Some Aspects of Population Growth, Trade, and Factor Mobility

André Sapir

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Some Aspects of Population Growth, Trade, and Factor Mobility

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FOREWORD

This paper is one in a special series of World Bank Staff Working Papers on population change and development. Prepared as background papers for the World Development Report 1984, they provide more detailed treatment and documentation of the issues dealt with in Part II of the Report. The papers cover a range of topics, including the effects of population growth and change on economic development, the determinants of fertility and mortality, the links between population growth and internal and international migration, and the management, financing, and effectiveness of family planning programs. They include several country and regional studies of fertility change and population policy.

The background papers draw on a large number of published and unpublished studies of individual researchers, on Bank policy analysis and research, and on reports of other organizations working on population and development programs and issues. The papers are the work of individuals and the views and interpretations expressed in them do not necessarily coincide with the views and interpretations of the Report itself.

I hope these detailed studies will supplement the World Development Report 1984 in furthering understanding of population and development issues among students and practitioners of development.

Nancy Birdsall
Staff Director
World Development Report 1984
Some of the Papers in the Population and Development Series


Merrick, Thomas W. *Recent Fertility Declines in Brazil, Colombia, and Mexico*. World Bank Staff Working Paper no. 692.


Abstract

This paper examines whether and how international economic relations between the industrialized and the developing countries might accommodate the growing North-South demographic and income gaps. Three channels of international relations are analyzed: trade, capital movements, and international migration. The trade-offs, if any, between trade and factor movements, and between capital movements and international migration, are also investigated. The study combines economic theory and historical evidence on trade and factor movements.

In examining the interrelationship between population growth and international trade, the paper points up results from regression analysis which indicate that the accumulation of human capital is a necessary condition for success in exporting manufactured products. In relatively human capital abundant developing countries, the fact that population and labor force are often growing rapidly compared to the industrialized countries does not determine whether or not these countries export manufactures, though the product composition of such exports may be affected. In human capital poor developing countries, rapid population and labor force growth actually compromise their opportunity to participate in the worldwide expansion of manufactured exports. For these countries, there is little or no possibility for export growth to accommodate their rapid population growth.

The effects of population growth on factor movements between the developing and the industrialized countries are investigated with a review of labor immigration into the United States, labor immigration into Europe, and capital export from Japan. The position adopted in the paper is that trade is generally to be preferred to either capital movements or labor migration. However, even free trade might leave disparities in factor prices and, hence, international factor movements might be required for achieving world efficiency. Finally, the paper notes that the "right type" of capital exports (a la Japan) is likely to have a much more favorable impact on the dynamics of comparative advantage than the "wrong type" of labor imports (a la Europe).
Ce document tente de déterminer si (et, dans l'affirmative, comment) les relations économiques internationales entre pays industrialisés et en développement pourraient jouer un rôle positif du point de vue de l'écart croissant existant entre le Nord et le Sud en matière de population et de revenu. Trois modes de relations internationales sont analysés ici : les échanges, les mouvements de capitaux et les migrations internationales. L'interaction éventuelle, d'une part, entre le commerce et les mouvements de facteurs et, d'autre part, entre les mouvements de capitaux et les migrations internationales est également étudiée. L'étude s'appuie à la fois sur la théorie économique et des données précises concernant les échanges commerciaux et les mouvements de facteurs enregistrés par le passé.

En examinant la relation mutuelle qui existe entre l'accroissement démographique et les échanges internationaux, le document signale les résultats d'une analyse de régression qui indique que sans accumulation de capital humain, il est impossible de parvenir à exporter des produits manufacturés. Dans les pays en développement relativement riches en capitaux, le fait que la population et la main-d'œuvre s'accroissent souvent plus rapidement que celles des pays industrialisés n'est pas l'élément qui explique que ces pays exportent ou non des produits manufacturés, bien qu'il puisse influer sur la composition par produits de ces exportations. Par contre, les pays en développement où les capitaux sont rares voient le rapide accroissement de population et de la main-d'œuvre compromettre effectivement leurs chances de participer à l'expansion mondiale des exportations de biens manufacturés. La possibilité qu'ont ces pays d'accroître leurs exportations dans des proportions comparables à leur rapide accroissement démographique est faible ou nulle.

Ce document étudie les effets de l'accroissement démographique sur les mouvements de facteurs entre pays en développement et pays industrialisés en examinant l'immigration de main-d'œuvre aux États-Unis et en Europe ainsi que les exportations de capitaux du Japon. Il en ressort qu'il vaut mieux, en général, donner la préférence aux échanges plutôt qu'aux mouvements de capitaux ou aux migrations de main-d'œuvre. Toutefois, même le libre-échange peut laisser persister des différences au niveau des prix des facteurs et, par conséquent, des mouvements de facteurs internationaux sont peut-être nécessaires si l'on veut parvenir à une certaine efficacité au niveau mondial. Le document constate enfin que le "type approprié" d'exportations de capitaux (à la japonaise) a des chances d'avoir une incidence beaucoup plus favorable sur la dynamique de l'avantage comparatif que le "type erroné" d'importations de main-d'œuvre (comme celles que l'on observe en Europe).
En este documento de trabajo se examina la cuestión de si las relaciones económicas internacionales entre los países industrializados y los que están en proceso de desarrollo podrían ajustarse a las crecientes diferencias demográficas y de ingresos entre el Norte y el Sur, y cómo podría ello hacerse. Se analizan tres de los cauces a través de los cuales se desarrollan las relaciones internacionales, a saber: el comercio, los movimientos de capital y las migraciones internacionales. Se investigan asimismo las compensaciones recíprocas, de haberlas, entre el comercio y los movimientos de factores y entre los movimientos de capital y las migraciones internacionales. El estudio combina la teoría económica y datos históricos sobre el intercambio comercial y los movimientos de factores.

Al examinar las interrelaciones entre el crecimiento de la población y el comercio internacional, el estudio muestra resultados obtenidos mediante análisis de regresión que indican que la acumulación de capital humano es una condición necesaria para lograr el éxito en la exportación de productos manufacturados. En los países en desarrollo que tienen una abundancia relativa de capital, el hecho de que la población y la fuerza de trabajo aumentan con frecuencia rápidamente en comparación con los países industrializados no determina el que exporten o no manufacturas, aunque sí puede hacer que resulte afectada la composición por productos de tales exportaciones. En países en desarrollo pobres en capital, el rápido crecimiento de la población y la fuerza de trabajo pone en peligro efectivamente su oportunidad de participar en la expansión mundial de las exportaciones de productos manufacturados. En el caso de estos países, las posibilidades de que el aumento de las exportaciones se ajuste al rápido crecimiento de su población son escasas o nulas.

Los efectos del crecimiento de la población en los movimientos de factores entre los países en desarrollo y los industrializados se investigan por medio de un examen de la inmigración de mano de obra a los Estados Unidos, la inmigración de mano de obra a Europa y la exportación de capital del Japón. La postura adoptada en el presente estudio es la de que, en general, el comercio es preferible a los movimientos de capital o a la migración de mano de obra. Ahora bien, cabe que incluso el comercio libre deje como legado disparidades en los precios de los factores, y de ahí que quizás los movimientos internacionales de factores sean necesarios para lograr la eficiencia a nivel mundial. Por último, en el estudio se señala que el "tipo acertado" de exportaciones de capital (al estilo del Japón) es probable que tenga una repercusión mucho más favorable en la dinámica de la ventaja comparativa que el "tipo desacertado" de importaciones de mano de obra (al estilo de Europa).
Acknowledgments

The present essay contains some thoughts concerning the relationship between population growth and international economic relations. This is obviously a very complex topic which our short essay can only pretend to touch on. We have found that the factor endowment theory of international trade provides a useful framework for the analysis of the problem at hand. This theory is appealing for the study of the international economic impacts of population growth since it directly relates trade and factor movements to the supply of factors of production. Hosts of writers have recently emphasized that it is necessary to go beyond the factor endowment explanation of comparative advantage. We share their views on the need to recognize the importance of other elements, such as technological differences, scale economies, and market imperfections, in shaping trade patterns. Yet, as a first approximation, we will disregard these elements and focus almost exclusively on factor endowments. Therefore, ours must be considered as a ceteris paribus analysis of the issues.

I have greatly benefitted from comments by Nancy Birdsall, Mike Finger, Oli Havrylyshyn, William McGreevey, Jim Riedel, Gurushri Swamy and participants of a World Bank staff seminar. I am grateful to Rama Seth for computational assistance.
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I. Introduction

During the past quarter-century, world population dynamics has undergone significant changes. Besides a spectacular acceleration in the overall growth rate, the new pattern has been characterized by sharp differences between developing and industrialized nations. This has resulted in a demographic gap between these nations which, by all accounts, will continue to widen in the foreseeable future. The magnitude of the gap is depicted in Figure 1.1 for total and working-age (20-59) population. In the forty year span between 1960 and 2000, the gap for total population is expected to grow from 1.1 billion to 3.6 billion. At the same time, the gap for the population of working age is expected to increase from 0.4 billion to 1.7 billion.

Figure 1.1
In the recent past, great intellectual efforts have been devoted to the study of the interaction between population dynamics and income growth. Despite much controversy, it is usually accepted that rapid population growth—because of its negative impact on physical and human capital accumulation—has slowed down the rate of economic progress in developing countries. Whatever the precise nature of the interaction, it remains that the growing demographic disparity has been accompanied by enormous income differentials between developing and industrialized countries. Given the present difference in income levels, the absolute gap in terms of per capita income will continue to widen for some time, even if average incomes grow faster in developing than in industrialized countries.

Our concern here is with the relationship between the demographic and income trends described earlier and international economic interactions of developing and industrialized nations. The purpose of this paper can be viewed under alternative interpretations. On the one hand, it can be interpreted as an investigation into the pattern of international economic interactions that could result from the predicted widening demographic and income gaps. Alternatively, it can be viewed as examining whether such interactions between developing and industrialized countries could accommodate these gaps. In other words: given that rapid population growth in developing countries has a detrimental effect on economic progress, can the developing countries be rescued from this outcome by reinforcing their international economic relations with industrialized countries. 1/

There are two channels the international system could, in principle, rely upon to accommodate the effects of uneven population growth rates: trade and factor movements. Therefore, our analysis will deal with the relationship between widening demographic and income gaps and trade, capital movements, and
international migration. Moreover, we will examine whether there is a trade off between trade and factor movements, and between capital movements and international migration.

A basic tenet of our study will be that changes in factor endowments produce changes in factor costs. Accordingly, the demographic trends described earlier will not only increase the relative labor abundance of developing countries but also decrease the relative price of labor in these countries. It is via such change in the relative prices of production factors that we plan to investigate the possibility for trade or factor movements to accommodate the widening population and labor force gaps between developing and industrialized countries. This will be done by combining economic theory and historical evidence on trade and factor movements.

II. Trade

In this chapter we examine the interrelationship between population growth and international trade. Our focus is on the following question: Can developing countries accommodate their rapid growth of population and labor force by means of rapid export growth? This is obviously a supply question which relates to the possibility that lower labor costs, due to an increase in the relative labor abundance, would render developing countries more competitive on world markets. Throughout this chapter, we will ignore the demand side of the relationship between demographics and trade which consists of investigating the effect of population growth on developing country imports, mostly for food products. The chapter is divided into three sections. In the first one we review historical trends relating to the relative importance and pattern of trade during the nineteenth and twentieth
centuries. The second section examines the recent export record of developing countries and attempts to relate it with certain characteristics of these economies. The final section attempts to draw some perspectives for the future of the issue at hand.

Some Historical Perspectives on Trade

According to Kuznets (1967), the ratio of world trade to world product has steadily increased throughout the nineteenth century. From 3 percent in 1800, it reached 33 percent in 1913. Thereafter, the depression of the 1930s and World War II considerably reduced the relative importance of world trade, which reached its lowest since 1913 in the early 1950s. Since then it has, again, steadily increased to 22 percent in 1963 and, further, to 30 percent in 1980. Thus it took about 30 years after World War II for world trade to regain its pre-World War I importance.

Obviously, the ratio of trade to GNP varies considerably across countries. Kuznets, and several other economists after him, have shown in cross country studies that this ratio varies inversely with the absolute size of GNP. However, once the effect of size is controlled for, it is found that the ratio of trade to GNP increases with the level of GNP per capita. As Little (1982) indicates, contrary to a common misconception, industrialized countries are more trade-dependent than developing countries.

The works by Kuznets (1967) and Lewis (1981) indicate that, until recently, primary products accounted for most of world commodity trade. Between 1850 and 1937, the share of manufactures in world trade (measured at current prices) oscillated between 36 and 39 percent. After World War II, this share started to increase steadily, reaching 50 percent in 1960 and 61 percent in 1973. Thereafter, there was a decrease due to the oil price increase. In 1980 the share of manufactures in total trade was 55 percent.
For the industrialized countries, manufactures accounted in 1980 for 73 percent of total exports and 51 percent of total imports. For developing countries as a whole, manufactures represented 19 percent of exports and 62 percent of imports; if traditional oil exporters are excluded, the respective figures are 39 and 57 percent.

According to Kuznets (1967), the distribution of world commodity trade (measured at current prices) between developing and industrialized countries has changed relatively little from the 1870s to the 1960s. Industrialized countries have consistently accounted for about 70 percent of world trade. Flows among industrialized countries have oscillated between 45 and 50 percent of world trade, while flows among developing countries have increased their relative importance from 4 to 8 percent; trade between developing and industrialized countries has remained at around 45 percent of total trade. More recent figures indicate that similar proportions have continued to prevail throughout the 1970s.

Trade and Changes in Factor Endowments

The demographic trends described in the introduction imply that the relative labor abundance of developing countries is increasing and, therefore, that the relative price of labor should be decreasing in these countries. (The term "labor" used here refers to unskilled workers only.) What is the consequence of this trend on developing country exports? Can a reduction in the relative cost of unskilled labor give rise to an increase in exports by developing countries?

In order to answer these questions, one needs first to distinguish between primary and manufactured products. As far as primary products are concerned, it is well known that export prospects for developing countries depend more on growth of world demand than on the supply conditions which prevail in these countries. On the other hand, there seems to be a consensus
among economists that developing country export growth for manufactured products is based mostly on their relative competitive position. 3/

Accordingly, in the remainder of this chapter, we will focus our attention on manufactured products which, alone, seem to have the potential for export growth via a shift in supply conditions, such as a reduction in the relative cost of (unskilled) labor.

During the past two decades, developing countries considered as a group have made dramatic gains in manufactures exports. This has resulted in the doubling of the share of manufactures in total developing country exports from 10 percent in 1960 to 20 percent in 1980. If one excludes nonfuel products, the corresponding figures are 13 and 44 percent, respectively.

However, developing countries are far from being a homogenous group: performance in manufactures exports varies greatly across individual countries. It is clear that some countries have been able to exploit their relative advantage afforded by low costs for unskilled labor, while others have not. We will now attempt to identify individual country characteristics associated with manufactures export performance. For the purpose of this study, we define export performance of a country as the value of manufactures exports in 1980 divided by the corresponding value in 1962. 4/ The results of this computation are reported in Table 2.1 (column 3) where countries (all those for which data were available) have been arranged by ascending order according to the value of manufactures exports in 1962.

There are, obviously, many factors which contribute to manufactures export performance in developing countries. Rather than attempting to quantify the importance of several such factors, we will examine only one possible explanatory variable which we feel is particularly important. Having estimated the contribution of this variable, we will then examine what other factors might play an important role in shaping export performance.
Table 2.1 Export Performance and Human Capital

<table>
<thead>
<tr>
<th>Country</th>
<th>Value of manufactures (millions of dollars) 1962</th>
<th>Value of manufactures (millions of dollars) 1980</th>
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<th>Adult literacy Rate (%) 1970</th>
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<td>158</td>
<td>330</td>
<td>2.1</td>
<td>77</td>
</tr>
<tr>
<td>Israel</td>
<td>184</td>
<td>4,551</td>
<td>24.7</td>
<td>n.a.</td>
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<tr>
<td>Portugal</td>
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<td>16.2</td>
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<td>31.9</td>
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<td>344</td>
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<td>India</td>
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<tr>
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<td>28.6</td>
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</tr>
</tbody>
</table>
There is widespread agreement that the accumulation of human and physical capital is a key factor in the process of economic development. In particular, Krueger (1968) found that differences in human capital endowments contribute more than any other factor to income differences across countries. Given that data on physical capital are not readily available for most of the countries in our sample, we have only attempted to evaluate the effect of human capital accumulation on export performance. This was done by regressing the measure of export performance defined earlier on an index of human capital, controlling for the value of manufactures exports in 1962. Among the possible measures of human capital, it was felt that the adult literacy rate for 1970 (a mid-point between 1962 and 1980) was the best choice. 5/ The reason for including the value of manufactures exports at the beginning of the period as an explanatory variable is that, for a given level of human capital in 1970, countries with low initial exports can more easily improve their relative position than established exporters.

The results of the regression analysis for the sub-sample of forty-two countries for which data on literacy were available are as follows:

\[
\log \left( \frac{ME_{80}}{ME_{62}} \right) = -0.073 + 1.000 \log (LR_{70}) - 0.195 \log (ME_{62}) \quad R^2 = 0.246
\]

(1.018) (0.281) (0.120)

where \( ME \) is the value of manufactures exports, \( LR \) is the adult literacy rate, and the values in parentheses are the standard errors of the coefficients.

There are two implications from these results. First, the coefficient of the human capital variable is strongly significant. Developing countries which had accumulated sizeable human capital by 1970 have tended to perform better than others in manufactures exports. This result is confirmed by splitting the forty-two countries into a group of twenty-one high performers and
twenty-one low performers. Among the twenty-one countries belonging to the first group, nineteen had a high literacy rate in 1970 (over 50 percent) and only two, Tunisia and the Ivory Coast, had a low one (below 50 percent). On the other hand, among the twenty-one low performers, seven had a high and fourteen had a low literacy rate. Thus, the accumulation of human capital appears to be much more a necessary than a sufficient condition for high manufactures export performance. Second, human capital and the other independent variable of the model only explain 25 percent of cross-country variations in export performance. Thus, although human capital appears to be an important explanatory variable, several other factors are, undoubtedly, missing in the regression analysis.

In order to gain some insight on missing explanatory variables, we have examined the residuals of the regression. Using two standard deviations as the cutting line, we find that thirteen residuals lie outside the usual bounds, six on the positive side and seven on the negative side. The six countries for which the actual export performance value much exceeds the fitted value are: Brazil, Turkey, Tunisia, Ivory Coast, Indonesia, and The Republic of Korea. The seven countries with a fitted value much exceeding the observed value are: Algeria, Bolivia, Ethiopia, Paraguay, Venezuela, Madagascar, and Papua New Guinea. One factor which differs between the two country groups is trade policy. On the whole, overachievers in terms of export performance have been countries with outward-oriented trade policies (especially during the 1970s), while underachievers have tended to adopt inward-looking policies. Other economic, social, or political factors have, no doubt, also played a role in determining the degree of export success.

The conclusion which emerges from the regression analysis is that the accumulation of human capital appears to be a necessary condition for success
in exporting manufactured products. Had the data been available, it would probably have shown that the accumulation of physical capital is another key factor. What this means is that only in countries enjoying sufficient relative (human and, probably, physical) capital endowments could one expect a change in supply conditions (other than the accumulation of capital) to have an impact on manufactures exports. Thus in relatively capital abundant, high income developing countries, the fact that population and labor force are often growing relatively rapidly compared to industrialized countries should not determine whether or not they export manufactures, but rather it should affect the extent and product composition of these exports. On the other hand, in low-income, capital-poor countries, rapid population and labor force growth (by reducing the possibility for human and physical capital accumulation) actually compromises the opportunity to participate in the expansion of manufactures exports. For these countries, there is little or no possibility for export growth to accommodate their rapid population growth.

For successful manufactures exporters, international differences in relative rates of accumulation for the various factors of production can be expected to modify their pattern of trade because of the induced changes in factor prices. Several recent empirical studies tend to confirm this prediction. The case of Japan is particularly illuminating. In the span of only thirty years, this country has emerged from the group of developing countries to become one of the world's most industrialized nations. From a per capita GNP level lower than that of Brazil, Chile, and Malaysia in 1952, Japan is now on equal footing with most of the other OECD countries. Simultaneously to this rapid growth of income, Japan has experienced a deep transformation in her factor endowment position. Still considered a labor abundant country in the 1950s, rapid (physical and human) capital accumulation
and a drastic reduction in population growth led to "labor shortages" during the following decade. "Cheap labor" soon became a thing of the past. 8/

In a recent study, Peter Heller (1976) has investigated whether Japan's shift in factor endowments toward a capital abundant position has resulted in a change in her trade pattern as predicted by theory. With the help of input-output coefficients, Heller has computed the direct and indirect requirements for labor, capital and skilled labor associated with Japan's trade structure. His results indicate that between 1955 and 1968 the capital and skill intensity of her exports have greatly increased. 9/ This leads him to conclude that the change in Japan's factor endowment has strongly altered the composition of her exports toward capital and skill intensive sectors.

The relationship between the changing pattern of comparative advantage and the accumulation of factors of production has been further explored by Balassa (1979) in a cross-section study covering thirty-six countries. Like Heller (1976) this study distinguishes three factors: labor, physical capital and human capital. Balassa uses a two stage procedure. In the first stage, regression equations are estimated, separately for each country, relating a measure of export performance in nearly 200 product categories to their physical and human capital intensity. The second stage involves regressing the estimated coefficients from the previous stage on country characteristics reflecting factor endowments.

Balassa finds that intercountry differences in the pattern of exports can be largely explained by differences in physical and human capital abundance. He concludes that this result supports a 'stages' approach to comparative advantage, according to which the accumulation of physical and human capital leads to changes in the structure of exports. Implicit here is the fact that the abundance and accumulation of capital are measured relative
to labor which, in turn, is directly linked to population. Balassa illustrates his approach with the case of Japan, which has lost its comparative advantage in certain products to the newly industrializing countries (NICs). He predicts that, in turn, these countries might be supplanted by countries at lower levels of relative capital accumulation for unskilled labor intensive products.

A recent study by Havrylyshyn and Alikhani (1982) seems to confirm Balassa's prediction. The authors have investigated the exports during the seventies of non-NIC developing countries which have emerged as new exporting countries (NECs). They find that the NECs are basing their rapid export expansion on similar products as did the NICs earlier on. The NECs, which are generally more labor abundant than the NICs, tend to have a comparative advantage in unskilled labor intensive products. On the other hand, as a result of their capital accumulation, the NICs have tended to shift their comparative advantage toward more capital and skill intensive commodities.

Future Prospects

The previous sections provide the historical and analytical background for assessing whether world trade can accommodate the widening demographic gap between developing and industrialized nations. This section concludes that, for developing countries in general, the detrimental effects of rapid population growth cannot be mitigated by increased exports. Nevertheless, for certain developing countries that have already managed to accumulate sizeable stocks of human and physical capital, fuller participation in world trade can contribute toward absorbing relatively rapid population increases without compromising their chances for economic progress.

Despite a prolonged duration, the current recession of the world economy has not significantly affected the ratio of world trade to world
product. Between 1980 and 1982, this ratio has decreased by merely one percentage point, down to 29 percent. During the same period, the relative importance of manufactures in world trade has continued to increase. On the whole, the share of developing countries in world manufactures exports has also continued to rise.

During the decade ahead, world trade can be expected to grow slower than before the mid-1970s, but its importance relative to world product should remain around 30 percent. For developing countries taken as a whole, trade should continue to grow faster than GNP and at a more rapid rate than in industrialized countries. At the same time, there will remain great disparities in export performance among these countries.

In low income countries, especially in Africa, the lack of human and physical capital will continue to restrain the growth of manufactured product exports. This situation can be expected to further worsen due to the rapid growth of population. Thus for these countries there is little hope for exports to accommodate their population pressures.

The situation in other developing countries is somewhat different. In these countries, there is sufficient human and physical capital to permit a rapid expansion of manufactures exports. For these countries, the successful absorption of new entrants into the labor force seems to be possible provided an appropriate economic environment exists. According to a recent study on trade and employment in developing countries, this would imply a combination of an outward-oriented trade strategy and a realignment in factor market incentives. Within this framework, an export strategy based on labor intensive products would relieve these countries from (part of) their demographic pressures. 10/
The possibility for exports from developing countries to absorb some of the new labor force entrants crucially depends upon their access to foreign markets, especially in the industrialized countries, which are their main customers. Despite the rise in protectionist pressures in industrialized countries in recent years, it seems that market penetration by developing countries for manufactured products has continued to increase, albeit at a reduced pace. Nevertheless, there is some fear that, as large developing countries begin to follow the strategy of labor intensive exports adopted earlier by smaller countries, they "would encounter sharp protective resistance to the resulting flood of export" [Cline 1982]. There are several reasons why this gloomy outcome might not materialize. First, large countries tend to have large domestic markets and, hence, relatively low export to production ratios. For developing countries, this relationship is less straightforward as large countries (in terms of population, for instance) might have relatively small domestic markets due to low per capita incomes. In this case, exports might be critical for the successful establishment of certain manufactured products, unless the domestic market is expanded—for instance by improving conditions in the agricultural sector. Second, industrialized countries are not the only foreign market for manufactures exports from developing countries. On the contrary, developing countries themselves account for a sizeable share (around 30 percent) of those exports, and it might be expected to increase in the future along with income gains. Third, if one accepts the "stages" approach to comparative advantage outlined earlier, there will be room for new entrants (even large ones) in the market for labor intensive exports. As the present dominant countries (that is, the Southeast Asian NICs) accumulate further human and physical capital, they can be expected to lose their comparative advantage in labor intensive products in
favor of countries with relatively less capital endowments. Finally, it is important to note that the possibility for countries to successfully enter the market for labor intensive products and supplant the present dominant nations depends not only upon their own policies but also upon the policies of industrialized countries. In the case of textiles, for instance, it has been noted that the Multifibre Arrangement (MFA) protects not only producers in industrialized countries but also the present leading developing country suppliers for whom rapid wage increases threaten the competitiveness of textiles exports. \[11/\]

III. Factor Movements

In the previous chapter we have seen how changes in factor endowments (particularly population growth) tend to affect the pattern of trade. Throughout our analysis, we have left aside the possibility of international factor movements. Here we will adopt the opposite approach and focus entirely on capital and labor movements across countries. We will take for granted differences in factor prices across countries and examine their effects on factor movements as well as the choice between alternative forms of international factor mobility. Our piecemeal procedure obviously serves a purely academic purpose since trade and factor movements influence each other in a very direct fashion. A more realistic approach integrating trade and factor mobility will, nevertheless, have to await the next chapter.

As we have seen earlier, the Heckscher-Ohlin theory predicts a negative correlation between the price and supply of factors of production. *Ceteris paribus*, the reward of a factor that is relatively abundant in a particular country will tend to be relatively low in that country. Countries
with different factor endowments will therefore tend to have different factor rewards. Abstracting from trade, international factor price differentials can be expected to induce international factor movements. Since, in fact, factors of production are only partially mobile, there will be a tendency for the more mobile one to leave low reward places and go to high reward places where it is in short supply. And indeed, labor has usually moved from poor to rich capital or natural resource countries while capital has moved toward either labor or natural resource rich countries.

Our enquiry about the effects of population growth on factor movements between developing and industrialized countries begins with a review of the immigration of labor to the United States. We will then discuss the policy of labor import of European countries which will be contrasted with Japan's policy of capital export.

The Case of the United States

In this section we review the immigration experience of the United States. We begin with a brief historical description and then discuss the economic effects of this migration.

A. From Colonial Times to the 1920s

During the three centuries that followed Columbus' discovery of America, immigration to the continent remained a rare occurrence. By 1800 there were only four million inhabitants of European origin in the United States. During the nineteenth and early twentieth centuries more than 60 million Europeans left their countries for overseas destinations, mostly in the direction of the United States. The major factors behind this unprecedented migration are (i) Europe's population explosion caused mainly by declining death rates; (ii) the Industrial Revolution, which initially brought rising inequality and pauperisation of certain groups; (iii) untapped
natural resources overseas; and (iv) the invention of the steamship, which made its first Atlantic journey in 1819. With reduced transportation costs, migration proceeded on the basis of large disparities in wages and rents between the two continents created in part by the large supply of labor (the mobile factor) in Europe and the enormous availability of good arable land (the immobile factor) in the United States.

Around 1880 a break occurred in the pattern of immigration. As the economic conditions and population pressure improved in Northern and Western Europe, the new migrants came more and more from Southern and Eastern European countries. At the same time, the industrialization process of the American economy changed the destination of migrants from rural to urban settlements.

B. After the 1920s' Quotas

Until after World War I, admission of Europeans into the United States was essentially unrestricted. Adverse economic conditions and fear of a change in the ethnic composition of the population led, in the early 1920s, to the imposition of quotas limiting the number and national origin of migrants.

One of the consequences of the curtailment of European migration was the first large-scale wave of Mexican labor into the United States. Since then, the rapid Mexican population growth, the wide wage disparity, the active recruitment by private United States employers, and the easiness of crossing the border have all combined to produce a massive flow of legal and mostly illegal migrants from Mexico. Recently, a sizeable number of undocumented workers from other Latin American and Caribbean countries have also migrated to the United States.
C. Economic effects

There has always been a battle in the United States between opponents and proponents of immigration barriers. Although philosophical considerations have no doubt played a role, the split has been mainly between gainers and losers—or, at least, between those perceiving themselves as such—from new labor inflows. Economists have participated in the debate by attempting to evaluate the economic effects of migration. They distinguish between static and dynamic effects.

The major static effect concerns the distribution of income among the various factors of production. With a static framework, this issue hinges essentially on whether migrants are substitutes for or complements to other factors. The theoretical argument has generally been that labor loses and capital gains from increased labor migration. In a recent study, J. B. Grossman (1982) has examined the degree of substitutability between migrant workers and other factors in the context of the United States economy. Using cross-section data for 1970, she estimates a translog production function from which a measure of factor substitutability can be derived. Her results indicate that foreign-born workers are complementary with capital but substitutes for native workers with either native or foreign-born parents. Therefore an inflow of immigrants increases the return to capital and decreases wages (alternatively it might increase unemployment in case of downwardly inflexible wages) as theoretically predicted. If all wages are flexible, Grossman estimates that a 10 percent increase in the number of immigrants employed in the United States would reduce wages of natives by 1 percent and of other immigrants by more than 2 percent; the return to capital would increase by more than 4 percent.
The distributional impact of immigration has also been examined by Williamson (1980) in a study of the period between the 1830s and the 1960s. The core of the study is a general equilibrium model with three sectors (agriculture, industry and services) and four factors of production (land, capital, unskilled labor, and skilled labor). Simulations of the model produce the expected negative relationship between migration and wages of competing (unskilled) labor. Williamson's results indicate, however, that migration has had a much smaller impact on American income distribution than farmland growth (during the 19th century), capital accumulation, and technological progress. A counter-factual simulation pegging these three factors at their historical levels and allowing (legal) migration between 1929 and 1966 to continue at its pre quotas rate indicates that real wage growth among the unskilled would have been 20 percent below its historical level.

The static analysis might have either overstated or underestimated the impact of immigration on income distribution (or on any other magnitude). There might in fact be dynamic effects induced by the impact of migration on factors such as capital accumulation and technological progress, which were previously exogenous. Kindleberger (1967) has argued that mass immigration in the late nineteenth and early twentieth century has meant that "wage rates for common labor were held down, profits were maintained, and growth through high rates of investment proceeded." This view is also shared by Williamson (1980), who incorporates it into his model. As far as technological progress is concerned, Habakkuk's (1962) thesis is that the relative scarcity of labor in the United States in the nineteenth century has stimulated labor-saving innovation. This would imply that mass immigration has reduced the labor saving bias of American technological progress. More recently, Simon (1980) has argued that the increase in the rate of total
factor productivity growth is the most important long-run effect of immigration. His argument rests essentially upon greater economies of scale. As usual, dynamic effects are difficult to document and highly speculative. In fact, we will see in the next section that some of the above arguments are far from being universally shared. In any event, as we have already noted, dynamic effects mostly lie beyond the scope of this paper.

The Case of Europe

A. The "Guestworker" Program

Historically, Western Europe has been, on balance, a land of emigration. This trend was reversed in the early 1960s when its rapidly growing economy started to welcome foreign workers. The main feature of this new phenomenon has been the policy pursued by the countries of immigration. In most of them, guestworker programs were set up that systematically recruited foreign workers on a temporary basis in order to fill particular jobs for which there was a "shortage" of domestic workers. After 1960, more than 20 million foreigners, almost all from developing Mediterranean countries, had worked or lived in Western Europe for at least some time. By 1973, about 7 million alien workers (accompanied by about as many dependents) accounted for more than 10 percent of Europe's labor force. Since then the recession has halted guestworker programs, but, despite voluntary and involuntary departures, the number of migrant workers has not decreased by more than 20 percent compared to its 1973 peak level (the number of dependents has probably, in fact, increased).

Several factors characterize contemporary European migration. First, except for intra-EEC labor movements (mostly from Italy), international migration is regulated by a system of labor permits granted by a governmental agency. Second, employers in the countries of immigration have actively
recruited foreign workers either directly or through official channels. (Until the mid 1970s Germany maintained official recruiting offices in major source countries.) In fact, labor permits have usually been granted to employers who then have recruited immigrants. Third, differentials in expected earnings between Western Europe and the Mediterranean countries and population pressures in these countries have been such that labor permits have constituted an actual binding constraint on immigration. Thus it can be said that Western European countries have faced an almost unlimited supply of workers from the Mediterranean Basin at the going wages.

B. Economic Effects.

Throughout the 1960s and early 1970s, the major rationale behind the immigration policy was the notion of "labor shortage." In economic terms, a shortage is the sign of a disequilibrium which requires an adjustment. This adjustment can be in terms of either a quantity or a price change. A policy of labor immigration is a quantity adjustment aimed at relieving a labor shortage which prevails at a given wage. On the other hand, a price adjustment would imply increasing the wage rate. 18/ Obviously, in practice the actual adjustment is a combination of both price and quantity adjustments. These two forms of adjustment have different static (income distribution) and dynamic (accumulation and technological progress) effects.

The distributional effect of immigration observed earlier for the United States seems to hold also in the European case. Several authors have found that an increase in the employment of foreign workers has a dampening effect on money wages. See, for instance, Bain and Pauga (1972) and Garbers and Blankart (1973).

The discussion of the dynamic effects of immigration is much more controverted. Most economists have accepted Kindleberger's (1967) argument,
according to which immigration leads to lower wages, higher profits, and hence higher investment. On the other hand, Mishan and Needleman (1966) have argued that the arrival of new immigrants induces social capital expenditures which reduce the capital available for industrial investment and may even cause a decline in the absolute industrial capital stock. The latter view has been rejected by Castles and Kosack (1973) and others. As far as technological progress is concerned, no one seems to have argued, as did Simon (1980), that European immigration has had a beneficial effect via greater economies of scale. On the other hand, several economists from the Kiel Institute for World Economy—for example, Hiemenz and Schatz (1979)—have argued that, by reducing the scarcity of labor, immigration has reduced the rate of labor saving innovation of the German economy. A wage adjustment would probably have had the opposite result.

The Case of Japan

A. The "Invest Abroad" Program

Shortly after European countries, Japan "began to experience labor shortages in the mid-1960s" (Ozawa 1979a, p. 80). Japan and Europe, both threatened with a slowdown of economic growth by the exhaustion of their labor surplus, reacted in almost opposite fashions. While authorities in Germany and elsewhere were organizing guestworker programs and setting up labor recruiting offices in Mediterranean countries, the Japanese government was mounting a large scale "invest abroad" program and establishing offices in developing countries in order to organize the search of investment opportunities.

Obviously, it is much more likely that Europe's import of labor was motivated by labor shortages than is the case for Japan's export of capital. Yet, there seems to be a consensus that the change in this country's relative
resource endowments was indeed a major incentive for investing abroad en masse, at least in the manufacturing sector. As Ozawa (1979b) writes: "As a way to escape from the strained labor market at home Japanese manufacturers began to look for labor in such neighboring countries as Hong Kong, Singapore, South Korea, and Taiwan." (p.80)

Historically, outward direct investment by Japanese firms have been strictly controlled. Toward the end of the 1960s various measures were taken to progressively encourage overseas investments. In principle, these were completely liberalized in 1972. As a result of such measures, Japan's direct foreign investments experienced an exceptionally rapid growth. From only $1.5 billion for the period 1951-67, the cumulative value of overseas investments approved by the government went to $15.9 billion by 1976 and reached $36.5 billion by 1980. Manufacturing investments, which represent about 40 percent of the total, are concentrated in developing countries, particularly in Asia.

B. Economic effects

This author is not aware of any study of the effect of outward direct investments on Japan's income distribution. It seems likely that, ceteris paribus, they have had the same qualitative effect on wages and capital rentals as an inflow of additional labor. The dynamic effects are much more difficult to predict at this stage. In our next chapter we will come back to this issue when the effects of factor mobility on the international structure of production will be taken into account.

Conclusion

Whether spontaneous or organized, factor movements have usually occurred in response to factor price differentials, themselves related, at least in part, to differences in factor endowments. In the examples we have
reviewed earlier, labor has moved from relatively labor abundant countries (Europe in the nineteenth century, Mexico and Mediterranean countries in the recent past) to countries relatively well endowed with either natural resources (America in the nineteenth century) or capital (contemporary America and Western Europe). Capital has usually gone in the opposite direction, as in the case of Japan.

During the twentieth century, potential factor movements have usually been severely controlled by national policies. Especially in the case of labor migration, it is the rich industrialized nations that have erected barriers against the citizens from poor developing countries. Only when the former found it advantageous (like Europe in the 1960s and early 1970s or the United States when it recruited Mexican labor from 1943 to 1965 under the bracero program) was it claimed that "migration, like mercy, blesses him that gives and him that takes" (Kindleberger 1967, p. 202).

IV. Population Growth, Trade, and Factor Mobility

Ceteris paribus, countries in which the rate of population growth is high compared with the accumulation rates of other factors will tend to have low wages relative to the return of the other factors. As we have seen in the previous two chapters, such countries will accordingly tend to (i) export products that use labor relatively intensively and import products that use labor relatively unintensively; and/or (ii) export labor and/or import other factors. Our previous discussion has indicated that each of these alternatives has actually occurred, but so far we have analyzed them as if they were independent of one another. In this chapter we will attempt to study their interrelationship.
Despite the existence of large international flows of labor and capital during their era, most nineteenth century exponents of international trade theory postulated international immobility (and complete internal mobility) for all factors of production. The celebrated 1919 paper by Eli Heckscher represents probably the first major departure from the previous orthodoxy and effort at integrating trade and international factor mobility. One of Heckscher's contributions was to show that, under certain conditions, commodity trade alone leads to full factor price equalization, which implies the elimination of the incentive or need for factor mobility.

The Factor Price Equalization Theorem formally established by Lerner (1953) and Samuelson (1948) for the two-good, two-factor, two-country case shows that commodity price equalization through trade leads to full equalization of the prices of the (assumed) completely immobile factors if (a) countries have identical technologies, (b) countries are incompletely specialized, and (c) factor intensity reversals are excluded (that is, commodities can be unambiguously classified in terms of factor intensity). Attempts at generalizing the Theorem to many goods and many factors have produced mixed results. In particular, Samuelson (1953) has shown that full factor price equalization cannot occur if the number of factor exceeds the number of goods, but partial equalization is not excluded.

In reality, factor prices are obviously far from being equalized internationally. One possible argument is simply that free trade does not in fact prevail and therefore that commodity prices are not equalized. On the other hand, many authors have rejected the usefulness of the Factor Price Equalization Theorem on the ground that its assumptions are unrealistic. These assumptions require not only internationally identical technologies but also that actual techniques of production are everywhere the same. However,
with substantial differences in factor endowments, countries will specialize their production and the techniques of production will necessarily differ across countries. Heckscher himself had noted this possibility and indicated that, in fact, it provided the explanation for the nineteenth century emigration from Europe to America:

The situation of the United States in the period before the large European immigration may be considered once again ... The country had enormous riches of good arable land but a very small population. When trade with Europe became possible through improved transportation, it was obvious that exports of products using land would be exchanged for imports of products using labor. The scarcity of labor in the United States was so great that there were not sufficient workers to cultivate all the land which could have been used advantageously for the export of wheat to Europe; even to the extent that the land was cultivated, this was done largely by the substitution of land for labor, that is, to use a common phrase by extensive cultivation. As a result, rents were low and wages were high in the United States, compared with the rest of the world, and trade alone could not level out these discrepancies. Apart from costs of transportation, trade must equalize the prices of a given product throughout the world. But when a given product is produced by different quantities of each factor of production in the United States and Europe, then it is not only possible, but necessary, that the relative and absolute prices of the factors of production must differ in the two exchanging countries ... On this basis the emigration of Europeans to the United States is easily explained (1919, pp. 290-1).

Thus, the wide disparity in factor endowment ratios made for differences in factor prices and hence provided an incentive and a need for international factor mobility.

Even if some of the assumptions of the theorem are violated, trade alone might still result, as in Heckscher's example, in the partial equalization of factor prices. This viewpoint was in fact shared by Ohlin, who in his 1933 treatise has indicated that free trade only implies a tendency toward equalization. Once again it is Samuelson who formally established this proposition. In a paper entitled "Ohlin was right", Samuelson (1971) has
shown that, for the so-called Richardo-Viner model, where there are n goods, n sector-specific factors, and one factor that is freely mobile across all sectors, complete commodity price equalization only tends to equalize factor prices internationally. Note that this model can be viewed as a short-run version of the usual two factor Heckscher-Ohlin model when one factor is temporarily immobile across sectors. We will return to the Ricardo-Viner model later on.

In conclusion, as long as one accepts that differences in factor endowments form the basis for trade, theory can reasonably be made to predict that trade reduces factor price discrepancies (although it could instead predict the opposite result as, for instance, if there were factor intensity reversals). What this implies is that trade can be considered as a (partial) substitute for factor movements in the sense that an increase in the volume of trade reduces international differences in factor prices and hence the incentive for factor movements.

As long as important reward differentials exist, generated by either the presence of trade restrictions or other factors, there will be an incentive and a need for factor movements. The incentive concerns individual factor owners who choose the location of employment of their factors that gives the highest reward. These private considerations coincide with global welfare since factor movements are also a need if world income is to be maximized.

Since factor prices differ sharply, especially between industrialized and developing countries, increased factor movements can be expected to improve world efficiency. Yet, as we have seen in Chapter 3, such movements are usually restricted by national governments. The reason is obviously that governments serve either their country's national interest or particular
national constituencies rather than the global interest. It is in this perspective that actual choices between trade and factor mobility or between alternative forms of such mobility have to be examined.

The Choice Between Labor and Capital Mobility: Europe versus Japan

We have seen earlier that, faced with "labor shortages", Europe decided to import labor while Japan chose to export capital. In this section we will further examine the experience of these two economies and attempt to relate it to their pattern of trade with developing countries.

A. Europe

The description of the guestworker program given earlier implies that the number and sectoral allocation of foreign workers in Europe are essentially the result of the action of employers in these countries. In his recent study on migrant labor and industrial societies, Piore (1979) notes that declining industries (for example, textiles, garments, and shoes) appear to be consistent employers of immigrants. Furthermore, he observes that "the industries where migrants are concentrated ... are under very intensive competitive pressure from abroad ... and, if migration was curtailed they would no longer survive domestically and the goods they produce would be imported." These facts suggest that immigration policies have been used by European employers in structurally weak sectors as a means of remaining competitive. Indeed, one way for industries to resist the competition from labor-abundant developing countries is to try reducing their labor costs. Obtaining labor permits for immigrant workers offers precisely this possibility. (Obviously, another way would be to seek the protection of trade barriers.)

Recently, Bhagwati (1982) and Sapir (1983) have used theoretical models to investigate the relationship, in a capital-abundant economy such as
Germany, between trade competition and immigration from labor-abundant countries. In his paper, Sapir shows how a shift in comparative advantage in favor of developing countries can lead to labor immigration within the context of a Ricardo-Viner model with two sectors and three factors (two sector-specific types of capital and labor). The key here is that immigration can be viewed as a way to redistribute income in favor of the owners of capital in the labor intensive sector who are injured by the shift in comparative advantage due to the immobility (across sectors) of their capital. In this model, domestic (German) workers lose from an inflow of foreign workers, but it is not difficult to see why, in fact, German and other European workers accepted the guestworker policy until 1973. First, the growth rate of the economy and the demand for labor were sufficiently buoyant to ensure that the added supply of labor did not prevent wage rates from continuing to rise—albeit at probably a slower pace than otherwise. Second, only German workers competing with foreign workers are likely to have been hurt, others might in fact have gained. This is especially the case since guestworker programs in general prevented or, at least, restricted immigrant labor from moving either across sectors or up the skill ladder. Such a segmentation of the labor market was probably an important factor. After 1973, the demand conditions drastically changed in the labor market and the opposition of labor to further recruitment of foreign workers dominated (politically) the ever-present desire of employers for an abundant supply condition.

In the Bhagwati-Sapir analysis, the immigration policy is the result of a shift in comparative advantage in favor of developing countries for labor intensive industries. This policy is therefore aimed at resisting a structural adjustment, implying a redistribution of certain (labor-intensive) activities in favor of developing countries. In their models, if immigration
were not allowed, the shift in comparative advantage would have implied a process of structural adjustment involving a continuous decrease in the production of labor intensive goods and an increase in the production of capital intensive goods. Therefore, given the relative factor endowments of industrialized and developing countries, the European type of labor migration has substituted for (i.e. decreased) the Heckscher-Ohlin trade between these two regions.

The fact that the emigration of labor from developing Mediterranean to industrialized European countries has been a substitute for trade and therefore a factor reducing the pressure for structural adjustment has been examined by Bourguignon and Gallais-Hamonno (1977) and Hiemenz and Schatz (1977). Both these works have also insisted that protection against countries with an abundant supply of labor has reinforced the effect that immigration has had on structural adjustment in Europe.

B. Japan

Quite to the contrary, Japan's policies seem to have been aimed at accelerating the process of structural adjustment. This is the case, in particular, of her invest abroad program. Japan's manufacturing investments differ from American and European investments not only by the fact that they are much more concentrated in developing countries, but also by their sectoral composition. In Asia, where most Japanese investments in developing countries are located, more than 50 percent are in textiles, electrical appliances and other labor intensive activities.

As Nayyar (1978) has indicated in his study of multinational corporations, Japanese overseas investments have been largely export oriented, one of their primary functions being often exports back to Japan. Kiyoshi Kojima has written extensively on the nature of Japanese direct foreign
investment, which he contrasts to American or European investment. His analysis of "Japanese type, trade oriented" investment is based upon factor endowments as determinants of comparative advantage. Kojima argues that Japan's manufacturing investments in Asia have been undertaken in industries becoming comparatively disadvantageous in Japan (due to a rapid change in her factor endowments) and which had the potential of becoming comparatively advantageous in the host country. In his recent collection of essays, Kojima (1978) describes how this process has operated in the case of textiles:

As the economic growth in Japan accelerated, wages increased. This made it more costly to produce labor intensive commodities. Therefore, since the wage rate in Korea, for instance, is one-third or even a quarter of that in Japan and labor efficiency is high, Japanese capital, superior technology and management skill entered Korea to create a textile industry ... As Korea was originally abundant in cheap labor, it potentially possessed comparative advantage in the production of such labor intensive manufactures. (p. 16)

Turning around the Ricardo-Viner model of Sapir (1983), it can easily be seen how the inflow of foreign capital can increase and, hence, complement the Heckscher-Ohlin trade between industrialized and developing countries. Indeed, assume now that, instead of importing labor, the labor-intensive sector in the industrialized country which suffers a shift in comparative advantage decides to reduce its activity in that country by exporting some of its capital to a labor-abundant economy. With sector-specific capital, the inflow of foreign capital in the labor-intensive sector of the host country results in an increase of production for that sector and a decrease for the capital-intensive sector. Hence, this type of capital migration is trade oriented since the labor abundant country will not export more of the labor-intensive commodity and vice versa for the capital-abundant country.

In this model, workers in the home country (Japan) lose from an outflow of capital just like German workers were losing previously from an
inflow of foreign workers, but again it is not too difficult to see why they accepted the invest abroad policy. First, the rate of capital accumulation and technological progress in Japan are sufficiently rapid to ensure that the outflow of capital does not produce a substantial slow down in the growth of wages. Second, the structural adjustment of the economy is viewed by all parties as a necessary process and is prepared accordingly. In a sense it could be said that the rate of time preference appears to be lower in Japan than in Europe, where the guestworker program seems to have been set up bearing in mind only a short-term horizon. As Franko and Stephenson (1982) note:

While the Europeans have attempted with greater or lesser success to adapt to the process of change, Japanese companies have generally promoted it ... Perhaps most distinctively of all, they have [done this by carrying] out a programme of active, export oriented foreign investment in those sectors (synthetic fibres and TVs) where the competitive edge has passed to lower-cost, NIC suppliers.

V. Conclusion: The Choices

If one theme runs throughout this essay it is that population growth and changes in other factor endowments generate pressures to reorganize the international division of labor and/or relocate factors of production. Although such a process is desirable from the viewpoint of global efficiency, it is likely that nation-states will continue to resist it for the benefit of either a country as a whole (in the case of large countries enjoying monopoly power) or powerful groups of citizens.

Freer trade and the implied reorganization of the international division of labor along the lines described in Chapter 2 would probably result in a tendency for international factor prices to move closer to one another.
Leaving aside the (politically remote) possibility of international compensation based on the gain in efficiency for the world economy, this tendency would mean, *ceteris paribus*, lower wages and higher rentals in industrialized countries as well as higher wages and lower rentals in developing countries. (Obviously, these static effects might themselves induce dynamic effects of a quite different nature.) However, the experience of the past three decades with a rapid expansion of world trade suggests that, even with freer trade, several factors (including wide international differences in relative factor endowments) will continue to cause factor prices to remain relatively far apart between industrialized and developing countries. Whether or not such differences will persist in being sufficiently large to induce pressures on factor movements remains to be seen. Indeed, despite considerable international flows in the recent past, factors of production tend to be subjected to great inertia. This is especially the case for labor but applies to capital as well. For labor, not only wage differentials but also absolute wage levels seem to influence the desire to migrate. This is exemplified by the case of Italy where, despite the persistence of wide wage differentials with other EEC countries to which Italian labor could freely migrate, the income level seems now sufficient to reduce such migration considerably. On the other hand, for capital, the risk factor (new environment, possibility of expropriation, etc.), especially in developing countries, acts as a strong deterrent against more important foreign direct investment. In Japan, more than in either America or Europe, the government has reacted against this factor by encouraging joint ventures with local firms and participating in the financing of overseas investment.

In the author's view, to the extent that it can accomplish what factor movements do, trade ought, probably, to be preferred to either labor
migration or capital movement. One reason for this is that, as Diaz-Alejandro and Helleiner (1982) put it, while "trade in goods can be quite unintrusive, ... many cultures, however, find the intimacy with foreigners involved in factor movements ... too high a price to pay for the economic gains that those transactions may generate." The recent problems related to the large-scale presence of migrant workers in Europe illustrate this point sufficiently clearly. Another reason is that individual trade flows can more or less easily be turned on and off, while inflows of foreign labor or capital can hardly be reversed. With trade a country acquires the service of factors of production, while with labor or capital movements it acquires also those factors themselves.

If disparities in factor prices render international mobility inevitable, what form should it take? To begin with, if natural resources are the cause of such disparity (as in oil-rich countries or in nineteenth century America), it is quite obvious that it is (at least partially) mobile factors such as labor and capital that have to move. Besides the previous case, there might be certain circumstances under which labor and capital flows take the same direction. This could be true if investment conditions in a low-income location were particularly unfavorable due, for instance, to the lack of infrastructure. Ohlin (1977) cites the case of Italy after World War I where considerable amounts of capital and labor flowed from the south to the north. In general, however, labor migration and capital movements can be regarded as substitutes for one another. The choice between these two forms of factor mobility involves several considerations. First, there is an asymmetry between capital and labor movements in the sense that, usually, only in the latter case does the factor of production move with its service. Therefore in this case, as Bhagwati (1979) has argued, one needs to worry
about which country's welfare migrants need to be included in. Welfare comparisons of the choice between capital and labor mobility could produce different results depending on which country's welfare criterion migrants belong to (see, for instance, Bhagwati and Srinivasan (1983) and Wong (1983)). Second, there is another asymmetry arising from the undesirable social effects of labor migration, especially in the case of guestworker programs. On this account, capital movements are more desirable than labor migration. Finally, as we have seen in the case of Europe and Japan, the "right type" of capital exports (a la Japan) is likely to have much more favorable repercussions on the dynamics of comparative advantage than the "wrong type" of labor imports (a la Europe).
Footnotes

1. For further reasons to look at population growth within the context of international economic relation, see Demeny (1983).

2. See GATT (1982), Table Al.


4. The data are from Table 13, World Bank (1983). These are expressed in current dollars.

5. The data are from the World Bank (1980).

6. During the 1970s, the human capital profile of Tunisia has drastically changed. Its adult literacy rate in 1980 was 62, compared to 24 in 1970.


8. See Galenson (1976) and Ozawa (1979a).


12. If all factors of production were fully mobile their distribution would be arbitrary.

13. There were also several million black African slaves who had been taken unwillingly to the Americas.

14. See Bohning (1978) and Bouvier et al. (1977).

15. Brinley Thomas (1954) has shown how, in fact, America's abundant natural resources have attracted both labor and capital from Europe.

16. Barriers against non-European migrants had already been erected earlier.

17. For an excellent account of Mexican migration to the United States, see Fogel (1980).

18. For further discussion on immigration and labor shortages, see Johnson and Orr (1981).

19. This and the previous paragraph draw upon Paine's (1974) Chapter 1.
20. A similar view is held by Krause and Sekiguchi (1976).

21. In many ways, the recent migration of labor to oil rich countries resembles the nineteenth century migrations to America and other natural resource-abundant nations.
References


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