
alternatively the above model becomes:

\[
\frac{\sum B_j - \sum B_i}{(1+r)^t} = \sum C_{ij}
\]

and solving for \(r\) we obtain the rate of return which equilise the net return in \(j\) with the cost of movement. Gross migration between \(i\) and \(j\) will be:

\[
m_{ij} = f(ri - rj)
\]

(Eq. 2.12)

The model suggests partial equilibrium and it is stochastic. Therefore it is not possible to provide predictions regarding the effects of migration in the places of origin and destination.

The model provides the possibilities of explanation of migration. The strengths of this approach are to be found in the significance that it attaches to individual attributes. Characteristics such as age, skills, education and stage in the life cycle can readily be related to the decision to migrate, and the probability of migration given an income and earnings horizon. Individual panel data are required to test the monetary reward propositions. That makes empirical specification of the model far more difficult than in the case of the macro-adjustment models (Bowles, 1970). Further, it is not clear that even if such data exist there are enough observations, stratified by location and by attribute, to enable general conclusions to be made on the validity of the model (Schwartz, 1976).

Some of the basic empirical evidence on migration appears in conflict with the human capital model. A disturbing result is the systematic tendency to reverse the migration decision. In the nineteenth century, Ravenstein (1885) observed that gross migration flows between areas were much larger than net flows, and a flow in one direction tended to produce a counter flow. Sjaastad (1962) dismissed reverse flows as the product of imperfect information or aggregation bias with migrants in each direction having different occupations. However, it can be shown that reverse migration flows
consist largely of return migrants who should be aware of conditions at the origin of their move. Also, since the same individual moves back, the aggregation bias argument does not apply to return migrants. The tendency of migrants to reverse locational decisions, particularly where earnings differentials between origin and destination are large, appears to conflict with human capital theory.

In the case of Greek repatriation from West Germany, for example, we must take into account the migration policy followed by the host country and the great problems of culture and education which the children of migrants face. These may overcome earnings differentials between Greece and West Germany, leading migrants to the decision to return. This is an example of the relationship between the individual and society, or, more correctly, the locational socio-economic context in which decisions are actually made, and cannot be predicted by the model.

Finally, there are also weaknesses concerning the empirical estimation of the model, which are discussed in the next chapter together with an alternative way of specifying the model in order to avoid the criticism.
CHAPTER THREE

MODELLING MIGRATION

3.1 Introduction

The purpose of this chapter is to develop a number of viable migration models, given certain underlying theoretical assumptions. Three models based on the Neo-classical, Keynesian and Human Capital theories are developed. Improvements and extensions have also been made after considering the criticism of the theories set out in Chapter 2 and in this chapter.

3.2 Migration and Neo-classical Theory

Under the strict assumptions of short-run neo-classical static equilibrium theory, the existence of real wage differentials among regions provides the only inducement for economic migration to take place. The assumptions, taken over the regions, consist of profit maximisation under perfect competition, a homogeneous labour supply, constant returns to scale and perfect information among economic markets. Further, the short run is defined as in Chapter 2, that is, autonomous investment is not allowed sufficient time to affect the size of capital stock (Richardson, 1978). If, at the same time, we assume zero migration costs, then in the short run, with given natural resources, capital stock and technology, the mobility of labour force is perfect.

The situation may be illustrated with the aid of a standard model which is often used to depict the neo-classical macro-system (Branson, 1973; Dornbusch, 1980):

Production function: \[ Y = f(K, N), \quad \frac{\partial Y}{\partial N} > 0, \quad \frac{\partial^2 Y}{\partial N^2} < 0 \] (Eq. 3.1)

Product Market: \[ I(r) = S(r) \] (Eq. 3.2)

Labour Supply: \[ N = f\left(\frac{W}{P}\right), \quad \frac{\partial N}{\partial\left(\frac{W}{P}\right)} > 0 \] (Eq. 3.3)
Equilibrium in the labour market: (profit maximisation)

\[ \frac{\partial Y}{\partial N} = \frac{W}{P} \]  
(Eq. 3.4)

Equation of exchange: \[ \frac{M}{k} = P \cdot Y \]  
(Eq. 3.5)

where: \( Y \): production; \( N \): employment; \( W \): nominal wage;
\( P \): prices; \( \frac{1}{k} \): velocity of money; \( M \): money supply;
\( K \): constant capital stock; \( I \): investment; \( S \): savings;
\( r \): interest rate; and \( \frac{W}{P} \): real wage.

Under the assumption of two separate economies A and B which have identical parameters with the only difference being the size of labour supply, the nominal and real wages of the two regions will balance at different levels. Figure 3.1a depicts the production function. Under constant returns to scale, the labour demand curve (MPL) declines monotonically from left to right (Figure 3.1b). Figure 3.1c depicts the equation of exchange and Figure 3.1d shows the determination of nominal wages. \( s_A \) and \( s_B \) represent the labour supply curves for the two regions A and B. From Figure 3.1b real wages will be \( \frac{W_A}{P_1} \) and \( \frac{W_B}{P_1} \), with identical prices \( (P_1) \) for the two regions the nominal wages will be \( W_A \) and \( W_B \) (Figure 3.1d). Production (under the above assumptions) is greater in region (A), which has labour force \( (N_A) \) than in region (B) with labour force \( (N_B) \) \( (N_A > N_B) \), Figure 3.1b).

According to the neo-classical theory, the difference between wages, \( \frac{W_A}{P_1} > \frac{W_B}{P_1} \) will lead to a movement of labour from A towards region B. As a result of this movement in A fewer workers will be supplied for employment at all wage levels, while in B labour supply will increase at all wage levels. In terms of Figure 3.1b, labour supply curve \( s_A \) will shift up to the left and labour supply curve \( s_B \) will shift down to the right increasing, through the flexibility of nominal wages, real wages in region A and decreasing real wages in region B. Based on the assumption that mobility costs are zero, migration will continue until real wages in the two regions are equalised.
Figure 3.1

Neo-classical Macro-system

3.1a

Y = f(\bar{K}, N)

3.1b

\frac{\text{PY} = \frac{\bar{M}}{k}}{P}

3.1c

3.1d
The difference in wages, given the assumption of identical economic characteristics prevailing in both A and B, is due to the difference between the initial levels of labour employed in the regions. Therefore, real wages will equalise when the number of employees reach, through migration, the same level (N) (Figure 3.1b) in both regions. At this level of employment, production in each region is \( Y_C \) and in aggregate total production is more than in the initial period (before migration) \( 2Y_C > Y_B + Y_A \).

With the money supply given and constant velocity of money in the short run, an increase in the product will result in a decrease in prices. Especially:

\[
\frac{M}{k} = P(Y_A + Y_B) \quad \text{since} \quad 2Y_C > Y_A + Y_B \quad (\text{after migration}) \quad \text{and}
\]

in order to maintain the quality \( \frac{M}{k} = P'(2Y_C) \)

must be \( P' < P \).

Thus, if \( Y \) increased from \( Y_A + Y_B \) to \( 2Y_C \) prices must decrease from \( P_1 \) to \( P_2 \) (Figure 3.1c) for the equation of exchange to be confirmed. The rate of change in prices is slower than the change in wages, therefore the decrease in the price level of the total economy does not offset the decrease in wages in region B. The final level of real wages in both regions (\( \frac{W}{P_2} \)) will be lower than the average level of wages in the two regions before migration:

\[
\frac{W}{P_2} < \frac{1}{2} \left( \frac{W_A}{P_1} + \frac{W_B}{P_1} \right).
\]

In contrast, the weighted average of the real wages of the two regions will be lower than the real wage \( \left( \frac{W}{P_2} \right) \) which prevails after migration.

We may evaluate the above conclusions by adopting a mathematical form for the production function. We assume that the production function is of a Cobb-Douglas type. From the previous analysis it is evident that after migration the labour force for each region (A and B) will be equal to (N). In period (t), before migration, each region's employed number of workers equal:
\[ N_A = N(1+\gamma) \]
\[ N_B = N(1-\gamma) \quad \text{where: } 1 > \gamma > 0 \]

the real wages: \[ \frac{W_A}{P_1} < \frac{W_B}{P_1} \quad \text{since } N_A > N_B \]

Thus in period (t) each region produces:

Region A: \[ Q_A = AK^2 N^{1-a}(1+a)(1+\gamma)^{1-a} \]
Region B: \[ Q_B = AK^2 N^{1-a}(1-a)(1-\gamma)^{1-a} \]

In total, the whole economy (A + B) produces:

\[ Q = Q_A + Q_B = AK^2 N^{1-a}[(1+\gamma)^{1-a} + (1-\gamma)^{1-a}] = AK^2 N^{1-a}T_1 \]

In period (t+1) after the movement of the labour force, when the labour markets are in balance the production is:

Region A: \[ Q'_A = AK^2 N^{1-a} \]
Region B: \[ Q'_B = AK^2 N^{1-a} \]

and in total (A + B):

\[ Q' = Q'_A + Q'_B = 2AK^2 N^{1-a} \]

\[ Q' > Q \] because for \( 0 < a < 1 \) and \( 0 < \gamma < 1 \), \( T_1 = (1+\gamma)^{1-a} + (1-\gamma)^{1-a} < 2 \) as Table A3.1 in the Appendix indicates.

Regarding the real wages, which according to the theory equal the marginal product of labour, in period (t) the average real wage of both regions will be:

\[ w = \frac{W_A + W_B}{2} = \frac{1}{2} \left[ \frac{\theta Q_A}{\theta N_A} + \frac{\theta Q_B}{\theta N_B} \right] = \]

\[ = \frac{1}{2} \left[ (1-a) AK^2 N_A^{1-a} + (1-a) AK^2 N_B^{1-a} \right] \]

152.
where: \( w_A = \frac{w}{P_1} \) and \( w_B = \frac{w}{P_1} \)

given that \( N_A = N(1+\gamma) \) and \( N_B = N(1-\gamma) \) the average real wage becomes:

\[
w = (1-a) A^a N^{-a} \left[ \frac{(1+\gamma)^{-a} + (1-\gamma)^{-a}}{2} \right]
\]

On the other hand the weighted average real wage will be:

\[
w_g = \frac{w_A N(1+\gamma) + w_B N(1-\gamma)}{2N} = \frac{w_A (1+\gamma) + w_B (1-\gamma)}{2}
\]

\[
= \frac{1}{2} \left[ \frac{\theta Q_A}{\theta N_A} (1+\gamma) + \frac{\theta Q_B}{\theta N_B} (1-\gamma) \right]
\]

\[
= \frac{1}{2} \left[ (1-a) A^a N_A^{-a} (1+\gamma) + (1-a) A^a N_B^{-a} (1-\gamma) \right]
\]

for \( N_A = N(1+\gamma) \) and \( N_B = N(1-\gamma) \), \( w_g \) becomes:

\[
w_g = \frac{1}{2} \left[ (1-a) A^a N^{-a} (1+\gamma)^{1-a} + (1-a) A^a N^{-a} (1-\gamma)^{1-a} \right] \Rightarrow
\]

\[
w_g = (1-a) A^a N^{-a} \left[ \frac{(1+\gamma)^{1-a} + (1-\gamma)^{1-a}}{2} \right]
\]

In period \((t+1)\) after migration the real wages of both regions A and B are equal:

\[
\frac{W_A}{P_2} = \frac{W_B}{P_2} = w' = \frac{\theta Q}{\theta N} = (1-a) A^a N^{-a}
\]

As Table A.3.2 in the Appendix indicates:

\[
T_2 = (1+\gamma)^{-a} + (1-\gamma)^{-a} > 2 \quad \text{where} \quad 0 < \gamma < 1 \quad \text{and} \quad 0 < a < 1
\]

and given that:

153.
\[ w = \frac{w_A + w_B}{2} = (1-a)AK^aN^{1-a} \left[ \frac{(1+\gamma)^{-a} + (1-\gamma)^{-a}}{2} \right] \]

\[ w' = (1-a)AK^aN^{1-a} \left[ \frac{(1+\gamma)^{1-a} + (1-\gamma)^{1-a}}{2} \right] \]

we may conclude that: \( w > w' > w_g \).

Thus the real wage \( w' \) (after the migration of the labour force) is lower than the average real wage \( w \) of the two regions and greater than the weighted average real wage before the movement of labour force.

In the absence of alternative assumptions the size of net migration (\( m \)) of economically-motivated migrants will depend solely on the size of the real wage difference between regions B and A or:

\[ m = f \left( \frac{\bar{w}_B}{P_B} - \frac{\bar{w}_A}{P_A} \right) \quad \text{with} \quad f' \left( \frac{\bar{w}_B}{P_B} - \frac{\bar{w}_A}{P_A} \right) > 0 \]  \hspace{1cm} (Eq. 3.6)

3.3. Keynesian Statics

We now formulate a migration model according to Keynesian static theory. Firstly, however, we modify the classical assumptions and introduce a Keynesian economic framework (Reppas, 1978; Hart, 1975; Branson, 1973; Dornbusch, 1980). As a guideline, the familiar Keynesian macro-system of equations is set out, while the assumption of identical parameters for each (A, B) regional equation has been retained (Branson, 1973).

\[ I_j(r) = S_j(y) \quad \text{(IS curve)} \]  \hspace{1cm} (Eq. 3.7)

where: \( \frac{\partial I_j}{\partial r} < 0, \quad \frac{\partial S_j}{\partial y} > 0 \) and \( j = A, B \), \( r \) is determined for the whole economy.
\[ M = L_1(Y_j) + L_2(r,P) \quad \text{(LM curve)} \quad \text{(Eq. 3.8)} \]

with:
\[ \frac{\partial L_1}{\partial (Y_j)} > 0, \quad \frac{\partial L_2}{\partial r} < 0, \quad \frac{\partial L_2}{\partial P} > 0, \]
where both \( P \) and \( M \) are exogenously determined.

\[ Y_j = g(N_j) \quad \text{(production function)} \quad \text{(Eq. 3.9)} \]

with:
\[ g'(N_j) > 0, \quad g''(N_j) < 0. \]

\[ w_j = g'(N_j) \quad \text{labour market} \quad \text{(Eq. 3.10)} \]

\[ W_j = \bar{W} + h(N_j) \quad \text{labour supply function} \quad \text{(Eq. 3.10a)} \]

and
\[ W_j = P.w_j \quad \text{(Eq. 3.11)} \]
\[ Y_j = P.y_j \]

where: \( I = \text{investment}; \quad S = \text{savings}; \quad r = \text{interest rate}; \)
\( y = \text{production}; \quad M = \text{money supply}; \quad L_1 = \text{transactions demand}; \)
\( L_2 = \text{speculative demand}; \quad P = \text{prices}; \quad Y = \text{income (nominal)}; \)
\( N = \text{employment}; \quad w = \text{real wage}; \quad W = \text{nominal (money) wage}; \)
\( \text{and } \bar{W} = \text{minimum acceptable money wage}. \)

In the labour market equations the key differences between the Keynesian and classical economics are found in the specifications of the labour supply function (and in the product market specification also). Labour supply is dependent on money and not real wages and inflexible money wages replace complete flexibility over the whole classical supply function (Figure 3.2).

Given the assumption that prices \( P \) are region-wide determined, labour supply function may be translated from money to real terms so that:
\[ w_j = \bar{w} + h(N_j)/P \quad \text{(Eq. 3.12)} \]
Figure 3.2

Labour Market: The Effects of Economic Migration - Keynesian Case
where: \( w_j = \frac{W_j}{P} \) and \( \bar{w} = \frac{\bar{W}}{P} \).

Equation 3.12 may be represented by the supply curve \( N^S_w \).

In Figure 3.2, the region-wide determined minimum real wage rate (\( \bar{w} \)) prevents region B from meeting intraregional equilibrium position at \( (w_B, N_B) \). The intersection of the labour supply curve \( (N^S_B) \) with the real wage rate is constrained at \( Q^* \) rather than \( Q \); equivalent to a supply of labour \( N^*_B \). As a result region B experiences (involuntary) unemployment equal to \( u = \bar{N} - N^*_B \). Migration from region B to region A will now occur for two distinct reasons:

(a) real wage advancement, and
(b) job search.

After migration, equilibrium occurs at \( Q_A \), in region A which gives employment \( \hat{N}_A \) at wage rate \( \hat{w}_A \), and at \( Q_B \) for the region B giving employment \( \hat{N}_B \) at wage rate \( \hat{w}_B \). Assuming possible migration costs, complete real wage equilisation is impeded by the physical costs barrier to the potential migrants.

The most important outcome to be noticed, however, is the fact that the migration function may now be written as:

\[
m = a(\hat{w}_A - w_B) + b(\bar{N} - N^*_B) \tag{Eq. 3.13}
\]

where: \( b > 0 \) and \( \bar{N} - N^*_B \): unemployment.

Thus we may conclude that the assumption of downwardly inflexible money wage rates (equation 3.13) leads directly to the necessity of including an excess labour supply variable in the migration model.

We may arrive at the same conclusion by using a slightly more complicated method (Hart, 1975). The whole procedure is based on the specification of the savings function. Two assumptions will be made: (a) total investment and savings within each region is generated by that region alone, and (b) there is a given money supply for each region.
We transform equations 3.7, 3.8, 3.10, 3.10a by using employment \( N \) as the linking variable. We leave the money variables \( Y = P_y \) and \( W = P_w \) on one side. Next, we have \( y = y(N) \) given by the production function (equation 3.9) and \( w = y'(N) \) by marginal productivity in terms of \( N \). The conditions on the product and labour markets then read:

\[
I_j(r) = S_j \left[ y_j(N_j) \right] \quad \text{(Eq. 3.14)}
\]

and

\[
Py'j(N_j) = \bar{w} + W(N_j) \quad \text{(Eq. 3.15)}
\]

where: \( j = A, B. \)

These give \( (r) \) and \( (P) \) in terms of \( (N) \). The other part of the system is the money equation, and we can simplify by taking the reasonable approximation: (Allen, 1967)

\[
M = k Pyj(N_j) + PL(r) \quad \text{(Eq. 3.16)}
\]

Now, suppose that there is a full employment goal in each \( j \)th region. Therefore \( (N_j) \) satisfying the labour supply function is the full employment level. We then turn to the IS schedule, corresponding to the investment/saving condition (equation 3.14) and we enter it with full employment real income \( y_j = y(N_j) \), giving full employment savings \( S_j(y_j) \). All that remains is to find the interest rate \( (r) \) so that investment \( I(r) \) takes up full employment savings \( S_j(y_j) \). But it can happen that the rate of variation of investment (when investment is interest-inelastic) is so narrow that no \( (r) \) exists. There is no equilibrium possible in the product market: investment falls short of full employment savings at all interest rates. The Keynesian system then fails to provide a complete equilibrium, something that cannot happen in the neo-classical model (Allen, 1967).

The short-run slope of the IS schedule is dependent on the existing capacity in the capital goods industry and the degree of utilisation of this capacity. At any point in time, assuming a diverse industrial structure among regions, those regions with the greatest proportion of older capital equipment and out-dated industrial activity would experience a lower utilisation of their existing capacity
at any given level of aggregate demand. In terms of Figure 3.2 region B might experience higher unemployment than region A due to the additional fact that the former region has a greater under-utilisation of its existing capacity and thus a more inelastic IS schedule. In terms of equation 3.14, for $j = (A, B)$ elasticity:

$$\frac{-r}{y_A(N_A)/\theta r} > \frac{-r}{y_B(N_B)/\theta r}$$

One would expect, therefore, that investment in region B would be fairly unresponsive to changes in the rate of interest, given the degree of surplus capacity and (or) the relative demand inelasticity of that capacity, and that this in turn might provide an effective bar to the attainment of full employment (Hart, 1975).

The consequences of migration for the whole economy are more difficult to evaluate than in the neo-classical case. The attainment of full employment equilibrium of the neo-classical model may not be applied with the Keynesian model. This could easily be due to the different specification of the Keynesian savings function (equation 3.7). The movement of both employed and unemployed migrants may have multiplier and induced investment effects which may overturn the neo-classical inclination to full employment stability (Archibald, 1967; Brown, 1972).

The question of whether or not there will be an efficiency gain to the whole economy after migration, as was the case in the neo-classical model, will depend on whether the rise in real output through migration will be reinforced or counteracted by the multiplier effects. In terms of Figure 3.2 the multiplier gains in region A through net inward migration may be greater or less than the multiplier losses in region B through net outward migration (depending on such factors as the relative sizes of the multipliers, the short run physical and social capital constraints and the size of the secondary multiplier effects across region boundaries).

The two previous models, developed from the framework of classical and Keynesian static macro-economics, depicted migration flows
responding to a set of exogenous static economic variables in the sense that each variable was presented in terms of a single regional differential at a given point in time.

A full understanding of the economic migration process involves analysis within a dynamic setting where potential migrants' expectations of levels or changes in economic differentials become the important consideration.

Isaac (1947) supports this thesis by stating in his international migration case:

"We have assumed that the migrant is motivated only by comparisons of his existing opportunities and contemporary opportunities elsewhere. But clearly a static treatment of so essentially dynamic process as migration cannot yield adequate results and qualifications in this respect are necessary. By his decision to migrate, the migrant links his own prospects with opportunities in the new country. His migration would be a failure if conditions were to deteriorate in the new country or improve in the old, so that he would eventually be better off had he not moved at all. His decision therefore will depend largely on his judgement of the future prospects in both countries, on his preference for satisfaction in the near future, on the probability of expectations being realised, and on his evaluation of risk."

It would seem reasonable that in such situations potential migrants will base their decision on expectations based on the foreseeable future. Migration will be then a function of expected variables. For instance in the classical case:

\[
mit = f(Y^*_i(t), Y^*_j(t))
\]

or in a linear form:

\[
mit = a + b_1Y^*_i(t) + b_2Y^*_j(t)
\]

(Eq. 3.17)

where: 

\(mijt\) = migration from area (i) to area (j) in time (t);

\(Y^*_i(t)\) = expected income in area (i)

\(Y^*_j(t)\) = expected income in area (j).
Three forms of expectations, based on alternative ways of specifying expected rates of price inflation (Turnovsky, 1972) have been frequently used in migration studies (Walsh, 1974; Greenwood, 1975).

The first is merely stating that: real value = actual value

\[ Y_t^* = Y_t \]

where \( Y_t \): actual value of \( Y \) in period (t)

A slightly more elaborate hypothesis is incorporated in the following extrapolative expectations model:

\[ Y_t^* = Y_t + \gamma(Y_t - Y_{t-1}) \]

In this formulation expectations reflect current values plus or minus some correction based on the change in the variable since the previous period. If \( \gamma < 0 \) it is expected to reverse itself. If \( \gamma = 0 \) it reduces to static expectations \( Y_t^* = Y_t \).

Finally, an adaptive expectations hypothesis can be incorporated in the model by letting

\[ Y_t^* = Y_{t-1}^* + \gamma(Y_t - Y_t^*) \]

\( 0 \leq \gamma \leq 1 \)

This formulation assumes that in each period the previous period's level of \( Y_t^* \) is corrected by some fraction \( \gamma \) of the discrepancy between this forecast level and the actual level in the current period.

If the expectations hypotheses embodied in (a), (b) formulations are to be incorporated in the migration equation, the relevant expressions are simply substituted for \( Y_{it}^* \) and \( Y_{jt}^* \) in equation 3.17. By successive substitution and combination, equations 3.17 and (c) can be reduced to:

\[ m_{ijt} = a\gamma + b_1Y_{it} + b_2Y_{jt} + (1-\gamma)m_{ij}(t-1) \]  

(Eq. 3.18)

Equation 3.18, because of the inclusion of the lagged dependent
variable, must be treated in a different way from the usual Ordinary Least Squares approach as we discuss in the next chapter.

3.4 Models of Migration as an Investment in Human Capital

3.4.1 The Human Capital Approach

These models are based on the neo-classical theory about investment and have appeared largely in the works of the Chicago School, in particular Sjaastad (1962) and Schultz (1962). In his Costs and Returns of Human Migration, Sjaastad (1962) comments on previous studies looking at the response of migrants to labour earnings differentials:

"Most studies concerned about ... have found a relationship between income or earnings and migration and usually in the expected direction (that is, high earnings are associated with net in-migration, low earnings with net out-migration). The qualifications, however, are numerous and the observed relationship is usually quite small and weak."

Within this theory migration is viewed in a costs-and-returns framework, such that for an individual to migrate his expectations must be that the costs of migration are equal to or less than the difference in the present discounted values of the streams of benefits in the source and receiving areas. In other words, his ultimate migration decision will be based on a comparison of his expected utility derived from his discounted returns as a result of the move after allowing for discounted migration costs and his expected utility derived from his discounted returns if he was to remain in his existing locality.

For the discrete time period case, migration occurs if:

\[ \sum_{t=0}^{T} \frac{B_j}{(1+i)^t} - C(0) - \sum_{t=0}^{T} \frac{B_i}{(1+i)^t} \geq 0 \]  

(Eq. 3.19)

where:  
\[ B_j = \text{expected annual returns in destination area} \]
\[ B_i = \text{expected annual returns in origin area} \]
\[ T = \text{time horizon} \]
\[ i = \text{rate of discount} \]
\[ C = \text{costs of migration}. \]

We now turn to the private returns and costs of migration.

A. **Money Returns and Costs of Migration**

Private money returns to migration consist of positive or negative increment to real earnings stream obtained by moving to another place. This increment arises from a change in nominal earnings, a change in costs of employment, a change in prices or a combination of these. Money costs include the out-of-pocket expenses of movement.

(i) **The Money Costs**

The direct costs of moving include the costs of transport and the increase in expenditure on food and lodging (for migrants, their belongings and their dependants). The magnitude of these costs is sufficiently small that it cannot account for the large earnings differentials encountered in the data of most migration studies.

This is true in the case of Greek emigration to West Germany (see Figure 1.12), where big differences between average wages prevailed and the transportation costs were so low that for the northern regions of Greece (Macedonia and Thrace, see Figure 1.1) there was no difference in expenses from travelling to Athens or abroad (Federal Republic of Germany) (Fakiolas, 1980). A great number of recruited migrants have not had to pay for this journey.

Because of lack of precise estimates of these direct costs of migration, and since these costs are likely to vary directly with miles travelled, distance is often used as a proxy. The problem which arises in such an approach, however, is that distance, as we see below, also appears to be positively correlated with a set of non-money costs as well.
(ii) The Money Returns

The money returns to migration are the income that the potential migrant expects to receive in the destination area. This income consists of expected wages, expected earnings from the new level of prices and expected earnings from potential benefits provided by employment.

From Figure 1.17 we can compare the minimum wages of manual workers in Greece and West Germany expressed in US dollars for the period 1960-1982. The difference (wages in the Federal Republic of Germany were three times Greek wages in the early sixties) has been increased during the twenty years period 1960-1980. Greek emigrants to West Germany had the opportunity to increase their income even further by working considerable amounts of overtime. They could also enjoy unemployment benefits, while in Greece the first serious effort to establish unemployment benefits was only made in 1974 (Babanasis, 1982).

B. Non-Money Costs and Returns

The Human Capital model of decision-making based on the previous section where only economic costs and returns are included, is consistent with the narrow 'classical' concept of economic man. The individual is viewed as a bundle of productive services which can be offered for sale or for self-employment to produce goods and services for self-consumption or for the market. The choice of residence open to him from among the alternatives is determined exclusively by the spatial structure of employment opportunities and of prices for his services. It is assumed that just as the entrepreneur will select the investment which is expected to maximise his profits, so a migrant will choose the situation he expects will maximise his income. This approach predicts that migration will occur whenever expected net economic returns are positive.

The assumption of strict economic rationality has been criticised by economists (e.g. Vaizey, 1965) on the grounds that
people are not observed making the rather complex calculations necessary for the estimation of rates of returns to human capital investments. Empirical studies reveal that businessmen do not literally solve the equations specified by economists in which profit maximising is the central objective (Simon, 1966) – they are frequently guided by apparently convenient rules of thumb.

There are numerous dimensions to the environment to which individuals attach value that do not have opportunity costs as conventionally defined. Thus the maximisation of income is not synonymous with the maximisation of welfare. The differences between the economic and welfare costs and the economic and welfare returns to investment in migration are called, respectively, the psychic costs and returns.

As Becker (1964) states,

"Since many persons appear to believe that the term 'investment in human capital' must be restricted to monetary costs and returns, let me emphasize that essentially the whole analysis applies independently of the division of real earnings into monetary and psychic components."

He also avoids the measurement problem that economists confront when applying the conceptual framework to the empirical analysis of migration by stating that, "real earnings are the sum of monetary earnings and the monetary equivalent of psychic earnings".

(i) The Non-pecuniary Costs

The first non-pecuniary costs to consider are opportunity costs – the earnings foregone while travelling, searching for, and learning (training) a new job. Part of these foregone earnings is a function of the distance of migration. In addition, the required time for someone to find a job is presumably affected by the level of unemployment.

The costs related to on-the-job training are subject to measurement. Since they are reflected by reduced earnings, these
costs can be taken into account by choosing the appropriate expected earnings stream (after migration) for comparison with the expected stream had the migrant not moved.

The second form of non-pecuniary costs concerns 'psychic' costs. Since people are often reluctant to leave familiar surroundings, family and friends, migration involves a 'psychic' cost. It is difficult to quantify these costs. They do not represent real economic costs (Sjaastad, 1962). Rather, they are of the nature of lost consumer surplus on the part of the migrant. Although the psychic costs involve no resource cost, they do affect resource allocation. More migration would certainly take place if psychic costs were zero for everyone. In addition, even if knowledge were perfect, psychic costs could explain the existence of earnings differentials larger than those explained by the money and opportunity costs of migration. However, these differentials would not represent resource misallocation. Optimal resource allocation must take into account tastes and will vary accordingly if people prefer familiar to strange surroundings.

(ii) The Non-pecuniary Returns

As we have already seen, psychic costs do not involve any resource cost. Accordingly, non-pecuniary returns arising from locational preferences do not involve resource costs to the extent that they represent consumption which has a zero cost of production. Some people, for example, may be indifferent to earnings at one level in region A and a lower level in region B owing to a preference for the latter region's climate.

This type of return is taken into account especially when retired people decide to migrate and in the case of return migration, where one may decide to give up higher earnings in the destination area in order to enjoy the better climate and familiar environment in the place of origin (Tziafetas and Tzougas, 1985).
Distance is related to non-pecuniary returns since a convenient approach to the place of origin is always taken into account when the potential migrant has to decide among different destinations. This relationship raises a problem for the use of geographic distance as a proxy for the direct (economic) costs of moving.

We may now return to our model and write migration as a function of:

\[ mij(t) = F \left[ \frac{V_j(t) - V_i(t)}{V_i(t)} \right], \quad F' > 0 \]  \hspace{1cm} (Eq. 3.20)

where:

- \( mij(t) \) = labour migration from area \((i)\) to area \((j)\) in period \((t)\)
- \( V_j(t) \) = discounted present value of the expected real income stream over a worker's planning horizon in area \((j)\)
- \( V_i(t) \) = discounted present value of the expected real income stream over a worker's planning horizon in area \((i)\).

Migration takes place as a result of individuals seeking to maximise their utility which is functionally related to the expected present value of income (pecuniary and psychic), the discount period usually taken to be migrant's working lifetime.

Expected future income is usually related to the median income of a relevant (economic or socio-economic) older group at the origin and in potential destinations while expected income is usually combined with a measure of the probability of finding employment in the potential destination region. Discount rates are normally determined by experimentation using different levels after suggesting suitable functional forms for equation 3.20.

One of the most significant efforts of studying migration using the human capital approach is the investigation of net migration out of the southern United States made by Bowles (1970). Based on the approach that a utility maximiser would decide to migrate whenever
the benefits of migration exceed the costs, after properly discounting both to their present values and then summing, he has used panel data. He has assumed that a working life is extended to age 65 and income gains are based on the mean earnings for the certain population sub-group in the South and non-South. The present value of the expected stream of earnings extending over the remainder of the working life of the sub-group in question was computed, using a variety of assumptions concerning the subjective role of time preference and the appropriate upward adjustment of the income streams to take account of future productivity growth. A variety of rates of time preference were used: one per cent, six per cent and eleven per cent, while an assumption of one per cent per annum of productivity growth has been made.

It is obvious that a study of the determinants of migration based on the human capital approach requires panel data of a certain sub-group of the population in question, and a number of assumptions which sometimes do not agree with the real world and influence to a high degree the results of the estimations.

An almost inevitable outcome of the human capital approach is that migrants are disaggregated in at least two distinct ways (Garcia Ferrer, 1982). Firstly, they are disaggregated by economic or socio-economic group or for several countries by race so as to determine future income streams relevant to each group. Secondly, they are disaggregated by age since older migrants are likely to discount future income more heavily (possibly more risk-aversers) than their younger counterparts due to greater occupational risk and uncertainty. Older migrants may also seek relatively larger threshold present value differentials as an inducement to migrate since their discounting horizon is both shorter and less certain.

Several researchers (Navratil and Doyle, 1977; Clark and Ballard, 1980) support the view that the decision to migrate may be considered a two-dimensional process. The first dimension involves the decision of whether or not to relocate, while the second concerns the question of exactly where to relocate. (2)
The personal characteristics of a migrant, particularly age and education, tend to significantly influence the first phase of the migration decision. Gallaway (1969) and Wertheimer (1970) have demonstrated that mobility declines with age and Hamilton (1965) has concluded that it increases with education. Other personal characteristics which may be significant in influencing migration are employment status, lifestyle and previous migration by the individual. The probability that a labor force member will migrate is likely to increase when an individual is unemployed, since the unemployed are likely to perceive greater expected returns to mobility than the employed. It is also reasonable to expect that established families would be less mobile because of the added costs of moving an entire family. Finally, persons who have moved at least once in the past are more likely to move again than persons who have not yet experienced their first move.

The second phase, on the other hand, tends to be a function of the labor market characteristics of an area which makes it attractive to migrants. Research conducted by Greenwood (1975), Raimon (1962) and Lowry (1966) using aggregate data has revealed that migration into an area is positively affected by an area's rate of employment growth, degree of urbanisation, educational level, per capita income, and the number of persons who migrated to the area in past periods. It is negatively affected by the distance separating the origin and the destination areas and by the unemployment rate of the destination area.

Doyle and Navratil (1977) argued that studies of migration are subject to specification bias by ignoring one of the two sets of characteristics which influence the decision to migrate.

3.4.2 Empirical Weaknesses

While supporters of the human capital approach are claiming that their empirical results provide improvements compared to the static differential models (Neo-classical-Keynesian), there are nevertheless serious enough empirical weaknesses resulting from the
approach to warrant the argument for the need to develop alternative expectational schemes (Hart, 1975).

The first concerns the choice of discount rates. The fact that discount rates are experimentally determined is not of critical importance if disaggregation, as referred to above, is undertaken. The problem arises from the fact that an individual will discount his future with respect to both pecuniary and psychic income and almost inevitably only pecuniary income can be measured. The two discount rates, however, cannot be regarded as being independent. For instance, in the case of risk-averse behaviour one would expect the two rates to be negatively related since a migrant who is primarily concerned to maximise his utility, which is derived from psychic returns (enjoying a better environment), may discount his money returns less heavily than in another situation where psychic returns are not of critical importance. Thus the optimum discount rate chosen for the expected money returns may be biased since it is affected by an influence excluded from the model.

The second weakness concerns future income stream. It seems imperative that estimates of expected income returns should reflect certain individual and group influences which will affect future income stream. For example, one's expected income should be adjusted to take account of future increases in human capital investments (opportunity and willingness to attend educational or on-the-job training schemes) and pecuniary increases due to changes of aggregate productivity rate and/or the ability of trade unions to influence the returns to labour. However, given the long time horizon of the human capital decision, such adjustments must be regarded as highly experimental.

The third criticism is related closely to the second. Expected income returns are usually multiplied by a probability of finding employment. Employment opportunity is related to the whole lifetime span of money, and to a lesser extent psychic, income returns.
If long-term expectations of employment opportunity are based on past experience of relative occupational and age groups, then for many potential migrants (especially in low-skill occupations) it may be seen to be so uncertain that the resulting high rate at which the future would be discounted may possibly truncate the effective decision period producing a much shorter time-span model.

If expectations are based on the current cross-sectional position, by observing employment opportunity among older age groups at any given time, then possibly they must be modified to take account of the changing employment pattern of employment opportunity by age group through time.

The fourth criticism concerns the assumption that a migrant's working lifetime is the decision period over which expectations are based and it seems to be a bold one. The following reasons support the argument that for a significant proportion of potential migrants a more valid period would be much shorter.

(a) Certain individuals may decide to migrate under conditions of anticipated return migration. This is especially the case of Mediterranean migration to Western Europe. Migrants from relatively poor countries such as Portugal, Southern Italy, Greece and Turkey migrated to developed Western European countries such as France, West Germany, Belgium and Sweden. During their stay in the receiving countries they endeavour to save the maximum proportion possible of their earned income before returning home to invest their savings in such a way as to improve their occupational and/or consumer status.

(b) The category of younger potential migrants is more likely to emphasise expected money returns within its utility function than its older counterpart. As we move into the older age groups, psychic considerations may gradually replace pecuniary ones. Such a possible switch in emphasis from pecuniary to psychic considerations through an individual's working lifetime may be according to the theory of human capital decision-making but not to empirical models which primarily emphasise the pecuniary aspects of the decision. Therefore
it may be preferable to treat any pecuniary move as being concerned with utility maximisation of a segment of total time, while the start of a new segment would stress a new relative weighting of money and psychic returns.

(c) The role of Risk and Uncertainty affect the migration decision. Decision-making is a function of the prevailing macro-economic climate. Under certain economic conditions the evaluation of the long-term future may be seen to be so uncertain and economic decisions so risky that the effective decision period may be severely shortened (Mueller, 1981).

3.4.3 Specification of the Migration Function

The difficulties of empirical estimation of migration models based on the human capital approach (requirement of panel data and of certain assumptions - Bowles, 1970), as well as the empirical weaknesses mentioned above, led researchers to alter the model specifying migration function in order to avoid criticisms. Because of lack of panel data in our case (Greek migration), and in order to avoid the empirical weaknesses we are going to re-specify the migration function, returning to equation 3.20.

We may define the discounted present value of the expected real income stream over a worker's planning horizon to include the unemployment opportunity element.

\[
V_i(o) = \int_{t=0}^{u} P_i(t)Y_i(t)e^{-rt} dt
\]  

(Eq. 3.21)

where:

- \( Y_i(t) \) = net real income in area (i) in period (t)
- \( P_i(t) \) = probability of having a job in area (i) in period (t)
- r = discount rate reflecting the degree of consumption time preference of the typical worker in area (i,j)
\[ V_j(t) = \int_{t=0}^{u} P_j(t) Y_j(t) e^{-rt} \, dt - C(o) \]  
(Eq. 3.22)

where:  
- \( Y_j(t) \) = net real income in area (j) in period (t)  
- \( P_j(t) \) = probability of having a job in area (j) in period (t)  
- \( C(o) \) = initial fixed cost of migration and re-allocation in area (j)  
- \( t \) = time (year).

We may also define:

\[ P_i(t) = \left( \frac{E_i}{L_i} \right) (t) \]

where:  
- \( E_i \) = the existing employed labour force in area (i)  
- \( L_i \) = the existing total labour force in area (i)

and

\[ P_j(t) = \left( \frac{E_j}{L_j} \right) (t) \]

where:  
- \( E_j \) = existing employed labour force in area (j)  
- \( L_j \) = existing total labour force in area (j).

If we assume, as did Todaro (1969), Harris and Todaro (1970), Laber and Chase (1971), Yap (1976) and Salvatore (1981a) in order to avoid weaknesses (referred to above), that real income differentials remain constant over time, the empirical estimation of the model can be simplified by dealing with a one-period time horizon.

Thus, we may have:

\[ m_{ij} = F \left[ Y'(t) \right], \quad F' > 0 \]  
(Eq. 3.23)

where:

\[ Y'(t) = \left[ \frac{E_i(t)Y_j(t) - E_i(t)Y_i(t)}{L_j(t)Y_i(t)} \right] / \frac{E_i(t)Y_i(t)}{L_i(t)Y_i(t)}. \]

In order to utilise all the information provided by the two variables we take them separately as:
mij(t) = G \left[ Y(t), E(t) \right], \quad Y > 0 \quad \text{and} \quad E > 0 \quad \text{(Eq. 3.24)}

where:\n\begin{align*}
Y(t) &= \frac{Y_j(t) - Y_i(t)}{Y_i(t)} > 0 \\
E(t) &= \frac{(E_j/L_j)(t) - (E_i/L_i)(t)}{(E_i/L_i)(t)} > 0
\end{align*}

Since unemployment rate \( U = 1 - E/L \) testing the previous equation 3.24 is equivalent to testing equation 3.25:

\[ mij(t) = H \left[ Y(t), U(t) \right], \quad H_Y > 0 \quad \text{and} \quad H_U < 0 \quad \text{(Eq. 3.25)} \]

where:\n\begin{align*}
U(t) &= \frac{U_j(t) - U_i(t)}{U_i(t)} < 0.
\end{align*}

Equation 3.25 indicates the relative importance of short-run as opposed to the long-run forces in the migration decision. An unemployed worker is likely to migrate independently of the higher income stream that he might receive in the long run by migrating.

Since migration (especially international migration) is a decision which is not reversible without implying considerable costs, it may be regarded as a function of the expected value of the explanatory variables. Expectations can take the form of:

(a) Static expectations, where real value = actual value, for instance: \( Y_t^* = Y_t \) or,

(b) Extrapolative expectations model where:
\[
Y_t^* = Y_t + \gamma (Y_t - Y_{t-1})
\]

If \( \gamma > 0 \) the change in the variable is expected to continue,
If \( \gamma < 0 \) the reverse is expected, and
If \( \gamma = 0 \) it reduces to the static expectations form.

The above expectations hypotheses are simply substituted in the equations 3.24 and 3.25.
Finally, expectations will be formed on the basis of a distributed lag of current and past values of the explanatory variables (Adaptive expectation). In this case substitution of the explanatory variable will lead to the inclusion of the lagged dependent as an additional explanatory variable. For example,

\[
Y^*_t = Y^*_{t-1} + \gamma(Y_t - Y^*_{t-1}), \quad 0 \leq \gamma \leq 1
\]

equations 3.24 and 3.25 become:

\[
m_{ij}(t) = f \left[ Y(t), E(t), m_{ij}(t-1) \right] \quad (Eq. 3.26)
\]

\[
m_{ij}(t) = Q \left[ Y(t), U(t), m_{ij}(t-1) \right] \quad (Eq. 3.27)
\]

The inclusion of the lagged dependent as an additional explanatory variable leads to the violation of two basic assumptions of OLS. \( E(e_t m_{t-1}) \neq 0 \) and \( E(e_t e_{t-1}) \neq 0 \), and the power of the Durbin-Watson statistic to detect serial correlation is impaired requiring estimation by the Wallis (1967) or other methods (Salvatore, 1977).

We may now extend the model by separating the 'push' from the 'pull' factors. Equations 3.26 and 3.27 become:

\[
m_{ij}(t) = f \left[ Y_i(t), Y_j(t), E_i(t), E_j(t), m_{ij}(t-1) \right] \quad (Eq. 3.28)
\]

\[
m_{ij}(t) = Q \left[ Y_i(t), Y_j(t), U_i(t), U_j(t), m_{ij}(t-1) \right] \quad (Eq. 3.29)
\]

Thus we may conclude that the approach followed by many researchers that divides factors influencing the decision to migrate into those that 'push' individuals out of the origin (depressed) area, and those that 'pull' them into the destination (developed) area is frequently only a crude version of human capital theory (Barnum and Sabot, 1976).

Finally, in order to deal with the problem of multi-collinearity which arises from the use of time series data, we can estimate migration as a function of the ratios of the explanatory variables, in this way decreasing their number. Equations 3.28 and 3.29 become:
\[ m_{ij}(t) = f \left[ \frac{Y_j}{Y_i}(t), \frac{E_i}{E_i}(t), m_{ij}(t-1) \right] \]  \hspace{1cm} (Eq. 3.30)

\[ m_{ij}(t) = Q \left[ \frac{Y_j}{Y_i}(t), \frac{U_j}{U_i}(t), m_{ij}(t-1) \right] \]  \hspace{1cm} (Eq. 3.31)

Equation 3.25 is equivalent to equation 3.13 of the Keynesian model. If we take expected values of equation 3.25 we arrive at equation 3.27 or equation 3.29 which is similar to the equation yielded by introducing expected values in equation 3.13 of the Keynesian model (Table 3.1). In the following chapter we are going to determine migration flows between Greece and West Germany using the models derived above (Table 3.1 shows the process followed):

(a) Neo-classical.

(b) Keynesian.

(c) The 'common' dynamic push-pull model derived by taking expected values of both equations 3.13 (Keynesian) and 3.25 (Human Capital).
Neo-classical

Main explanatory variable: income differentials

\[ \text{mij} = f(Y_i, Y_j) \]

Taking expectations the model becomes:

\[ \text{mij}(t) = f(Y_i t, Y_j t, \text{mij}(t-1)) \] (a)

Keynesian

Unemployment together with income differentials are the causes of migration

\[ \text{mij} = f(Y_i, Y_j, U_i, U_j) \] (b)

Human Capital

Migration decision is based on the discounted present value of net expected utility resulting from migration

\[ \text{mij}(t) = F \left[ \frac{V_j(t) - V_i(t)}{V_i(t)} \right] F' > 0 \]

After taking into account the empirical weaknesses of the original model we conclude to a model similar to that of the Keynesian case where migration depends on income and employment opportunities (unemployment)

\[ \text{m} = f(Y_t, U_t) \]

The model disaggregated into groups of variables stating 'push', 'pull' factors becomes similar to the Keynesian model

\[ \text{mij} = f(Y_i, Y_j, U_i, U_j) \] (c)
Footnotes

(1) For the differences between Neo-classical and Keynesian models, see Appendix Table A3.3.

(2) Of course, these dimensions are often inseparable. A decision to relocate is most often made simultaneously with the decision to relocate to a specific area.

(3) Also, the time a potential migrant is planning to stay abroad influences his decision because he is going to discount his expected costs (psychic) more heavily if he plans to stay longer than the usual short period of one or two years (Levy and Wadicki, 1972).

(4) The one-year lagged dependent variable may be interpreted to correspond to the information available to potential migrants as well as the help new migrants may receive when they arrive at the destination area (Lianos, 1972; Greenwood, 1970).

(5) Note that $Y_{ij}$ is not the same for all three models. In the Neoclassical equation $Y_{ij}$ represents wage rates, in the Keynesian, it represents national incomes and in the Human Capital, net-returns (after taking into account cost of living).

(6) For definitions of $y_{ij}$ see footnote above.
### Table A3.1

Prices of $T_1 = (1+\gamma)^{1-a} + (1-\gamma)^{1-a}$ for $0 < a < 1$ and $0 < \gamma < 1$

<table>
<thead>
<tr>
<th>$a$</th>
<th>$0$</th>
<th>$0.25$</th>
<th>$0.50$</th>
<th>$0.75$</th>
<th>$1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma$</td>
<td>$T_1 = (1+\gamma)^{1-a} + (1-\gamma)^{1-a}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0$</td>
<td>$2$</td>
<td>$2$</td>
<td>$2$</td>
<td>$2$</td>
<td>$2$</td>
</tr>
<tr>
<td>$0.25$</td>
<td>$2$</td>
<td>$1.99$</td>
<td>$1.23$</td>
<td>$1.99$</td>
<td>$2$</td>
</tr>
<tr>
<td>$0.50$</td>
<td>$2$</td>
<td>$1.95$</td>
<td>$1.93$</td>
<td>$1.95$</td>
<td>$2$</td>
</tr>
<tr>
<td>$0.75$</td>
<td>$2$</td>
<td>$1.87$</td>
<td>$1.82$</td>
<td>$1.87$</td>
<td>$2$</td>
</tr>
<tr>
<td>$1$</td>
<td>$2$</td>
<td>$1.68$</td>
<td>$1.41$</td>
<td>$1.68$</td>
<td>$2$</td>
</tr>
</tbody>
</table>

### Table A3.2

Prices of $T_2 = (1+\gamma)^{-a} + (1-\gamma)^{-a}$ for $0 < a < 1$ and $0 < \gamma < 1$

<table>
<thead>
<tr>
<th>$a$</th>
<th>$0$</th>
<th>$0.25$</th>
<th>$0.50$</th>
<th>$0.75$</th>
<th>$1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma$</td>
<td>$T_2 = (1+\gamma)^{-a} + (1-\gamma)^{-a}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0$</td>
<td>$2$</td>
<td>$2$</td>
<td>$2$</td>
<td>$2$</td>
<td>$2$</td>
</tr>
<tr>
<td>$0.25$</td>
<td>$2$</td>
<td>$2.02$</td>
<td>$2.35$</td>
<td>$2.08$</td>
<td>$2.13$</td>
</tr>
<tr>
<td>$0.50$</td>
<td>$2$</td>
<td>$2.09$</td>
<td>$2.23$</td>
<td>$2.41$</td>
<td>$2.67$</td>
</tr>
<tr>
<td>$0.75$</td>
<td>$2$</td>
<td>$2.28$</td>
<td>$2.75$</td>
<td>$3.48$</td>
<td>$4.57$</td>
</tr>
<tr>
<td>$1$</td>
<td>$2$</td>
<td>$\infty$</td>
<td>$\infty$</td>
<td>$\infty$</td>
<td>$\infty$</td>
</tr>
</tbody>
</table>

179.
DIFFERENCES BETWEEN NEO-CLASSICAL AND KEYNESIAN MODELS

The structure of the complete Keynesian model can be displayed against the corresponding form of the Neo-classical model as shown in Table A3.3. The three differences in the functional relations between the models are: (a) in the Neo-classical model savings depend only on interest rate, while in the Keynesian model savings depend on income providing the basis of the multiplier effect; (b) demand for money includes a speculative demand, as a decreasing function of interest rate, in the Keynesian but not in the Neo-classical model; (c) labour supply, in the Keynesian, is dependent on money wage rate (instead of real wage rate as in the Neo-classical version) and money wages are inflexible below a certain level (Allen, 1967).

### Table A3.3

<table>
<thead>
<tr>
<th>Market</th>
<th>Classical</th>
<th>Keynesian</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment=savings</td>
<td>( I(r) = S(r) )</td>
<td>( I(r) = S(y) )</td>
</tr>
<tr>
<td><strong>Money</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand</td>
<td>( M = kY )</td>
<td>( M = L_1(Y) + L_2(r,P) )</td>
</tr>
<tr>
<td>and ( W = Pw, Y = Py ) and ( Y = Py )</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Labour</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand</td>
<td>( y = y(N) )</td>
<td>( y = y(N), w = y'(N) )</td>
</tr>
<tr>
<td>( \frac{W}{P} = y'(N) )</td>
<td>( W = w_0 + w(N) )</td>
<td></td>
</tr>
<tr>
<td>Supply</td>
<td>( N = N(\frac{W}{P}) )</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER FOUR

EMPIRICAL ESTIMATIONS

4.1 Introduction

The purposes of this chapter are two-fold. Firstly, it aims to estimate the determinants of migration between Greece and West Germany during the 1960-1982 period. Secondly, it aims to introduce new approaches in migration modelling. Sections 4.2 and 4.3 present empirical estimations of migration based on simple neoclassical, Keynesian and human capital models. Section 4.4 introduces utility functions and risk coefficients in migration modelling aiming to improve the previously used models and in particular the human capital model. Finally, section 4.5 examines migration decisions in a choice model context which enables us to estimate the probability that an individual, drawn at random from the population, will choose to migrate in a specific location.

The models which are presented below are time series models. They analyse how the rate of migration varies over time (from year to year) as a result of changes over time in the underlying socio-economic conditions between two regions (countries). For example, as real wages rise and the rate of unemployment falls in the more developed country relative to the less developed one over time, we might expect the migration rate from the less developed country to the more developed country to rise. On the other hand, if the gap in real wages and unemployment rates narrows between the two countries over time, we might expect the migration rate to decline and possibly even reverse itself. In general, time series analysis is theoretically more appropriate for the analysis of economic relationships. However, the majority of migration studies which concern regional migration within a country, use cross-section data due to the high costs involved in the collection of data over time (Greenwood, 1975; Fields, 1979; Kau and Sirmans, 1977; Vanderkamp, 1971; Salvatore, 1981a). Only a few studies, which concern international migration, use time series models (Maldonato, 1976; Walsh, 1974). The only study of Greek migration concerns out-migration to
West Germany and the period covered is 1960-1973 (Lianos, 1975).

The literature on migration reveals a division between those who specify models in terms of net migration (Fleisher, 1963; Fabricant, 1970) and the larger number who work in terms of gross flows (Sahota, 1968; Greenwood, 1969; Gallaway and Vedder, 1971). The question of the appropriateness of the alternative specifications is not always explicitly discussed and the impression is sometimes conveyed that data availability has dictated the choice (Walsh, 1974). However, both Fabricant (1970) and Greenwood (1969) argue that net migration models are reduced-form equations from structural models specified in terms of gross migration; Vanderkamp (1971) treats equations for gross flows as reduced-form equations incorporating elements of structural relationships specified in terms of new and autonomous migration. Availability of data enables us to test models of Greek emigration to West Germany and return migration from West Germany.

All the estimated models presented in this chapter are one-equation models which relate the rate of emigration (return migration) to a set of explanatory variables. In single equation models the causality is unidirectional, running from the independent or explanatory variables to the dependent variable. Thus, the rate of migration is predicted to vary in a specific way depending on the change over time of explanatory variables.

Table 4.1 defines the variables which have been used for the empirical estimations of Greek migration flows to and from West Germany. All models have been estimated by the Ordinary Least Square Method (OLS). It is assumed that the classical assumptions concerning the residuals, the explanatory variables, their independence and the dependent variable are held. The next section (4.2) treats empirical estimations concerning out-migration flow.
### Table 4.1

**List of Variables Used in Empirical Estimations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMP</td>
<td>Greek out-migration to West Germany (1980-1982), thousands.</td>
</tr>
<tr>
<td>EMLF</td>
<td>Greek labour force emigrating to West Germany (1960-1982), thousands.</td>
</tr>
<tr>
<td>IMP</td>
<td>Greek migrants returning from West Germany to Greece (1960-1982), thousands.</td>
</tr>
<tr>
<td>EMP1</td>
<td>EMP one year lagged.</td>
</tr>
<tr>
<td>WG</td>
<td>real hourly earnings; manufacturing (1975=100), West Germany.</td>
</tr>
<tr>
<td>WH</td>
<td>real hourly earnings; manufacturing (1975=100), Greece.</td>
</tr>
<tr>
<td>URG</td>
<td>Unemployment ratio % (1960-1982) in West Germany.</td>
</tr>
<tr>
<td>URH</td>
<td>Unemployment ratio % (1960-1982) in Greece (estimations).</td>
</tr>
<tr>
<td>MPS</td>
<td>Greek migrants residing in West Germany (stock), 1960-1982.</td>
</tr>
<tr>
<td>MPS1</td>
<td>MPS one year lagged.</td>
</tr>
<tr>
<td>R</td>
<td>remittances from West Germany (US$ thousand), 1960-1982.</td>
</tr>
<tr>
<td>RW</td>
<td>WH/WG.</td>
</tr>
<tr>
<td>RU</td>
<td>URH/URG.</td>
</tr>
<tr>
<td>URM</td>
<td>unemployment ratio % of Greek migrants in West Germany (1970-1982).</td>
</tr>
<tr>
<td>RM</td>
<td>ratio of real average collectively agreed wages in Greece and West Germany.</td>
</tr>
</tbody>
</table>

**Sources:** United Nations, *Yearbook of National Accounts* (various years); National Statistical Service of Greece (NSSG) (various years); OECD (Country Reports); Bank of Greece, Statistical Survey; European Economy; Statistisches Jahrbuch, FRG (various years); Statistisches Taschenbuch (1982, 1983, 1984, 1985); Karavitis (1986); German Ministry of Labour.

**Note:** In following the above variables with the capital letter (L) in front of them, state the logarithm of the variables. For example: LEMP = log(EMP).
4.2 Out-Migration

A great number of equations have been estimated but only equations which revealed the best results are presented below. The dependent variable EMP measures thousands of Greeks who migrated to West Germany during the twenty-three year period 1960-1982. (Unfortunately there is no data on the sex composition of migrants.)

4.2.1 Neo-classical Model

The presentation of empirical estimations begins with the migration model based on the neo-classical theory. Under the neo-classical assumptions about labour and product markets, migration between two regions is explained by the earnings differentials occurring between the regions (Maldonado, 1976; Zell, 1977). Thus, explanatory variables in our model are indexes of real hourly earnings in manufacturing WH, WG for Greece and West Germany respectively (base year 1975=100). Since the majority of Greek migrants were workers or technicians (or agricultural workers but there is no data on earnings of this category) prior to their departure and most of them are employed in manufacturing while abroad, hourly earnings in manufacturing constitute a representative measure of earnings in the two countries.

An increase in the difference between earnings in the two countries may cause an increase in the rate of out-migration from the low earnings country to the high earnings country. An increase of earnings in West Germany will increase the difference, attracting more migrants from Greece so the sign of this variable (WG) is expected to be positive. On the other hand, an increase of earnings in Greece may cause a reduction in the difference leading to a decline of emigration. The sign of this variable (WH) is expected to be negative. Equation 4.1 gives the empirical estimation of the neo-classical model in logarithmic form.
LEMP = 11.23 + 0.7 LWG - 0.9 LWH

\[ R^2 : 0.56 \]  
(Eq. 4.1)

(*) statistically significant at 0.10.
The numbers in parentheses are standard errors.

Both variables take the expected signs but only earnings in Greece (LWH) are statistically significant. The coefficient, which for the logarithmic model represents the elasticity, suggests that a one per cent increase in hourly earnings in Greece will cause a 0.9 per cent decrease in emigration. The low Durbin-Watson statistic (0.75) suggests the existence of positive serial correlation. One reason for this may be that both variables are subject to common time trend as we can see in Figure 1.20. The application of the Cochrane-Orcutt (1949) procedure, in order to overcome the problem, led to a reduction of $R^2$ below 0.50 and was not accepted.

The search for the existence of collinearity\(^{(2)}\) between the two variables reveals that it is likely to cause problems in the estimation of coefficients and the application of statistical tests. The use of the earnings ratio ($RW = WH/WG$) did not much change the result 'compared' with equation 4.1. The reasons for this must lie in the specification of the model. Omission of substantial explanatory variables may cause big problems in empirical estimation. Next, we proceed to the presentation of the more advanced 'push-pull' model.

4.2.2 'Push-Pull' Model

The push-pull model derived from the Keynesian and human capital models of migration (Table 3.1) relates the dependent variable of Greek emigration (EMP) to a set of variables which include:
(a) the index of real hourly earnings in manufacturing WH, WG in Greece and West Germany like the previous model in equation 4.1; and
(b) the unemployment ratios URH, URG in Greece and West Germany respectively (Table 4.1).

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High earnings and employment opportunities ('pull' factors) prevailing in a country attract migrants from other countries, while low earnings and unemployment ('push' factors) in a country may stimulate emigration abroad (Walsh, 1974; Salvatore, 1984; Greenwood, 1985; Blanco, 1963; Lowry, 1966; Nelson, 1959). An increase of earnings in West Germany and of unemployment in Greece will stimulate emigration from Greece. The signs of these two variables (WG, URH) are expected to be positive. A decrease in employment opportunities or an increase of unemployment in West Germany and a rise of earnings in Greece will decrease emigration. The signs of these variables WH and URG (Table 4.1) are expected to be negative. Equations 4.2, 4.3 and 4.4 give the empirical estimations of the model which are expressed in a logarithmic form.

\[
\begin{align*}
\text{LEMP} & = 7.08^{**} + 1.21\text{LWG}^{**} - 0.34\text{LWH} - 1.03\text{LURG}^{**} + 0.28\text{LURH}^{*} \\
& \quad (1.36) \quad (0.52) \quad (0.27) \quad (0.14) \quad (0.15) \\
R^2 & = 0.88 \\
\text{LEMP} & = 8.31^{**} + 0.60\text{LWG}^{**} - 1.08\text{LURG}^{**} + 0.16\text{LURH}^{*} \\
& \quad (0.99) \quad (0.22) \quad (0.13) \quad (0.11) \\
R^2 & = 0.87 \\
\text{LEMP} & = 7.34 + 1.32\text{LWG} - 0.32\text{LWH} - 0.99\text{LURG} + 0.26\text{LURH} \\
& \quad (1.52) \quad (0.60) \quad (0.29) \quad (0.16) \quad (0.16) \\
& \quad + 0.012\text{LEMP}1 \\
& \quad (0.029) \\
R^2 & = 0.87
\end{align*}
\]

(\text{*}) statistically significant at 0.10.

The numbers in parentheses are standard errors.

Equation 4.2 represents the 'push-pull' model. All variables take the expected signs. Only earnings in Greece (WH) are statistically insignificant. The interpretation of coefficients reveals that for a 1 per cent increase in earnings in West Germany (LWG) and unemployment ratios in the two countries (LURG, LURH), emigration will increase by 1.21 per cent, decrease by 1.03 per cent and increase by 0.28 per cent respectively.
Equation 4.3 estimates the model when the statistically insignificant variable LWH (earnings in Greece) is omitted. All variables take the expected signs and are statistically significant. From both equations 4.2 and 4.3 we may infer that the inclusion of the variable LWH slightly improves $R^2$ while there are no dramatic changes in the values of coefficients and t-statistics except for the LWG coefficient. Since we are not sure about serial correlation (the Durbin-Watson statistic is 1.30 and 1.21 for equations 4.2 and 4.3 respectively) and about multi-collinearity, which is likely to exist, we cannot conclude to omit or not the variable LWH.

If emigration is regarded as a function of the expected value of the explanatory variables (adaptive expectations), the model takes the form of equation 4.4 in which the dependent variable one year lagged (EMpl) is included as an explanatory variable. Emigration one year lagged stands for the information available to potential migrants in Greece about the socio-economic conditions prevailing in the receiving country. It also represents the friendly environment which may welcome new migrants and help them (Lianos, 1972). The sign of this variable is expected to be positive since the presence of friends at the place of destination and the availability of information constitute positive factors in favour of out-migration when the decision is to be taken. Again, the best result is provided by the logarithmic form. All variables take the expected signs but the addition of LEMP1 violates the assumption of independence between explanatory variables and residuals resulting in the inconsistency of the Ordinary Least Squares Estimators (Maddala, 1977; Theil, 1971).

To overcome this problem, a re-estimation of equation 4.4 has been done using the Wallis (1967) method:

$$\text{LEMP} = 7.03^{**} + 1.25\text{LWG}^{**} - 0.30\text{LWH} - 1.02\text{LURG}^{**} + 0.22\text{LURH} \quad (\text{Eq. 4.4a})$$

$$(1.53) \quad (0.61) \quad (0.27) \quad (0.23) \quad (0.17)$$

$$+ 0.02\text{LEMP1} \quad \hat{R}^2 = 0.86$$

$$(0.025)$$
From the above equations 4.2, 4.3, 4.4 and 4.4a, one may conclude that the main determinants of out-migration from Greece to West Germany during the 1960-1982 period were, from the point of view of statistical significance and coefficient's size, firstly, earnings and unemployment in West Germany and, secondly, unemployment in Greece. The above conclusions can be compared with the conclusions of Lianos (1975) in his article "Flows of Greek Out-Migration and Return Migration" which constitutes the only empirical study of the determinants of Greek migration to West Germany. The author estimates the following equation of migration for the 1960-73 period:

\[
M_t = b_0 + b_1 Y_g + b_2 Y_{gr} + b_3 U_g + b_4 U_{gr} + b_5 M_{t-1}
\]

where:
- \( M_t \) = gross migration from Greece to West Germany.
- \( Y_g \) = income in West Germany.
- \( Y_{gr} \) = income in Greece.
- \( U_g \) = unemployment in West Germany.
- \( U_{gr} \) = unemployment in Greece.
- \( M_{t-1} \) = gross migration in the previous period.

He assumes that the number of moving people is positively (inversely) related to the level of income of the country of destination (origin). Also, the size of emigration is inversely (positively) related to the level of unemployment in the country of destination (origin). Hence, the parameters \( b_1 \) and \( b_4 \) are expected to be positive, while \( b_2 \) and \( b_3 \) are expected to be negative. As regards the coefficient \( b_5 \), it is expected to be positive.

The estimated equation is:

\[
M_t = 63.67 - 83 Y_g + 222 Y_{gr} - 17.61 U_g - 78 U_{gr} + 31 M_{t-1}
\]

(Eq. 4.5)

\[ R^2 = 0.82 \]

The numbers in parentheses are the standard errors.

The author's conclusion is that unemployment in West Germany, \( U_g \), is the main determinant of Greek migration. Although the aforementioned
conclusion of the author, as regards the importance of the employment opportunities factor in West Germany is of course true, we think that this conclusion cannot be based on the aforementioned estimated equation. This equation as we will discuss cannot be accepted both from the economic and statistical point of view and consequently it cannot be used for deriving conclusions about the importance of its included determinants of migration between Greece and West Germany.

Of course, he does not say anything about the violation of independence between explanatory variables and residuals due to the existence of $M_{t-1}$. However, we will criticise his results as given. The sign of the coefficient of the variable income in West Germany ($Y_g$) is negative, i.e. an increase (decrease) of income will cause a decrease (increase) of emigration. However, this result does not agree with the adopted assumption of the author. The same can be said for the coefficients of the variables, income in Greece ($Y_{gr}$) and unemployment in Greece ($U_{gr}$). This is because the sign of variable $Y_{gr}$ is positive and the sign of the variable $U_{gr}$ is negative, i.e. they are contrary to what was expected. As regards the size of the estimates of the coefficients of the equation (which would allow us to measure the influence of each explanatory variable on the dependent variable and consequently to see the importance of these variables) we can say nothing for the three variables previously referred to due to the fact that their signs do not agree with the author's assumptions.

Testing the statistical significance of coefficients, we observe that all the regression coefficients with the exception of variable unemployment in West Germany are not statistically significant. Also, the author does not refer to the problem of multi-collinearity. This problem is likely to appear in the applied equation. For example, a change of income (increase), if the labour force is not changing (increasing) as rapidly as income, creates more opportunities of employment and consequently it causes changes in the level of employment (increase) or unemployment (decrease).
Summarising the findings of equation 4.5 from economic and statistical points of view, we observe that: three main explanatory variables of the equation which contains five explanatory variables are inconsistent. This inconsistency of more than half of the main explanatory variables reflects the validity of the equation as a whole for the economic explanation of the result obtained. Furthermore, only one variable (Ug) is statistically significant. This fact, of course, decreases the usefulness of the equation as a whole from the point of view of its statistical reliability. Finally, the possible existence of multi-collinearity between the explanatory variables may not allow us to use this equation for measuring the degree of importance of their included determinants on Greek migration.

Based on them, we can say that equation 4.5 cannot be accepted from the economic and statistical point of view and consequently it cannot be used for deriving conclusions which will refer to the period of the empirical analysis of Greek emigration to West Germany. Of course, the two equations 4.4 and 4.5 are not directly compared in terms of variables' measurement and sample's period but the crucial point is that Professor Lianos's conclusions cannot be accepted in explaining emigration from Greece.

Since multi-collinearity is likely to exist but is very difficult to detect, we proceed with the estimation of equation 4.6. Here, the explanatory variables have been decreased to two by taking the ratios of earnings and of unemployment percentage, RW and RU respectively (Table 4.1). Variable RW defines the ratio of earnings in Greece (WH) over earnings in West Germany (WG) and variable RU defines the ratio of unemployment in Greece (URH) over unemployment in West Germany (URE) (Table 4.1).

An increase in the ratio of earnings RW due to an increase of earnings in Greece or a decrease of earnings in West Germany will decrease the rate of out-migration, thus the expected sign will be negative. Also, an increase in the ratio of unemployment due to an increase of unemployment in Greece or a decrease of unemployment in
West Germany will increase out-migration, so the expected sign of the variable RU will be positive. Furthermore, the use of ratios, except that it increases the number of degrees of freedom and may cure multi-collinearity, implicitly assumes that a change of a given per cent in the numerator has exactly the opposite effect on the dependent variable as a change of the same per cent in the denominator. Thus, the dependent variable is hypothesised to be homogeneous of degree zero in the numerator and denominator (i.e. \( x = x_n/x_d = \frac{x_n}{x_d} \)).

Equation 4.6 provides the estimation of out-migration when the ratios RW, RU are used.

\[
\text{LEMP} = 10.27^{**} - 0.63LRW^{**} + 0.30LRU^{**} \quad R^2 = 0.69 \quad (\text{Eq. 4.6})
\]

\[
(0.094) \quad (0.22) \quad (0.10)
\]

\[
\text{LEMP} = 7.40^{**} - 0.73LRW^{**} + 0.72LRU^{**} + 0.25LR1^{**} \quad R^2 = 0.85 \quad (\text{Eq. 4.7})
\]

\[
(0.78) \quad (0.16) \quad (0.13) \quad (0.067)
\]

\[
\text{LEMP} = 2.54^{**} - 0.50LRW^{**} + 0.63LRU^{**} + 0.61LMPS1^{**} \quad R^2 = 0.81 \quad (\text{Eq. 4.8})
\]

\[
(1.05) \quad (0.18) \quad (0.13) \quad (0.22)
\]

\( (** \) statistically significant at 0.05.
The numbers in parentheses are standard errors.

All variables take the expected signs. The low Durbin-Watson (0.76) statistic suggests that there is positive serial correlation. In order to cure the problem we estimated equation 4.6 using the Cochrane-Orcutt method, which gave the following result:

\[
\text{LEMP} = 10.31^{**} - 0.63LRW^{**} + 0.43^{**} LRU \quad R^2 = 0.60 \quad (\text{Eq. 4.6a})
\]

\[
(0.15) \quad (0.26) \quad (0.12)
\]

The Durbin-Watson statistic (1.76) suggests there is no serial correlation at the 10 per cent level. Both variables take the expected signs. Comparing the simple correlation between the two explanatory variables and \( R^2 \) for the detection of multi-collinearity
(Klein, 1962) proves that there isn't any. The two coefficients state that a one per cent increase of the ratios LRW, LRU, due to an increase of Greek earnings-employment or a decrease of West German earnings-unemployment will cause a 0.63 per cent decrease of out-migration and a 0.43 per cent increase respectively.

Next, equation 4.7 introduces an additional explanatory variable, RI. This variable consists of the volume of remittances, in thousands US dollars, of Greek migrants to Greece one year lagged. It is expected to take a positive sign because it constitutes a source of information concerning the earnings and possible savings which one migrant may achieve. An increase of the volume of remittances may induce more people to migrate. The inclusion of RI improves $R^2$ (0.85) compared with that of previous equation 4.6 without causing any problems to the already existing explanatory variables (RW, RU).

All variables take the expected signs. The Durbin-Watson statistic (1.74) suggests that there is no serial correlation. A one per cent increase in both earnings and unemployment ratio and in remittances will decrease out-migration by 0.73 per cent and increase it by 0.72 and 0.25 per cent respectively.

Equation 4.8 also introduces a new explanatory variable, MPS1 (Table 4.1). This variable corresponds to the number of Greek migrants already settled in West Germany (MPS) one year lagged and it stands for the information available to the potential migrant and the help he might receive in the destination area from friends and relatives already settled there (Salvatore, 1981b). Its inclusion improves $R^2$ compared with that of equation 4.6. All variables take the expected signs and we are not sure about serial correlation at 10 per cent level (Durbin-Watson statistic: 1.51).

The coefficients suggest that a one per cent increase in earnings ratio will decrease emigration by 0.5 per cent, while a one per cent increase in unemployment ratio and LMPS1 will increase emigration by 0.63 and 0.61 per cent respectively. Because the migrants' stock
**Figure 4.1**

**EMIGRATION POPULATION, L. FORCE**

Legend

- △ emigration popul.
- ⬤ emigration l. force

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>THOUSANDS PEOPLE</td>
<td>0</td>
<td>20000</td>
<td>60000</td>
<td>80000</td>
<td>60000</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: German Ministry of Labour.
depends on out-migration, the inclusion of MPS1 may cause problems violating independence between explanatory variable and residuals. Therefore the influence of this variable on out-migration will be better if it is examined in a simultaneous equations model context (Chapter Five) (Kau and Sirmans, 1979).

So far we have used as dependent variable the number of Greeks emigrating each year to West Germany. Unfortunately, this variable is aggregate and includes family members as well as migrant workers. This may cause an aggregation bias in our estimations since over time the composition of emigrants (population) by sex and age, changes as we have already seen in Chapter One. To overcome this problem we use as dependent variable the number of Greek migrants each year, whose age classifies them in the labour force. This is the only information we have in disaggregation level, and this variable (EMLF) contains both men and women. Figure 4.1 depicts both emigration flows EMP and EMLF. The two flows follow a common trend over time. Also, the change in the composition of emigrating population is evident. Equations 4.9 and 4.10 present the best results. Again, all equations are in logarithmic form.

\[
\text{LEMLF} = 9.40^{**} - 0.64\text{LRW}^{**} + 0.73\text{LRU}^{**}
\]
\[\begin{array}{c}
\text{(Eq. 4.9)} \\
0.10 & 0.25 & 0.12
\end{array}\]

\[
\text{LEMLF} = 6.94^{**} - 0.71\text{LRW}^{**} + 1.03\text{LRU}^{**} + 0.21\text{LR1}^{**}
\]
\[\begin{array}{c}
0.86 & 0.21 & 0.14 & 0.073
\end{array}\]
\[\text{(Eq. 4.10)} \]

\[\bar{R} = 0.88\]

(**) statistically significant at \(0.05\).
The numbers in parentheses are standard errors.

In equation 4.9 the explanatory variables are the ratios of earnings and unemployment in Greece and West Germany RW and RU respectively. Both variables take the expected signs. The Durbin-Watson statistic (1.47) suggests that we are not sure about serial correlation.

Equation 4.9 'compared' with equation 4.6 has a larger \(\bar{R}^2\). It seems that the same explanatory variables explain better emigration of
labourers than total emigration. However, what is interesting is that the order in which explanatory variables affected the dependent, in terms of coefficient size, has reversed 'compared' with the previous case where EMP (total emigration) was considered. Unemployment ratios influence EMLF more than the earnings ratio. A one per cent increase in unemployment ratio will increase emigration by 0.73 per cent, while a one per cent increase in earnings ratio will decrease it by 0.64 per cent.

Equation 4.10 also includes as explanatory variable the volume of remittances one year lagged. All three variables take the expected signs. The Durbin-Watson statistic denotes that there is no serial correlation at the 10 per cent level. Coefficients denote that a one per cent increase in the earnings ratio (RW), unemployment ratio (RU) and remittances will decrease out-migration of the labour force by 0.71 per cent and increase it by 1.03 and 0.21 per cent respectively. Again, unemployment affects out-migration of the labour force to a greater degree than earnings in terms of coefficients' size.

Availability of data concerning the unemployment rate among Greek migrants in West Germany during the 1970-1982 period offer us a chance to observe the response of emigration to changes in employment opportunities among migrants. Variable URM represents the unemployment ratio among Greek migrant workers. An increase of URM will decrease emigration so the expected sign will be negative.

\[
\begin{align*}
\text{EMP} &= 43604^{**} - 15937\text{RW}^{**} - 12550\text{URM}^{**} + 5335\text{URH}^{**} \\
& \quad (4372) \quad (3895) \quad (1587) \quad (973) \\
R^2 &= 0.93 \\
\end{align*}
\]  
(Eq. 4.11)

\[
\begin{align*}
\text{EMLF} &= 26372^{**} - 14074\text{RW}^{**} - 6174\text{URM}^{**} + 13638^{**}\text{URH} \\
& \quad (5658) \quad (5919) \quad (1294) \quad (3062) \\
R^2 &= 0.82 \\
\end{align*}
\]  
(Eq. 4.12)

(**) statistically significant at 0.05.

The numbers in parentheses are standard errors.
Equation 4.11 provides estimation when out-migration of population generally (EMP) is used as a dependent variable. We used the ratio of earnings in order to prevent any problems of collinearity between WG and WH (Table 4.1). All variables have the expected signs. The Durbin-Watson statistic (2.1) denotes that there is no problem of serial correlation. Interpretation of coefficients suggests that a one unit increase in earnings ratio will reduce emigration by 15,937 thousands, while a unit increase in unemployment ratios URM, URH will decrease emigration by 12,550 and increase it by 5,335 thousands respectively. From the size of coefficients it is evident that changes in earnings and unemployment among migrants affect mostly out-migration.

In equation 4.12, the dependent variable (EMLF) is out-migration of the labour force. Again, all variables take the expected signs and they are statistically significant. The Durbin-Watson statistic (1.65) suggests that we are not sure about correlation. Observing the coefficients' magnitude we infer that unemployment among migrants is the main explanatory variable affecting out-migration of the labour force and follow earnings ratio and unemployment in Greece. URH's coefficient is also large, almost the same as that of the earning ratio, 'compared' with those of equation 4.11. Again, it seems that labour force responds first to employment opportunities and then to income changes (see eq. 4.9).

4.2.3 Transcendental Functional Forms

Testing the various models of emigration in the previous section we concluded that logarithmic formulations of emigration equations (linear in parameters and variables) presented the best results in explaining out-migration from Greece to the Federal Republic of Germany during the 1960-1982 period. For instance, we may refer to the equation 4.6: EMP = logC + alogRW + blogRU. This kind of logarithmic model implicitly presupposes a Cobb-Douglas type function.

A Cobb-Douglas function has the form:
\[ Y = Ax_1^a x_2^b \] (Walter and Layard, 1978; Chiang, 1974) \hspace{1cm} (Eq. 4.13)

from which, by taking the logarithm, we have a log-linear in parameters equation: \[ \log Y = \log A + a \log x_1 + b \log x_2. \] In our example, equation 4.6 can be derived by taking the log of the equation:

\[ EMP = CRW^a RU^b \] \hspace{1cm} (Eq. 4.14)

The historic Cobb-Douglas function was the first parametric production function (Douglas and Cobb, 1928). Econometric and statistical technique requires models whose form is specified up to a finite vector of unknown parameters. Great concern has been given to flexible functions whose parametric specification allows identification of particular economic effects. Considering an n input, one output production function:

\[ Y = f(u_1 \ldots u_n) \] \hspace{1cm} (Eq. 4.15)

with partial derivatives

\[ f_i = \frac{\partial f}{\partial u_i} \quad \text{and} \quad f_{ij} = \frac{\partial^2 f}{\partial u_i \partial u_j} \]

economic effects such as scale, distribution and substitutability, can be generally expressed in terms of the production function and its first and second derivatives (Nadiri, 1982).

The economic effects contained in Table 4.2 characterise the usual comparative static properties of a production function at a given point. This table contains \((n+1)(n+2)/2\) distinct economic effects (exogenous technical change could be included by adding a variable \(t\) to the exogenous variables included in \(f\)). A necessary and sufficient condition for a function to reproduce comparative static effects at a point without imposing restrictions across these effects is to have \((n+1)(n+2)/2\) distinct parameters (Fuss, McFadden and Mundlak, 1978).
Table 4.2
A Partial List of Economic Effects
Related to the Production Function

<table>
<thead>
<tr>
<th>Economic effect</th>
<th>Formula</th>
<th>No. of distinct effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Output level</td>
<td>$Y = f(u)$</td>
<td>1</td>
</tr>
<tr>
<td>2. Returns to scale</td>
<td>$\mu = \left( \sum_{i=1}^{n} u_{ifi} \right) / f$</td>
<td>1</td>
</tr>
<tr>
<td>3. Distributive share</td>
<td>$s_i = u_{ifi} / \sum_{j=1}^{n} u_{ijfj}$</td>
<td>$n-1$</td>
</tr>
<tr>
<td>4. Own 'price' elasticity</td>
<td>$\epsilon_i = u_{ifi}/f_i$</td>
<td>$n$</td>
</tr>
<tr>
<td>5. Elasticity of substitution</td>
<td>$\sigma_{ij} = \frac{-f_{ii}/f_i^2 + 2(f_{ij}/f_{ifj}) - f_{ij}/f_j^2}{1/u_{ifi} + 1/u_{ijfi}}$</td>
<td>$\frac{n(n-1)}{2}$</td>
</tr>
</tbody>
</table>

Source: Fuss and McFadden, 1978 (p. 231)
The Cobb-Douglas function allows free assignment of the output level, returns to scale and distributive shares effects but does not allow flexibility regarding the substitution and own price elasticity effects. For instance, it implies that the elasticity of substitution parameter equals unity ($\sigma=1$). In principle, however, the elasticity of substitution parameter $\sigma$ can be a variable depending upon output and/or factor combinations (Hicks, 1948; Allen, 1936) taking any value between zero (the fixed coefficient model) and infinity (the straight-line isoquant (linear) production function). This being so, any ad hoc assumption about the numerical value of $\sigma$ can possibly lead to a specification bias in our model (Revankar, 1971; Sato, 1967).

Efforts have been made to remove restrictive features such as constant elasticity of substitution, additivity, separability, etc., which characterise traditional production functions. For this, flexible functional forms which do not impose a priori restrictive constraints have been employed (Dixon, Bowles and Kendrick, 1980). These functions are characterised by isoclines, which consist of the loci of points with constant marginal rates of technical substitution, but varying returns to scale and optimal input ratios.

An example of this class of functions is the transcendental logarithmic production functions (Christensen, Jorgenson and Lau, 1973) often referred to as the 'translog' production frontier, which have been recently employed for application in a large number of economic areas (Sato, 1975; Pindyck, 1978; Viton, 1981; Button and O'Donnell, 1985; Button et al., 1986). Translog can be interpreted as a Taylor's second order expansion of $\log Y$ in powers of $\log(u_i)$ while Cobb-Douglas as a first order expansion.

Equation 4.16 represents a translog functional form which is a direct generalisation of the Cobb-Douglas form (equation 4.17).
\[
\log Y = a_0 + \sum_{i=1}^{n} a_i \log(u_i) + \sum_{i=1}^{n} \sum_{j=1}^{n} a_{ij} (\log(u_i))(\log(u_j)) \quad (\text{Eq. 4.16})
\]

and
\[
\log Y = a_0 + \sum_{i=1}^{n} a_i \log(u_i) \quad (\text{Eq. 4.17})
\]

Translog has \((n+1)(n+2)/2\) parameters. Imposing restrictions reduces the number of parameters, as for example restrictions implying linear homogeneity reduce the number of parameters to \(n(n+1)/2\) since there must be \(\sum_{i=1}^{n} a_i = 1\) and \(\sum_{i=1}^{n} a_{ij} = 0\), while for the Cobb-Douglas it is only required that, \(\sum_{i=1}^{n} a_i = 1\).

We adopt the 'translog' functional form in our effort to determine Greek out-migration to West Germany for the period 1960-1982. We use the same explanatory variables as before (earnings, unemployment) but in an extended log-linear model (with regard to the 'Cobb-Douglas' functional form) free from any restrictions in parameters. We have estimated translog functions corresponding to the 'common' push-pull model and the model which uses as explanatory variables the ratios of earnings and unemployment.

We are going to apply a test for the set of parameters not included in the Cobb-Douglas form model (restricted model). The testing hypothesis \(H_0\) is that all coefficients of that set equal zero, against \(H_1\) hypothesis that they are different from zero. The translog form of the push-pull model gave:
Dependent variable LEMP
estimated coefficients:  

<table>
<thead>
<tr>
<th>( \beta )</th>
<th>Coefficient</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \beta_1 )</td>
<td>9.33</td>
<td>LWG</td>
</tr>
<tr>
<td>( \beta_2 )</td>
<td>-15.37</td>
<td>LWH</td>
</tr>
<tr>
<td>( \beta_3 )</td>
<td>-5.061</td>
<td>LURG</td>
</tr>
<tr>
<td>( \beta_4 )</td>
<td>-5.57</td>
<td>LURH</td>
</tr>
<tr>
<td>( \beta_5 )</td>
<td>-2.68</td>
<td>(LURG)²</td>
</tr>
<tr>
<td>( \beta_6 )</td>
<td>-0.35</td>
<td>(LURH)²</td>
</tr>
<tr>
<td>( \beta_7 )</td>
<td>-15.1</td>
<td>(LWG)²</td>
</tr>
<tr>
<td>( \beta_8 )</td>
<td>-11.05</td>
<td>(LWH)²</td>
</tr>
<tr>
<td>( \beta_9 )</td>
<td>0.45</td>
<td>(LURG,LURH)</td>
</tr>
<tr>
<td>( \beta_{10} )</td>
<td>-1.26</td>
<td>(LURG,LWG)</td>
</tr>
<tr>
<td>( \beta_{11} )</td>
<td>2.47</td>
<td>(LURG,LWH)</td>
</tr>
<tr>
<td>( \beta_{12} )</td>
<td>0.45</td>
<td>(LURH,LWG)</td>
</tr>
<tr>
<td>( \beta_{13} )</td>
<td>(1.05)</td>
<td>(LURH,LWH)</td>
</tr>
<tr>
<td>( \beta_{14} )</td>
<td>(13.76)</td>
<td>(LWG,LWH)</td>
</tr>
</tbody>
</table>

\[ R^2 = 0.96 \]
\[ \bar{R}^2 = 0.91 \]

Durbin-Watson = 0.90  
F statistic = 17.87  
N = 23  

This is the unrestricted model. The restricted model: 
LEMP = C, LWG, LWH, LURG, LURH (eq. 4.2) has \( R^2 = 0.90 \). We apply the F statistic test:
for both 5% and 1% levels. Thus we may conclude that \( H_0 \) is accepted and the coefficients \( \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = \beta_{10} = \beta_{11} = \beta_{12} = \beta_{13} = \beta_{14} = 0 \) are not different from zero.

Estimation of the second model gave the following:

<table>
<thead>
<tr>
<th>LEMP</th>
<th>estimated coefficient</th>
<th>( \beta_1 )</th>
<th>( \beta_2 )</th>
<th>( \beta_3 )</th>
<th>( \beta_4 )</th>
<th>( \beta_5 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>-1.83 [(0.65)] ( LRW )</td>
<td>1.00 [(0.25)] ( LRU )</td>
<td>-0.40 [(1.09)] ( (LRW)^2 )</td>
<td>-0.44 [(0.21)] ( (LRU)^2 )</td>
<td>0.18 [(0.062)] ( (LRW \cdot LRU) )</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.84 [(Eq. 4.19)]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F statistic</td>
<td>18.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( N )</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>1.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Again, the above unrestricted model is tested with the restricted one \( LEMP = C, LRW, LRU \) which has \( R^2 = 0.72 \) (eq. 4.6).

The \( H_0 \) hypothesis is that \( \beta_3 = \beta_4 = \beta_5 = 0 \) against the alternative \( H_1 = \beta_3, \beta_4, \beta_5 \neq 0 \).

The F criterion gives:

\[
F_{3,6} = \frac{0.84 - 0.72}{1 - 0.84} / 6 = \frac{0.04}{0.026} = 1.53 < F_{3,6}
\]
Again, hypothesis $H_0$ is accepted, which means that coefficients $\beta_3 = \beta_4 = \beta_5 = 0$ are not different from zero. From the above two tests, we may conclude that the unrestricted model does not perform well in our case of Greek out-migration to West Germany and the 'Cobb-Douglas' form model fits our data better.

4.3 Return Migration

Even from the 1880s when Ravenstein published two papers (1885, 1889) which postulated his "laws" of migration, return migration has been recognised as a counter stream compensating each main stream of migration. The same concept is referred to in Lee's hypotheses about the volume of migration under varying conditions in his recent (Lee, 1966) restatement of Ravenstein's "laws".

Migrants may decide to return home for a great variety of reasons ranging from nostalgie to loss of job. We may group all returning migrants into three categories. The first category consists of all migrants who return home as soon as they accomplish the objectives they had set at the time migration was decided. In a sense, for these individuals the decision to return home is taken simultaneously with the decision to migrate. The actual circumstances that favour or prevent realisation of the objectives will determine the time of return. Thus, the return time pattern may be different even for people with the same objectives and the same time of departure. As examples of such objectives we may mention the accumulation of a given amount of savings and the acquisition of skills and training on the job in a certain occupation.

The second category consists of migrants who return home after a short period of stay in their destination. These are people who find their actual conditions of life and work worse than that they expected and sufficiently worse to prefer to return home. It also includes people with limited capacity for adjustment and who, upon migration found out that the psychic cost of separation from the family and familiar environment is too big to bear. Consequently,
they decide to return home.

The third category includes migrants who decide to return because of unforeseen and unfavourable changes in the economic situation of the country of destination and consequently of their own employment opportunities and earnings. For example, an economic recession may result in lower levels of employment particularly among the ranks of migrant workers. (5)

The sociological evidence suggests that the types of costs and benefits perceived by potential return migrants are quite different from those for non-return migrants (Fakiolas, 1980; Kasimati, 1984; Vlachos, 1974; Paine, 1974; Mousourou, 1980). Because return migration is thought to be more responsive than non-return to non-pecuniary factors like friends and relatives, economic variables should explain a greater proportion of the variance of non-return than return migration.

Below we present the results of empirical estimations of return migration (IMP) from West Germany to Greece (Table 4.1). The explanatory variables have already been defined and there is no reason to repeat their definition here. However, their expected signs are now changing. An increase of earnings in West Germany will decrease return migration, the same effect will have an increase of unemployment in Greece. An increase of unemployment in West Germany will stimulate return migration and an increase of earnings in Greece may attract more migrants. Finally, the stock of Greek migrants already settled in West Germany, one year lagged, is expected to be positively related to return migration. Thus the expected signs will be positive for earnings in Greece, unemployment in West Germany and migrants' stock and negative for earnings in West Germany and unemployment in Greece.
\[
\text{IMP} = 58678^{**} - 935\text{WG}^{**} + 18\text{WH} + 10679\text{URG}^{**} - 5440\text{URH}^{*} \\
(25735) \quad (333) \quad (71.9) \quad (3139) \quad (3644)
\]
\[
+ 0.15\text{MPS1}^{**} \\
(0.043)
\]
\[ R^2 = 0.72 \]

\[
\text{IMP} = 53942^{**} - 859\text{WG}^{**} + 10530\text{URG}^{**} - 4789\text{URH}^{*} \\
(17782) \quad (159) \quad (3001) \quad (2720)
\]
\[
+ 0.15\text{MPS1}^{**} \\
(0.040)
\]
\[ R^2 = 0.74 \]

\[
\text{IMP} = 24373^{**} - 759\text{WG}^{**} + 7311\text{URG}^{**} + 0.20\text{MPS1}^{**} \\
(6176) \quad (157) \quad (2515) \quad (0.028)
\]
\[ R^2 = 0.71 \]

(**) statistically significant at 0.05.
(*) statistically significant at 0.10.
The numbers in parentheses are standard errors.

In equation 4.20 all variables take the expected signs, but earnings in Greece are not statistically significant. The Durbin-Watson statistic (1.15) denotes that we are not sure about serial correlation. In equation 4.21 we estimate return migration by omitting earnings in Greece (WH). Again, all variables take the expected signs. The Durbin-Watson statistic denotes that we cannot be sure about serial correlation. The influence of explanatory variables on return migration in terms of coefficients' size is the same as equation 4.20. Return migration is affected mostly by unemployment in West Germany and Greece and then by earnings in West Germany.

The application of the Cochrane-Orcutt method for equation 4.21 gives the following:

\[
\text{IMP} = 35071 - 863\text{WG}^{**} + 7962\text{URG}^{**} - 1653\text{URH}^{*} + 0.21\text{MPS1}^{**} \\
(20378) \quad (195) \quad (3197) \quad (824) \quad (0.051)
\]
\[ R^2 = 0.58 \]
Again, all variables have the expected signs. Coefficients state that a one per cent increase in WG, URH, URG will decrease return migration by 863 and 1653 migrants and will increase it by 7962 migrants respectively. The effect of MPS1 is worth mentioned, its inclusion in the regression improves the result.

Equation 4.22 gives the estimation of return migration when the less statistically significant variable (URH) is omitted. All variables take the expected signs, while we are not sure about serial correlation (Durbin-Watson statistic = 1.44). Again, unemployment in West Germany is a more important influence on return migration than earnings.

Finally, equation 4.23 estimates IMP when as explanatory variable is included the unemployment ratio among Greek migrants (URM).

\[
LIMP = 21.9^{**} - 2.5LWG^{**} + 0.47LURM^{**} - 0.44LURH^{**} \\
(1.77) \quad (0.40) \quad (0.093) \quad (0.10) \\
R^2 = 0.86
\]

All variables take the expected signs. The Durbin-Watson statistic denotes that there is no serial correlation. Unemployment among migrants seems to affect return migration less 'compared' with EMP in the previous equation 4.11, although here we have a logarithmic form. It seems that migrants do not respond too much to unemployment and prefer to stay in West Germany because they are afraid of losing their work permit by leaving the country in case they want to return later.
4.4 Migration Under Uncertainty

The 'push-pull' model, used in the previous sections, has been derived from the human capital model of migration. Like the human capital model it implicitly assumes risk neutrality in the behaviour of migrants. This assumption constitutes one of the major criticisms of the human capital theory. It is only recently that an attempt to explicitly take account of risk, along the lines of this model has been formulated (Weiss, 1972). In this section migration is treated as an investment decision but the approach differs from the human capital approach in that it explicitly introduces risk as an element specified in the objective function faced by a potential migrant (Langley, 1974). After the introduction of uncertainty (risk coefficient) in the objective function of the potential migrant, the migration model is derived by using the idea of 'optimal allocation' from the portfolio analysis (Tobin, 1958).

We assume that the individual has a one period utility function of the form:

\[ U = a - c e^{-b \delta} \]  \hspace{1cm} (Eq. 4.24)

\( U \) is the utility derived from migration; \( a, b \) and \( c \) are parameters \( c, b > 0, \ a \leq 0 \) and \( \delta \) is the net return from migration in the period under consideration. The net return is a stochastic variable since there is uncertainty about both costs and returns of migration (defined to include both monetary and psychic components (Smith, 1979; David, 1974). We assume that the probability distribution of returns, which may represent the belief that a particular outcome will occur - which may be evaluated by observed actions or the migratory experience of other individuals or from the past migratory experience of the individual himself, is normally distributed

\[ \delta \sim \mathcal{N} \left( \mu_{\delta}, \sigma_{\delta}^2 \right) \]
We assume that the migrant maximises the expected value of utility which given the normality assumption, is: (Farrar, 1962)

\[ E(U) = a - c \left( \exp \left( -\frac{b}{2} \delta + \frac{b^2}{2} \sigma_\delta^2 \right) \right) \]  
(Eq. 4.25)

\[ \max E(U) = \max \left( \mu_\delta - \frac{b}{2} \sigma_\delta^2 \right) \]  
(Eq. 4.26)

Parameter b may be interpreted as a coefficient of risk aversion since risk aversion coefficients (Arrow, 1971; Pratt, 1964) defined by Arrow and Pratt for a given utility function \( U \) are

\[ R = -\frac{UU''}{U'} \]  
relative risk aversion coefficient

and \( RA = -\frac{U''}{U'} \) absolute risk aversion coefficient.

In our case for \( U = a - c e^{-b\delta} \) the relative risk aversion coefficient is \( R = b > 0 \). For an interpretation of risk aversion, consider an individual faced with a random income \( Y \) and offered the alternative of a certain income \( Y_0 \). A risk averter would be willing to accept a value of \( Y_0 \) less than the mean value \( E(Y) \) of the random income, the difference may be thought as an insurance premium. For \( R = 0 \) we have risk neutrality.

We may now proceed in our application of the 'optimal allocation' idea by using the previous analysis as a background. We consider a region (A) with total population (T). Out-migration from the region to the rest of the world (faced by the potential migrant as a region B) is not obstructed by any legal constitutions. Each household tries to improve its standard of living and it is possible a number of people decide to migrate to other region(s). One may seek employment if there is unemployment in region A, or a better job (promotion) and/or higher earnings.

Each household faces two labour markets (in region A and outside the region) with different distributions of wages, and has a utility function \( U(Y) = a - c e^{-bY} \) where \( Y = \text{income} \). There are also monetary (transport costs, lost wages, seniority or pension rights) and psychic
costs to be considered before the decision for migration is to be taken. Any non-labour sources of pecuniary income at its disposal are assumed to be perfectly transportable and therefore will not be affected by a change in place of residence. Thus, in each time period it is possible that a percentage of the total population (T) \( \lambda_1 T_t = L_{1t} \) will migrate to another region and the rest of the population \( \lambda_2 T_t = L_{2t} \) remain in its homeland so that

\[
L_{1t} + L_{2t} = T_t
\]  
(Eq. 4.27)

Each household (individual) functions in order to maximise its utility function. Looking at the total population (T) we aim to maximise the aggregate utility function \( V(Y)_t \) where

\[
Y_t = Y_{1t} + Y_{2t} = L_1 w_{1t} + L_2 w_{2t}
\]  
(Eq. 4.28)

where:
- \( Y_t \) = income of total population at time (t)
- \( Y_{1t} \) = income of migrants at time (t)
- \( Y_{2t} \) = income of the rest of the population remaining at A in time (t)
- \( w_1 \) = wages at the labour market outside region A
- \( w_2 \) = wages prevailing in the labour market of region A.

Since the components \( w_1, w_2 \) are assumed to be random variables normally distributed, utility maximisation becomes equivalent to maximise the expected utility \( E[V(Y)]_t \) or

\[
\max V(Y)_t = \max \left[ E(Y) - \frac{1}{2} R \text{var} (Y) \right]_t = \bar{G}
\]  
(Eq. 4.29)

where: \( E(Y)_t = \bar{Y}_t \), \( \text{var} (Y)_t \) = variance of \( Y \) and \( R \) = coefficient of relative risk aversion \( (R = b \) for our utility function). We also have

\[
E(Y) = \bar{w}_1 L_1 + \bar{w}_2 L_2
\]  
(Eq. 4.30)

and

\[
\text{var}(Y) = \sigma_{w1}^2 L_1^2 + \sigma_{w2}^2 L_2^2 + 2L_1 L_2 \text{Cov}(w_1, w_2)
\]  
(Eq. 4.31)

where: \( \bar{w}_1, \bar{w}_2 \) are average wages.
Taking the first derivatives for $L_1$, $L_2$ \( \frac{\partial G}{\partial L_1}, \frac{\partial G}{\partial L_2} \)
eq 0 we have:

\[
\frac{\partial G}{\partial L_1} = \bar{w}_1 - R \bar{L} - L_1 \text{ Cov} (w_1 w_2) = 0 \quad (a)
\]

\[
\frac{\partial G}{\partial L_2} = \bar{w}_2 - R \bar{L} - L_1 \text{ Cov} (w_1 w_2) = 0 \quad (b)
\]

(Eq. 4.32)

Solving the system (4.32) we obtain the solution for $L_1$:

\[
L_{1t} = \frac{\bar{w}_{2t} \text{ Cov}(w_1, w_2)}{R[\text{Cov}(w_1, w_2)]^2 - \bar{w}_1 \sigma^2} - \frac{\bar{w}_{1t} \sigma^2}{R[\text{Cov}(w_1, w_2)]^2 - \bar{w}_1 \sigma^2} \quad (Eq. 4.33)
\]

The above equation determines the number of migrants at each time period ($t$). We may write it as $m_t = A \bar{w}_{2t} - B \bar{w}_{1t}$ where $m_t =$ number of migrants at time period ($t$). The signs of coefficients $A, B$ depends upon $\text{Cov}(w_1, w_2)$ since:

\[
(\pm 0) \quad (+)
\]

\[
L_{1t} = \frac{\bar{w}_{2t} \text{ Cov}(w_1, w_2)}{R[\text{Cov}(w_1, w_2)]^2 - \bar{w}_1 \sigma^2} - \frac{\bar{w}_{1t} \sigma^2}{R[\text{Cov}(w_1, w_2)]^2 - \bar{w}_1 \sigma^2}
\]

\[
(+) \quad (+)(0) \quad (+) \quad (+)(0) \quad (+)
\]

if $\text{Cov}(w_1, w_2) > 0 \Rightarrow L_{1t} = -\bar{w}_2 A + \bar{w}_1 B$

if $\text{Cov}(w_1, w_2) < 0 \Rightarrow L_{1t} = \bar{w}_2 A + \bar{w}_1 B$

if $\text{Cov}(w_1, w_2) = 0 \Rightarrow L_{1t} = \bar{w}_1 / \bar{w}_2$

Thus we have developed a migration model where out-migration depends on the average wages in the two labour markets. To complete the model we introduce unemployment variables (which may consist of pull or push factors) additionally, since they influence the decision and they are assumed to be constant for the short-time period (one year) and not random variables. Migration may be expressed as:

\[
m_{ijt} = f(\bar{w}_i, \bar{w}_j, U_i, U_j) \quad (Eq. 4.34)
\]
The model does take into account uncertainty about earnings in different locations, introducing the relative risk aversion coefficient (if R=0 utility maximisation reduces to max G=E(Y)). It may also apply for a number of different potential destinations j>2. In this case migration (m_t) is a function of all 'incomes' prevailing at the j locations (j = 1, 2, ..., J) (Wadycki, 1979). For the case of three locations, migration to location (1) depends also on the income (average) prevailing in location (3) and the covariance of w_1w_3. Thus the model may perform in cases where more than two destinations are available for the potential migrant (Appendix A4).

Unfortunately, lack of data does not permit us to apply this model in the case of Greek out-migration. We estimate using this application out-migration from Greece to Europe (EM) for the period 1960-1971 taking a binary location model: migration to Europe or remaining in Greece. As income variable we use real average collectively agreed wages (MH, MG) in Greece and West Germany, since migration to West Germany absorbed more than 80 per cent of total European migration for this period (National Statistical Service of Greece, 1981). We use also unemployment ratios for Greece and West Germany as representative of employment opportunities. We may note that migration to Europe constituted the main bulk of Greek out-migration since migration to transoceanic countries was insignificant during that time period.

$$\text{LEM} = 9.61 - 0.95\text{LRM} + 0.58\text{LRU} \quad \text{(Eq. 4.35)}$$

\[ R^2 = 0.79 \]
\[ R_1^2 = 0.76 \]
\[ N = 18 \]
\[ \text{F statistic} = 28.6 \]
\[ \text{Durbin-Watson} = 1.14 \]
\[ \text{LRM} = \text{LMH/LMG} \]
\[ \text{LRU} = \text{LURH/LURG} \]

** statistically significant at 0.05
Both variables have the expected signs, but only LRU is statistically significant at 0.5. The Durbin-Watson statistic suggests that we are not sure about serial correlation. A one per cent increase in LRU due to an increase of unemployment in Greece or a reduction in unemployment in West Germany will increase out-migration to Europe by approximately 0.58 per cent.

4.5 Migration Choice Model

So far, the human capital theory behind migration models viewed the potential migrant as deciding whether to migrate or not dependent on a cost-benefit approach. However, the potential migrant often faces a number of different mutually exclusive locations to migrate. Thus he has to decide not only to migrate but at the same time where to (Clark and Ballard, 1980). The need for policy-makers to know the probability by which an individual, drawn at random from the population, will migrate to a specific location led researchers to apply the probability choice models used in other economic fields (Train, 1980; DaVanzo, 1983; Falaris, 1982), i.e. demand for means of transport in the case of migration. We are going to derive a logit migration model and test it in the case of Greek out-migration to West Germany under a binary choice assumption.

In the following we describe how the probability of choices are deduced from the theory of utility maximisation. We assume that each individual faces J alternative choices indexed $j = 1, 2, ..., J$, which represent J alternative locations (for migration). Each alternative has a vector of observed attributes $x^j$ (for instance, labour market characteristics). The individual has a utility function

$$u = U(x, s, \varepsilon)$$

(Eq. 4.36)

representing tastes (Domencich and McFadden, 1975) where $x$ is the vector of observed attributes of an alternative, $s$ is a vector of observed socio-economic characteristics, such as sex, education and age, and $\varepsilon$ is a vector of unobserved characteristics of alternatives and unobserved factors such as intelligence, experience
and other variables determining tastes.

The utility function is maximised subject to a 'budget constraint' \( B \) composed of the alternative vector

\[
B = (x_1, x_2, \ldots, x_i)
\]  

(Eq. 4.37)

Provided that we are concerned with individuals drawn randomly from the population of individuals with common socio-economic characteristics \( s \) and confronting the same alternatives, the vector \( \epsilon \) will be random, and as a result the values of the utility function (equation 4.36) will be stochastic (McFadden, 1973b; Domencich, Kraft and Valette, 1968).

To simplify notation, we define

\[
u = U(x,s)
\]  

(Eq. 4.38)

which is a random function whose value depends on which individual we have drawn from the population of persons with the same observed characteristics and alternatives.

The individual will choose location (i) if this is the alternative which maximises his utility, or in other words if:

\[
U(x^i, s) > U(x^j, s) \quad \text{for} \; j \neq i, \; j = 1, \ldots, j
\]  

(Eq. 4.39)

Since these utility values are stochastic, the event that the individual will choose location (i) will occur with some probability \( P_i \) which we can denote by:

\[
P_i = \text{Prob} \left[ U(x^i, s) > U(x^j, s) \right]
\]  

(Eq. 4.40)

With complete generality it is possible to write the stochastic utility function in the form:

\[
U(x, s) = V(x, s) + n(x, s)
\]  

(Eq. 4.41)

where \( V \) is non-stochastic, reflects the 'representative' tastes of the population, and \( n \) is stochastic (with mean independent of \( x \)).
and reflects the effect of individual idiosyncrasies in tastes or unobserved attributes for alternatives in B. We may write equation 4.40 as:

\[ P_i = \text{Prob} \left[ n(x_i, s) - n(x_j, s) < V(x_i, s) - V(x_j, s) \right] \]  

(Eq. 4.42)

for \( i \neq j, j = 1, \ldots, j \) (McFadden and Diamond, 1974).

### 4.5.1 Probability Functions for Binary Choice

In this case we consider an individual with a choice between two alternatives (indexed \( j = 1, 2 \)) with vectors of attributes \( x^1 \) and \( x^2 \) respectively. Alternative (1) may represent a location in West Germany and alternative (2) the location of his present settlement. Thus his choice will be between migration to West Germany or staying in his homeland.

The choice probability for the first alternative, by introducing the cumulative distribution function \( G \) of the difference of the random components \( n(x^2, s) - n(x^1, s) \) and equation 4.41 is given by equation 4.43:

\[ P_1 = G(V(x^1, s) - V(x^2, s)) \]  

(Eq. 4.43)

We assume that \( V \) has the general form:

\[ V(x, s) = Z(x, s)'\beta \]  

(Eq. 4.44)

where \( Z' \) is a row vector of transformations of the raw data (logs, reciprocals, ratios or empirical functions) and \( \beta \) a column vector of unknown parameters. This assumption makes \( V \) a linear function of the parameter vector \( \beta \). We also assume that \( G \) is independent of \( x^1, x^2 \) and \( s \). This will be the case in particular if \( n(x^1, s) \) and \( n(x^2, s) \) are independent of each other and not dependent on the values of \( x \) and \( s \).

If the distribution function \( G \) is linear over the range of \( V \), then equations 4.43 and 4.44 yield:

\[ P_1 = (Z(x^1, s) - Z(x^2, s))'\beta \]  

(Eq. 4.45)
In our case we take vector \( (Z) \) to consist of labour market characteristics in locations 1 (West Germany) and 2 (Greece) such as earnings and unemployment ratios. Then equation 4.45 becomes:

\[
P_1 = b_1WG - b_2WH + b_3URG - b_4URH
\]  
*(Eq. 4.46)*

Instead of a linear function, the function \( G \) may be specified to be an ogive (Figure 4.2) which depicts the real line into the zero-one interval. We use the logistic distribution

\[
G(V) = \frac{1}{1 + e^{-V}}
\]

which gives the probability function:

\[
P_1 = \frac{1}{1 + \exp[\beta'Z(x^2, s) - \beta'Z(x^1, s)]}
\]  
*(Eq. 4.47)*

and it is termed the binary logit model. To show how the model specified in equation 4.47 can be estimated we first multiply both sides of the equation by \( 1 + e^{-V} \) \( (V = (Z(x^1, s) - Z(x^2, s))'\beta) \) to get \((1 + e^{-V}) P_1 = 1\). Dividing by \( P_1 \) and then substracting 1 leads to

\[
e^{-V} = \frac{1}{P_1} - 1 = \frac{1 - P_1}{P_1}
\]

by definition, however, \( e^{-V} = \frac{1}{P_1} \) so that \( e^V = \frac{P_1}{1 - P_1} \).

Now by taking the natural logarithm of both sides,

\[
V = \log \frac{P_1}{1 - P_1} \quad \text{or}
\]

\[
\log \frac{P_1}{1 - P_1} = b_1WG - b_2WH + b_3URG - b_4URH
\]  
*(Eq. 4.48)*

The dependent variable in this regression equation is simply the logarithm of the odds that a particular choice will be made. One important appeal of the logit model is that it transforms the problem of predicting probabilities within an \((0,1)\) interval to the
Cumulative Probability Distribution
Giving a Two-Tailed Ogive Curve

\[ v = (z(x_1^1, s) - z(x_2^2, s))^\beta \]
problem of predicting the odds of an event's occurring within the range of the entire real line (Pindyck and Rubinfeld, 1982).

Finally, we may state that the key factor of the analysis is the specification of a statistical distribution with the property that the difference of independent random variables having this distribution is a logistically distributed random variable. A distribution with this property is the Weibull distribution (Chow, 1983). A random variable \( n_1 \) has a Weibull distribution if:

\[
\text{Prob} \left[ n_1 \leq n \right] = e^{-e^{-(n+a)}} \tag{Eq. 4.49}
\]

where \( a \) is a parameter.

The associated frequency function is \( \Psi(n) = e^{-(n+a)} \exp[e^{-e^{-(n+a)}}] \).

One of the properties of the Weibull distribution is that if random variables \( n_1 \) have independent Weibull distributions then,

\[
\text{Prob} \left[ u_1 + n_1 > u_2 + n_2 \right] = \frac{e^{u_1-a_1}}{e^{u_1-a_1} + e^{u_2-a_2}} \tag{McFadden, 1973a} \tag{Eq. 4.50}
\]

From this we may conclude that the difference of two independent Weibull distributed random variables has a binary logit distribution:

\[
\text{Prob} \left[ n_2 - n_1 \leq u_1 u_2 \right] = G(u_1-u_2) = \frac{e^{u_1-a_1}}{e^{u_1-a_1} + e^{u_2-a_2}} \tag{Eq.4.51}
\]

When \( u_1 = V(x_i, s) = Z(x_i, s)'\beta \) and the parameters \( a_j \) in the underlying Weibull distributions are the same, equation 4.51 coincides with logit equation 4.47.

Below we estimate equation 4.48 using as the dependent variable the ratio \( \frac{\text{EMP}}{P} \) where \( P \) is the population of Greece for the period 1960–1982 in order to find the probability that one person chosen randomly from the population will migrate to West Germany. For the estimation of equation 4.48 a non-linear full maximum likelihood method has been employed.
\[
\log \frac{P_1}{1-P_1} = 0.045W_{G**} - 0.014W_{H} + 0.65U_{R_{G**}} - 0.062U_{R_{H**}} \quad (\text{Eq. 4.52})
\]

\[
N = 23
\]

Durbin-Watson = 1.32

(\text{**}) statistically significant at 0.05.

All variables have the expected signs and they are statistically significant except WH. The Durbin-Watson statistic lay in the range of uncertainty. The interpretation of coefficient must be done with care, since the left-hand side of the equation is the logarithm of the odds of choice not the actual probability. For example, a one unit increase in earnings in West Germany will lead to an increase of 0.045 in the logarithm of the odds that the individual will choose to migrate to West Germany. To find the effect of a change in WG on the probability of migration, we need to solve for the change in probability \(\Delta P\) as follows:

\[
\Delta \log \frac{P_1}{1-P_1} = 0.045 \Delta W_G
\]

To simplify, we utilised the fact that for any continuous variable \(x\), \(\Delta \log x = \Delta x/x\) and the fact that \(\log (x/y) = \log x - \log y\). Then

\[
\Delta \log \frac{P_1}{1-P_1} = \left( \frac{1}{P_1} + \frac{1}{1-P_1} \right) \Delta P_1 = \frac{1}{(1-P_1)P_1} \Delta P_1
\]

Since we have chosen \(\Delta W_G = 1\) it follows that

\[
\Delta P_1 = 0.045 \left[ P_1(1-P_1) \right]
\]

We found that the change in the probability is a function of the probability itself (Pindyck and Rubinfeld, 1982). Perhaps the most useful single value to choose for \(P_i\) is the mean.

Unemployment in West Germany seems to be the most important variable in terms of coefficients' size. Unemployment in Greece is also the most powerful from the remaining two explanatory variables. One may conclude that employment opportunities in Greece and West Germany are the main determinants of the odds that an individual
will choose to migrate to West Germany.

4.6 Conclusions

Summarising the above empirical estimations we may conclude that the 'common' Keynesian-human capital model ('push-pull' factors model) explains migration flows satisfactorily. The neo-classical model does not perform well and it seems that only income differences are inadequate to explain migration.

Out-migration is explained by changes in unemployment in the two countries and changes in earnings in West Germany. However, earnings and unemployment in West Germany are the most important from the coefficients' size view in affecting emigration. Thus we may conclude that emigration is almost explained by the 'pull' factors WG and URG, although WG is more powerful in affecting emigration.

The use of the emigration of labour force as the dependent variable changed the order with which the explanatory variables are influencing out-migration. Unemployment in the two countries is now the most important variable in explaining emigration of labour force. It seems that this group of migrants is interested in finding employment and then in the size of earnings, while previous estimations support the argument that total out-migration (EMP) responds first to earnings changes and then to employment opportunities. The same conclusion is derived when used as an explanatory variable unemployment between migrants.

The use of translog functions in order to avoid the restriction posed by the Cobb-Douglas type functions provided us with the opportunity to conclude that the restricted models (of Cobb-Douglas type) perform better than the unrestricted one in explaining out-migration.

Return migration is explained mainly by changes in unemployment in West Germany and Greece and less by changes of earnings in West
Germany. Thus, employment opportunities are affecting return migration mostly and in particular an increase of unemployment in West Germany will cause more migrants to return than a decrease in their earnings.

Section 4.4 gave us the opportunity to complete the model by introducing uncertainty in migration equation in the form of risk coefficients. Unfortunately, lack of data prevented us from testing the model in the case of more than two locations. However, we saw that under the 'optimal allocation rule' the decision-making is also taking into account the characteristics of the other possible locations when a potential location is considered.

Finally, the probability choice model provided us with the probability that an individual drawn at random from the population of Greece will choose to migrate to West Germany. Again, lack of data prevented us from testing the model with more than two choices. Oum (1979) warned us that one should not use the logit model without first being sure that the restrictions imposed on the parameters concerning elasticities of substitution, cross price elasticities and the structure of preferences are reasonable (McFadden, 1968). However, such restrictions also imposed by Cobb-Douglas type functions have been proved (section 4.2.3) to perform better than an unrestricted model (i.e. translog type function). Again, employment opportunities in the two countries, together with earnings in West Germany, affect the probability that an individual drawn at random from the population will choose to migrate to West Germany.

Earnings in Greece do not play any role in explaining both migration flows since they are, in all models, statistically insignificant. One reason for this perhaps is the quality of data used. (8)

Finally, we must note that all the previously tested models were single equation models. The relationship between migration and economic variables is directed from the right-hand side of the equation to the left-hand side. They ignore the possible effects
of migration on the explanatory variables thus being subject to simultaneous bias. The next chapter is concerned with this matter introducing a simultaneous equation system in order to avoid it.
Footnotes

(1) It is assumed that there are no legal restrictions concerning the movement of people between the two countries.

(2) Application of the rule of thumb for the detection of multicollinearity (Klein, 1962) reveals that the simple correlation between the two explanatory variables is slightly larger than the correlation of both variables with the dependent.

(3) The use of nominal per capita income by Professor Lianos is not representative of the earnings in the two countries (Cebula, 1981).

(4) The use of ratios also decreases the information provided by the variables (Zell, 1977).

(5) It does not follow that all migrants who leave the country of destination return home. Probably a portion of them may move to a third country.

(6) The probability of a 'tie' is zero.

(7) Unfortunately there are no available data concerning other locational characteristics or other disaggregated characteristics we could use like age group, sex groups or professional groups concerning migrants.

(8) Use of an alternative variable such as national per capita income did not provide better results.

(9) Both series have been adjusted by O.E.C.D.

(10) We assume that the same number of hours are worked in both countries.

(11) Note, that in long-term the coefficients take the right signs. However, the large size of M(t-1) (>1) indicates that there is serious econometric problems.
For \( j = 1, 2, 3 \) we have:

Total population \( T_t = L_{1t} + L_{2t} + L_{3t} \)

and \( Y_t = Y_{1t} + Y_{2t} + Y_{3t} = L_{1w1t} + L_{2w2t} + L_{3w3t} \)

Since the components \( w_1, w_2, w_3 \) are assumed to be random variables normally distributed, utility maximisation becomes equivalent to maximise the expected utility

\[
\mathbb{E} [V(Y)]_t \quad \text{or} \quad \max V(Y)_t = \max \left[ \mathbb{E}(Y) - \frac{1}{2} R \text{Var}(Y) \right]_t = G
\]

where:

\[
\mathbb{E}(Y) = \bar{w}_1 L_1 + \bar{w}_2 L_2 + \bar{w}_3 L_3
\]

and

\[
\text{Var}(Y) = \sigma^2_{w_1} L_1^2 + \sigma^2_{w_2} L_2^2 + \sigma^2_{w_3} L_3^2 + 2L_1L_2 \text{Cov}(w_1w_1)
\]

\[
+ 2L_1L_3 \text{Cov}(w_1w_3) + 2L_2L_3 \text{Cov}(w_2w_3)
\]

where: \( \bar{w}_1, \bar{w}_2, \bar{w}_3 \) are average wages.

Taking the first derivatives for \( L_1, L_2, L_3 \) equal to zero and solving the system we have:

\[
L_{1t} = \frac{\det(D_1)}{\det(A)}
\]

\[
D_1 = \begin{bmatrix}
-\bar{w}_1 & \text{Cov}(w_1w_2) & \text{Cov}(w_1w_3) \\
-\bar{w}_2 & \sigma^2_{w_2} & \text{Cov}(w_2w_3) \\
-\bar{w}_3 & \text{Cov}(w_2w_3) & \sigma^2_{w_3}
\end{bmatrix}
\]

and

\[
A = \begin{bmatrix}
\sigma^2_{w_1} & \text{Cov}(w_1w_2) & \text{Cov}(w_1w_3) \\
\text{Cov}(w_1w_2) & \sigma^2_{w_2} & \text{Cov}(w_2w_3) \\
\text{Cov}(w_1w_3) & \text{Cov}(w_2w_3) & \sigma^2_{w_3}
\end{bmatrix}
\]
5.1 Introduction

Simultaneous equation models estimate the effect of a change in one set of variables on another set of variables and then trace the repercussions which a change in the second set of variables has on the first. Most macro or aggregated migration models have been specified in terms of a single equation, and a set of regional characteristics is used to predict migration rates (Gober and Meyers, 1978; Wilkinson, 1970). Within this context migration is treated as the dependent variable in the regression model. This type of model is overly simplistic in that it allows for direct effects and disregards indirect effects (Blanco, 1963; Gallaway et al., 1967; Greenwood, 1969a,b, 1970, 1985, 1986; Hart, 1972).

Single equation models are recursive in nature and do not allow for any kind of feedback effect or reciprocal causation between variables. This lack of reciprocity has been stressed by Sjaasted (1962) who states that:

"Migration research has dealt mainly with the factors which affect migration and how strongly they have affected it, but little has been done to determine the influence of migration as an equilibrating mechanism in a changing economy. The movements of migrants clearly are in the appropriate direction, but we do not know whether the numbers are sufficient to be efficient in correcting income disparities as they emerge. There is a strong presumption that they are not."

The absence of reciprocity represents a simplification of the migration system. Migration patterns will influence the demographic and economic characteristics of the origin and destination regions and therefore one must be prepared to deal with the causes of migration as well as its effects (Cadwallader, 1985; Mueser, 1985).
In the late 1950s Myrdal (1957) and Hirschman (1958) outlined the process whereby migration plays a causal role in directing elements of the spatial economy (see Chapter 2). They recognised that migration was a selective process that draws disproportionately from the ranks of the young, highly educated and skilled and they concluded that depressed areas characterised by a net out-migration would be plagued by their less desirable residual populations whereas a net in-migration would contribute favourably to regional population composition in already prosperous regions resulting in greater inequality of income especially during initial stages of development.

The interdependent nature of the relationship between migration and economic variables was formally recognised in the late 1960s and early 1970s with the use of simultaneous equations to model the association between population movement and economic growth. Previous models failed to incorporate the dual directionality of the migration-economic change relationship.

Within a system of simultaneous equations, migration and economic change could be viewed as interdependent processes, each acting both as dependent and independent variable. Not only is this approach a conceptually more satisfying way of viewing the process of migration and economic change, but in addition this approach reduces the simultaneous equation bias inherent in the single equation regression model so commonly used in previous migration research (Willis, 1974; Greenwood, 1981; Christou, 1982).

One of the first attempts to specify a system of simultaneous equations which recognised the interdependency of migration and economic growth was Muth's (1971, 1972). He found migration and employment growth in US cities to be mutually interacting. Olvey (1972) used a more complex set of simultaneous equations to evaluate empirically the same relationship and obtained results generally consistent with those of Muth. Greenwood (1973) treated employment growth, income growth and unemployment change as endogenous variables in an expanded model of gross migration. He found that
in-migration induces both income and employment growth and is, in turn, influenced by them.

Below we introduce a simultaneous equation model where out-migration from Greece to West Germany, return migration from West Germany to Greece, earnings and unemployment in Greece are treated as dependent and independent variables in a four equations model in order to assess their interdependence (Liu Ben Chich, 1977; Mead, 1982).

5.2 The Model

The model consists of four equations: one equation for each endogenous variable. As endogenous variables are considered out-migration (EMP), return migration (IMP), unemployment rate in Greece (URH) and earnings in Greece (WH). Exogenous variables determined outside the model include earnings (WG) and unemployment (URG) in West Germany, industrial production (PRM) in Greece, employment in the agricultural sector (EMA) in Greece, the number of already settled migrants in West Germany, one year lagged (MPS1). Also other exogenous variables are the three lagged endogenous variables, URH1, EMP1 and WH1.

Table 5.1 defines all the variables used and their statistical sources. It must be stressed that it is the first time, at least as far as Greece is concerned, that international migration flows are treated together with other economic variables in a simultaneous equation model context. This simultaneous equations model enables us to study not only the determinants of migration flows but also the effects of these flows on the evolution of certain economic variables (unemployment-earnings).

The model allows for the feedback effects of migration flows on economic variables in Greece to be determined. It also avoids the simultaneous bias which arises when single equation models of migration are estimated, from the fact that they incorporate only a one direction relationship: that is, the influence from explanatory
Table 5.1

List of Variables Used in the Simultaneous Equation Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMP</td>
<td>Greek emigration to West Germany (sample period 1960-1982).</td>
</tr>
<tr>
<td>IMP</td>
<td>Return migration from West Germany to Greece (1960-1982).</td>
</tr>
<tr>
<td>EMP1</td>
<td>Greek emigration one year lagged.</td>
</tr>
<tr>
<td>WG</td>
<td>Real hourly earnings (manufacturing 1975=100) in West Germany.</td>
</tr>
<tr>
<td>WH</td>
<td>Real hourly earnings (manufacturing 1975=100) in Greece.</td>
</tr>
<tr>
<td>WH1</td>
<td>Earnings in Greece one year lagged.</td>
</tr>
<tr>
<td>URG</td>
<td>Unemployment ratio % in West Germany (1960-1982).</td>
</tr>
<tr>
<td>URH</td>
<td>Unemployment ratio % in Greece (estimates, 1960-1982).</td>
</tr>
<tr>
<td>URH1</td>
<td>Unemployment in Greece one year lagged.</td>
</tr>
<tr>
<td>MPS1</td>
<td>Stock of Greek migrants settled in West Germany one year lagged.</td>
</tr>
</tbody>
</table>

Sources: National Statistical Service of Greece, Statistical Yearbook (various years); Bank of Greece (Annual Reports) (Statistical Survey); German Statistical Yearbook (various years); Agricultural Bank of Greece; German Ministry of Labour; Karavitis (1986).
variables (economic variables) to the dependent variable (migration flow) (Milne, 1981).

The time period under study is 1960-1982. The four equations of the model are:

out-migration: \[ EMP = A_0 + A_1WG - A_2WH - A_3URG + A_4URH + A_5EMP_{t-1} \] (Eq. 5.1)

return migration: \[ IMP = B_0 - B_1WG + B_2WH + B_3URG - B_4URH + B_5MPS_{t-1} \] (Eq. 5.2)

unemployment in Greece: \[ URH = D_0 - D_1EMP + D_2IMP - D_3PRM - D_4EMA + D_5URH_{t-1} \] (Eq. 5.3)

earnings in Greece: \[ WH = F_0 + F_1PRM + F_2WH_{t-1} - F_3URH \] (Eq. 5.4)

Equations 5.1 and 5.2 have already been estimated in Chapter 4 (sections 4.2, 4.3). Out-migration (EMP) and return migration (IMP) are affected by both unemployment (URH) and earnings (WH) in Greece. Unemployment in Greece is also affected by emigration and return migration. Finally, earnings in Greece are directly related to unemployment and indirectly through URH to both emigration and return migration.

More specifically in equation 5.1, the left-hand side variable, out-migration (EMP), is determined by earnings and unemployment in West Germany, earnings and unemployment in Greece and out-migration one year lagged. As we have already seen (Chapter 4), out-migration is expected to be related positively to earnings in West Germany, unemployment in Greece and last year's out-migration and negatively to earnings in Greece and unemployment in West Germany.

In equation 5.2, return migration is determined by earnings and unemployment in West Germany, earnings and unemployment in Greece and last year's migrants already settled in West Germany. Return migration is expected to be related positively to unemployment in West Germany, earnings in Greece and migrants' stock one year lagged and

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negatively to earnings in West Germany and unemployment in Greece.

Equation 5.3 relates unemployment in Greece to emigration, return migration, industrial production in Greece, employment in the agricultural sector in Greece and last year's unemployment. Unemployment is expected to be related positively to return migration, especially in times of economic depression when return migration from abroad increases rapidly, and last year's unemployment. It is also expected to be related negatively to out-migration, since it relieves the country from a number of unemployed, industrial production (Kintis, 1973) and employment in the agricultural sector, since a great number of unemployed are agricultural workers who left their farms and sought employment in the big urban centres (urbanisation) (Repas, 1978).

Finally, equation 5.4 relates earnings in industry in Greece (manufacturing) with industrial production (manufacturing, Table 5.1), unemployment and last year's earnings. Earnings in Greece are expected to be positively related to industrial production (Kintis, 1973) and last year's earnings and negatively related to unemployment.

The specification of the model is based on: (a) the results concerning out-migration and return migration derived in the previous chapter, and (b) the argument that out-migration relieves the country from unemployment and underemployment while return migration will benefit the country providing skilled workers necessary for economic development.

The results obtained in Chapter 4 led to the specification of equations 5.1 and 5.2. Expected benefits resulting from out-migration and return migration concerning unemployment led to the inclusion of equation 5.3 which provides the opportunity to estimate these feedback effects of migration flows on unemployment. The rest of the explanatory variables in equation 5.3 have been tested in other econometric studies (Yannopoulos, 1984) and they are expected to influence unemployment. Unemployment also stands for any possible indirect relationship between out-migration and return migration.
Finally, equation 5.4 has been included in order for the model to be completed and since unemployment has been found to influence earnings in manufacturing (Kintis, 1973; Yannopoulos, 1984) and migration flows may influence earnings through their effect on unemployment. The causality of the model is represented schematically in Figure 5.1 (Papademetriou, 1982).

5.3 **Empirical Estimation**

The model satisfies both the order and rank condition for identification. In particular all equations are over-identified. The methods of estimation for simultaneous equation models can be classified under the category of limited-information methods and full-information methods. In the first category (ordinary least squares, indirect least squares, two-stage least squares, limited information maximum likelihood), we estimate for each equation separately using only the restrictions on the coefficients of that particular equation. In the second category (three-least squares, full information maximum likelihood), we estimate all equations jointly using the restrictions on the parameters of all the equations as well as the variances and covariances of the residuals (Maddala, 1977).

The most commonly used methods are two-stage least squares (2SLS) and three-stage least squares (3SLS). Ordinary least squares (OLS) is an inappropriate estimating technique because it lacks the consistency property that two-least squares (2SLS) and three-least squares (3SLS) possess. Three-least squares (3SLS) is preferable to 2SLS in our case, and has been used because it has greater asymptotic efficiency when equations are over-identified, as the equations of the present model are, and when equation disturbances have a non-diagonal covariance matrix. Best results are obtained from the following dynamic logarithmic model:
Figure 5.1

Causality of the Simultaneous Equation Model
emigration: \[ \text{LEMP} = 4.51^{**} + 2.42\text{LWG}^{**} - 0.92\text{LWH} - 1.06\text{LURG}^{**} \tag{Eq. 5.5} \]
\[ + 0.63\text{LWRH}^{**} + 0.04\text{LEMP1} \]
\[ (2.29) \quad (1.15) \quad (0.52) \quad (0.20) \]

return migration: \[ \text{LIMP} = 3.24 - 5.17\text{LWG}^{**} + 1.047\text{LWH} + 1.02\text{LURG}^{**} \tag{Eq. 5.6} \]
\[ - 0.67\text{LURH}^{**} + 2.5\text{MPS1}^{**} \]
\[ (2.42) \quad (1.42) \quad (0.58) \quad (0.16) \]

unemployment: \[ \text{LURH} = 225^{**} - 0.61\text{LEMP}^{**} + 0.66^{**}\text{LIMP} - 5.95\text{LPRM}^{**} \tag{Eq. 5.7} \]
\[ (86) \quad (0.20) \quad (0.25) \quad (2.21) \]
\[ - 13\text{LEMA}^{**} - 0.032\text{LURH1} \]
\[ (5.137) \quad (0.30) \]

earnings: \[ \text{LWH} = -0.98 + 0.26\text{LPRM} + 0.94 \text{LWH1}^{**} - 0.10\text{LURH}^{**} \tag{Eq. 5.8} \]
\[ (0.60) \quad (0.16) \quad (0.077) \quad (0.006) \]

The numbers in parentheses are standard errors.

\( **\) statistically significant at 0.05.

Equation 5.5 defines out-migration. All variables take the expected signs, but earnings in Greece and EMPI are not statistically significant. We may compare equation 5.5 with the corresponding equation in Chapter 4. The same variables, earnings and unemployment in West Germany and unemployment in Greece, are again the main determinants of out-migration. The most powerful variable is earnings in West Germany and follow unemployment in the same country and unemployment in Greece. The effect of a change in earnings in emigration to West Germany is twice the effect of a change in unemployment in the same country.

In equation 5.6 all variables take the expected signs but earnings in Greece are not statistically significant. Equation 5.6 is not directly compared with that of Chapter 4 (eq. 4.21) because they are in different algebraic forms, but the same variables are the determinants of return migration. The order of the most powerful
variable in quantitative terms has now changed. Instead of unemployment in West Germany, earnings in this country are now causing the larger influence in the dependent variable followed by last year's stock of migrants and unemployment rates in the two countries.

In equation 5.7 all variables take the expected signs except LURH1. The rest of the variables are statistically significant. Emigration and return migration affect unemployment with almost the same intensity but the most powerful variables are employment in agriculture and industrial production.

Earnings in Greece (eq. 5.8) are determined by last year's earnings and unemployment. Industrial production is not statistically significant although it takes the expected sign. Last year's earnings is the most powerful variable in terms of coefficient's size.

5.4 Conclusions

In this chapter we have applied a simultaneous equations system in order to estimate out-migration and return migration together with unemployment and earnings in Greece. Thus we have the opportunity to study the determinants of the migration flows and at the same time the effects of changes in the flows on economic variables (feedback effects) such as unemployment and earnings in Greece. This way we also avoid the simultaneous bias which appeared when single equation models are used.

Out-migration is explained by changes of earnings and unemployment in West Germany and by changes of unemployment in Greece. This result agrees with the conclusion of the single equation model we estimated in Chapter 4.

Return migration is explained by the same variables. The equation is not comparable with the one in Chapter 4 because of different algebraic forms. But what appeared is that earnings in

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West Germany are now the main determinant in terms of coefficient's size. Beside the different mathematical form (compared with equation 4.20 in Chapter 4), simultaneous equation bias existed in the single equation model (eq. 4.20) and may be the reasons for this change in the order of the most powerful variables. The importance, of course, is that mainly earnings and unemployment in West Germany and then unemployment in Greece are the determinants of return migration.

Migration flows (emigration, return migration) influence unemployment in Greece. Although their coefficient's size is not too large compared with that of employment in agriculture and industrial production, their influence appeared to be in agreement with the corresponding influence of unemployment on them. We may conclude that migration flows cause feedback effects in unemployment in Greece.

Earnings in Greece are explained mainly by last year's earnings and unemployment. Migration flows may influence earnings through unemployment but the size of the coefficient is not too large to permit us to verify it.

Finally, we may conclude that the results justified the application of the simultaneous equation model, since there are feedback effects on economic variables from both migration flows.

However, the use of such models involves the issues of specification error (Duncan, 1974; Dahlberg and Holmlund, 1978). Specification error includes the omission of relevant variables in the model and the misspecification of the correct form of equations. The algebraic form of equations has been based on the conclusions derived in the previous chapter (four). As far as the omission of relevant variables is concerned, there is a number of them, for example, labour force, employment in non-agricultural sectors, earnings by sector of economy, unemployment by sector, production by sectors, internal migration (urbanisation), which could have been useful in our effort to determine the causes as well as the effects.
of migration.

A larger simultaneous equations model could provide the opportunity to study the effects of migration flows on the Greek economy, e.g. employment, consumption for goods and services, production, balance of payments, savings, investments. Unfortunately, both lack of data for whole or part of our sample and the low quality of that which exists does not allow for such a study.
Footnotes

(1) From a number of different estimated models (in algebraic forms and number of variables) this model presented the best results.

(2) In fact in terms of properties of estimators the 3SLS technique is an improvement over 2SLS since, while both are consistent, 3SLS is asymptotically more efficient than 2SLS. The basic rationale for 3SLS as opposed to 2SLS, is its use of information on the correlation of the stochastic disturbance terms of the structural equations in order to improve asymptotic efficiency.

The full-information technique, (3SLS) provide the most desirable estimators in terms of both bias and mean squared error when the model is correctly specified and the variables are correctly measured. However, they are sensitive to both specification error and measurement error. A misspecification or measurement error can change the results so as to make the estimator (3SLS) less desirable than the limited-information estimators (2SLS). Monte Carlo studies (Chow, 1983) suggest that if correlations between stochastic disturbance terms in different equations are important and specification errors are not a problem, then it may be appropriate to improve upon the 2SLS estimates by using the 3SLS approach. We have also estimated the model by using the 2SLS technique. This yielded about identical results although in the case of the latter the coefficients of earnings in West Germany (WG) and Migrants' stock (MPS1) were not statistically significant in equations 5.6, 5.5 while the variable EMA took a reverse sign in equation 5.7. Intuitively, the 3 stage results seem preferable.
CONCLUDING COMMENTS

Since the beginning of this century remarkable changes in the geography spread and composition of the population of Europe have taken place. Not only has the growth in numbers continued but extensive redistributions of populations have occurred. In particular, economic growth, and the speed of industrialisation, especially since World War II have led to major movements of populations.

After World War I and until well into the 1950s, international migration in Europe consisted mainly of transfers of refugees and the resumption of traditional flows overseas. From about 1960, however, it took a new character. The dominant pattern became one of movement of workers and their families from the less developed countries of the South to the more industrialised countries of the West and North. Recipient countries were characterised by high rates of economic activity and low birth rates. The resulting labour shortages, which threatened to hamper this process, had to be covered by foreign manpower and, as a result a policy of encouraging migrants from countries of the Mediterranean basin was actively pursued.

As far as Greece is concerned, the post-war period was characterised by acute unemployment, because of the insufficient development of the industrial base, and also under-employment, especially in the agricultural regions of Macedonia-Thrace and Epirus. Furthermore, those in work found themselves at a disadvantage, vis-à-vis their Western European fellow workers, as far as both pay and working conditions were concerned. The decision to emigrate was further enhanced by geographical proximity with the formation of Greek communities in the host countries.

Emigration from Greece to West Germany involved considerable numbers of people during the 1961-66 and 1969-73 periods. However,
during the recession period 1967-68 and after 1973, when measures to reduce immigration had been taken by the German authorities, the number of people emigrating is lower than the numbers of return migrants (Figure 1.12).

The flow of return migrants from West Germany had been a feature of migration during the 1960s but it increased considerably after 1973.

A common question faced by many students of migration is: "Will international migration continue?" Whether they give a positive or negative answer to this question they all seem to agree that the 'potential' for international migration is extremely high and increasing. Zolberg (1982) states that, "the present migrant population in the world would be quantitatively and qualitatively different if all countries of the world allowed individuals to choose freely whether to stay, to leave or return and if they admitted all those who wished to enter". Condé (1982) maintains that, as long as a discrepancy exists between the economic levels of nations it is difficult to stop the flow of migration movements. Even Davis (1947, 1981) who had been predicting the virtual end of international migration for some time, admits that, "never before in human history has there been such an enormous potential for the movement of people between countries .... if migration were determined by free market conditions, we could expect to find a massive flow of people from the less developed to the more developed countries" (Davis, 1981).

To evaluate this 'potential' we need to know the determinants of migration. The causes of migration constitute one of the two major fields of interest for students of migration, the other one being its effects on the economies of both the region of origin and destination.

This thesis provided the opportunity to define the determinants of Greek migration to West Germany. In order to do that we have applied the Neo-classical, Keynesian and Human Capital models.
Chapter 2 provided the necessary theoretical background for the modelling of migration. The consideration of the economic philosophy of Neo-classical, Keynesian, Human Capital and Marxian theories gave the opportunity to identify migration in the context of each theory.

Three models based on the Neo-classical, Keynesian and Human Capital theories were developed in the third chapter. The order which these models were presented with follows the historic evolution of the theory, starting from the Neo-classical and then proceeding to the Keynesian and Human-Capital model.

Under the Neo-classical assumptions about labour and product markets, migration of labour is explained by wage-rate differentials prevailing between two regions. The Keynesian model instead of the usage of wage rates it uses national incomes and also adds unemployment prevailing in the places of origin and destination as a cause of migration. Under the Human Capital theory, migration will occur, if the present value of the expected net benefits exceeds the present value of the expected costs resulting from migration. Modelling migration in the Human Capital context we reach an equation where, migration is explained by a set of "push-pull" factors. "Pull" factors consist of net returns and employment opportunities (unemployment) faced by the migrant in the region of destination and "push" factors consist of net returns and employment opportunities (unemployment) faced by the migrant in the region of origin.

The results of testing these models on data concerning Greek migration to West Germany during the 1960-82 period were presented in the first part of chapter four. The purpose of this part was to look at separate models (how these models perform in the case of Greek migration) and not to compare one against the other. Again the order of presenting the estimated models is in accordance with the historic evolution of the theory, also followed in modelling them.

The neo-classical model does not perform well and it seems that only wage-rate differences are inadequate to explain out-migration (p. 185).

The application of the Human Capital model requires the existence of statistical data concerning costs of living, faced by the migrant in both countries of origin and destination, in order to estimate net returns in
both locations. Unfortunately lack of statistical data in the case of Greece does not allow the use of net returns as explanatory variables. Instead, we are restricted to use wage-rates (hourly earnings in manufacturing) together with unemployment prevailing in the two countries to test the "push-pull" model. Since the majority of Greek migrants were workers or technicians (or agricultural workers - but there is no data on earnings of this category) prior to their departure and most of them are employed in manufacturing while abroad, hourly earnings in manufacturing constitute a representative measure of earnings in the two countries. However, this restriction may well constitute a measurement error problem and possibly a reason why the wage variables perform inadequately in the empirical estimation. On the other hand the use of national incomes and unemployment prevailing in the two countries (Keynesian case) did not provide more logical results.

Out-migration of Greeks to West Germany (p. 183) is expected to be related to earnings in West Germany and unemployment in Greece positively and to earnings in Greece and unemployment in West Germany negatively.

The application of the "push-pull" model revealed that out-migration is explained by changes in unemployment in the two countries and changes in earnings in West Germany. Earnings in Greece were found to be statistically insignificant, possibly due to the measurement error problem. Additional to these main causes of migration, the number of Greeks, already settled in West Germany, and the volume of migrants' remittances seem to stimulate out-migration. The use of the emigration of labour force as the dependent variable, in an effort to dissaggregate out-migration revealed the same results. Unemployment in the two countries and the earnings in West Germany are the main explanatory variables.

Testing the various models of emigration, we concluded that logarithmic formulations of emigration equations (linear in parameters and variables) presented the best results. This kind of logarithmic model implicitly presupposes a Cobb-Douglas type function. The use of translog functions (p. 200) in order to avoid the restriction posed by the Cobb-Douglas
type formulation provided the opportunity to conclude that the restricted models (of Cobb-Douglas type) perform better than the unrestricted one in explaining out-migration.

The use of the "push-pull" model in explaining return-migration revealed that the main explanatory variables are unemployment in the two countries and earnings in West Germany.

The second part of chapter four gave us the opportunity to reconsider the previous models and test two new models. In section 4.4 we have introduced the concept of uncertainty into the migration equation in the form of risk coefficients. We saw that under the "optimal allocation rule" the decision making also takes into account the characteristics of the other possible locations, when a potential location is considered. Unfortunately lack of data restricted us to test the model in the case of two locations and we may conclude that the results are "similar" with the previous findings since out-migration was found to be influenced by earnings and unemployment prevailing in the two locations.

Finally, in section 4.5 we have derived and tested a logit migration model in the case of Greek out-migration to West Germany. The probability choice model (logit model) provided us with the probability that an individual drawn at random from the population of Greece will choose to migrate to West Germany. Again lack of data prevented us from testing more than a binomial model. The results revealed that location characteristics such as employment opportunities and wages affect the probability that an individual drawn at random from the population of a location (Greece) will choose to migrate to another location (West Germany).

All the previously tested models were single equation models. The relationship between migration and economic variables was directed
from the explanatory variables (right-hand side of the equation) to the
dependent variable (left-hand side of the equation). This ignored the
possible effect of migration on the explanatory variables thus being
subject to simultaneous bias. Chapter five has dealt with this matter
by introducing a simultaneous equation system. Out-migration from
Greece to West Germany, return migration from West Germany to Greece,
earnings and unemployment in Greece have been treated as dependent and
independent variables in a four equations model in order to assess their
interdependence.

The model allowed the feedback effects of migration flows on
economic variables in Greece (unemployment, earnings) to be determined
(p. 228). The results justified the application of the simultaneous
equation model, since there are feedback effects on economic variables
from both migration flows. Both flows influence unemployment in Greece
and through it they influence earnings.

Unfortunately, both lack of data and low quality of those which
exist (as in single equation models) do not allow us to test a larger
simultaneous equations model which could enable us to study the effects
of migration flows on the Greek economy e.g. employment, consumption
for goods and services, production, balance of payments, savings,
investment.

The future of Greek emigration depends on the development of the pull
and push factors in the coming years. For Greece unemployment is
expected to rise during the next two years, while wages are expected to
be constant, as part of the austerity measures introduced in 1985 in
order to stabilise the economy. However, the crucial point is that from
1988 the Greeks are free to enter the labour market of every EEC member
country. Given that:

a. most Western European countries are around or below replacement
levels of natural increase and an actual decline in indigenous
populations has begun to take place in several of them (principally the FRG, Austria, Sweden and the U.K.) (Tabbarah), 1984) and

b. the economic recovery, which has already begun in some EEC countries, will continue during the next few years, high level of emigration from Greece could be repeated.

Experience since 1968, when the free movement inside the EEC countries was established, shows that the internal migration among its member states increased much less than the migration from third countries (Zolatas, 1978). However, in the case of Greece, things are different. The large number of Greeks, already settled in West Germany (300,000) and the existence of return migrants who are more prone to re-emigration compared with the rest of the population, makes an increase in emigration possible. Also an out-migration of scientists from Greece to the member countries of the EEC may start. The forces acting for this development are:

a. The large number of Greek graduates of EEC members' universities (the number of Greek students in EEC countries exceeds 20,000 every year);

b. the high level of unemployment that these graduates and their fellows from Greek universities have faced since 1980 which is predicted to continue; and

c. the existence of employment opportunities for them in Community countries (especially in applied science and engineering).

So the country may experience a 'brain drain' during the following years.

The authorities, having in mind the limited benefits from out-migration to the country (Chapter One), have been forced to begin a census of all return migrants in Greece. They are collecting data concerning returnees' skills, present occupation and problems faced by them, which will be necessary for the planning of future policies. On the other hand, with the 'Mediterranean Integrated Programmes' which have already been approved by the EEC, the government is trying to secure employment in the less developed regions of Greece in the short run and economic development in the long run.
The future trends of Greek migration might be predicted using the models derived in the previous chapters under different assumptions about future values of the determinants. More useful predictions might be obtained by using a more complete simultaneous equation model since there exist feedback effects of migration as we have already seen.

What we propose is that the estimation/prediction of migration is disaggregated to regional level, which will enable us to also use migration estimations in the development planning of each region. Unfortunately, we did not have the available data to proceed at the regional level but future studies must take into account disaggregation and also the development of internal migration which constitutes the alternative to external migration for many people. Also panel data to be released in the future from the statistical service of Greece, concerning returnees, will be useful for the study of migration (return) and its effects on the Greek economy.

The interest of the government and the public in international migration has been increased considerably in the last few years. The lack of studies in Greek migration is now obvious and the academic community has started to concern itself with this matter. We think that this thesis comes to cover this lack of studies and constitutes a background for further research on Greek migration flows when availability of data will permit it.


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