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## PREFACE

The purpose of the *Population Bulletin of the United Nations*, as stipulated by the Population Commission, is to publish population studies carried out by the United Nations, its specialized agencies and other organizations with a view to promoting scientific understanding of population questions. The studies are expected to provide a global perspective of demographic issues and to weigh the direct and indirect implications of population policy. The *Bulletin* is intended to be useful to Governments, international organizations, research and training institutions and other bodies that deal with questions relating to population and development.

The *Bulletin* is prepared by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat and published semi-annually in three languages—English, French and Spanish. Copies are distributed widely to users in all States Members of the United Nations.

Although the primary source of the material appearing in the *Bulletin* is the research carried out by the United Nations Secretariat, officials of governmental and non-governmental organizations and individual scholars are occasionally invited to contribute articles.

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### Explanatory notes

Symbols of United Nations documents are composed of capital letters combined with figures. Mention of such a symbol indicates a reference to a United Nations document.

Reference to "dollars" (\$) indicates United States dollars, unless otherwise stated.

The term "billion" signifies a thousand million.

Annual rates of growth or change refer to annual compound rates, unless otherwise stated.

A hyphen between years (e.g., 1984-1985) indicates the full period involved, including the beginning and end years; a slash (e.g., 1984/85) indicates a financial year, school year or crop year.

A point (.) is used to indicate decimals.

The following symbols have been used in the tables:

Two dots (..) indicate that data are not available or are not separately reported.

A dash (—) indicates that the amount is nil or negligible.

A hyphen (-) indicates that the item is not applicable.

A minus sign (-) before a number indicates a deficit or decrease, except as indicated.

Details and percentages in tables do not necessarily add to totals because of rounding.

# INTERNATIONAL MIGRATION AND DEVELOPMENT\*

*Georges Photios Tapinos\*\**

## SUMMARY

The past decades have seen sharp fluctuations in migration flows and policies, accompanied by changes in the way the issues were approached. Following a review of those changes, this article assesses the effects of migration on development, emphasizing the shift from a national to an international perspective. The issue of migration, trade and international cooperation is considered next. The last section of the article is devoted to policy with reference to development cooperation as an alternative to migration.

The move of an individual from one country to another can be considered from different perspectives. The possibility of leaving a country can be seen as a basic human right—*jus peregrinandi*—independent of any assessment of the economic effects of the move on the individual or the country of origin or destination and irrespective of the legitimate right of a given country to control settlement on its territory. However, migration is best considered from a development perspective: at the microlevel, migration is generally prompted by the desire to improve one's welfare, and at the macrolevel, migration has an impact on the welfare of the populations of both the sending society and the receiving society. The right to emigrate should be accounted for in any human development index, but we will here concentrate on the effect of migration on individual and collective well-being.

This article will consider four points. To put the debate into perspective, recent trends and issues will be examined first. The past decades have seen sharp fluctuations in migration flows and policies, accompanied by changes in the way the issues were approached. In a second part the effects of migration on development will be assessed, emphasizing the shift from a national to an international perspective. The issue of migration, trade and international cooperation will be considered next. The final section will be devoted to policy and normative issues.

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*From the end of labour migration to  
the fear of mass migration*

After a decade during which migratory flows had intensified and diversified, in 1975-1985 the number of migrants decreased significantly, suggesting that the era of heavy migration had come to an end. The closing of borders in Western Europe (the then Federal Republic of Germany in November 1973, France in July 1974, Belgium in August of the same year), the decrease in the demand for foreign labour in the Gulf States (1983-1984) and the passing of the Immigration Reform and Control Act (IRCA) in the United States (1986) appeared to signal a turning-point. However, it was not long before a new era of increased international migration began (Zlotnik, 1991; Dumas, 1991; SOPEMI OCDE, 1986-1989). In Europe, immigration into traditional receiving countries remains important, despite the legal closing of the borders; traditional countries of emigration in southern Europe (Greece, Italy, Portugal, Spain), after having experienced net return migration in the late 1970s, are now attracting emigrants from both outside and within Europe; significant East/West flows preceded the opening of the borders of the former Eastern bloc countries and German reunification (3 October 1990). In the main countries of permanent settlement—the United States, Canada and Australia—flows have also been increasing. In the United States, despite growing negative public opinion on migration issues, the 1990 Immigration Act, which replaces the 1965 Act, effectively increases annual admission levels for a transitional period, though it sets immigration “caps” for later years. In Canada, the 1993 Immigration Act aims at enhancing the ability of the Government to manage the immigration and asylum systems by, among other things, giving priority to the admission of skilled immigrants and investors.

Even more significant is the shift in the channels of entry. Particularly noteworthy is the sharp increase in asylum seekers, especially in Europe, where applications have increased dramatically, and in illegal migrants, who, although difficult to measure, are abundantly documented in many countries on all continents. Indeed, in situations where legal inflows are restricted, except for purposes of family reunion, the main means of entry and settlement has become the refugee procedure. This holds also for irregular migration which is mostly due to discrepancies between market forces (supply and demand) and legal restrictions to entry. Thus, the restatement by major immigration countries of their control policy—either to accept only legal entries (as in the United States, following the 1986 IRCA) or to stop labour migration altogether (as in Europe, following the 1974 ban)—has greatly enhanced illegal flows, particularly under conditions of increased political instability and income differentials. The amnesty programmes—the 1986 IRCA, the regularization in France (1982), Spain (1985) or Italy (1986 and 1990)—underline the dual facet of illegal migration. By definition, these programmes recognize the fact that entries have gone out of control, but at the same time, they try to send the message that from now on control will be effectively implemented and further spontaneous entries will not be accepted.

One has to add new patterns linking countries of departure and of arrival (otherwise totally unrelated), such as flows from Sri Lanka to Italy, and the appearance of newcomers. Japan and Taiwan (province of China), for example, had for years been considered models of growth without migration.

On the whole, structural imbalances, which are at the root of international migration flows and which explained most of the increasing migration flows in the 1960s and 1970s, have not improved. On the contrary, the factors which induced migration in the recent past are still at play and have even been reinforced—factors such as the increasing gap in developing countries between the rapidly growing supply of labour, as a result of high past fertility, and the slow increase in the demand for labour and the growing disparity in GNP per capita in African and Eastern European countries *vis-à-vis* Western Europe.

An analysis of the current situation provides support for the concept of migration systems as tools for understanding migration flows, though the precise form of those systems may be elusive. However, the idea of a world system in which there are interrelated networks requiring a global perspective is probably an overstatement. From such a perspective, it would be pertinent to raise the question of whether a society is sufficiently attractive to appeal to the best among potential migrants and to assess the comparative attractiveness of other destinations. But such an approach is still a long way from claiming the existence of a world system.

In any event, emergence of economic zones, such as the European Economic Community (EEC, 1957), the Andean Pact (1969), the West African Economic Union (CDEAO, 1975), Mercosur (1990-1991) or the North American Free Trade Agreement (NAFTA, 1993) might have more significant implications for labour flows than worldwide trade liberalization attempts, such as the General Agreement on Tariffs and Trade (GATT). There is, however, one way in which GATT could have an impact on migration, and that is through liberalization of services (Hindley, 1992).

#### *From national to international concern*

International migration issues are increasingly being reformulated. The problem is now approached from an international and interdependent perspective, as opposed to the more traditional attempt to assess the causes and consequences for sending and receiving areas. Furthermore, the traditional distinction between economic and political reasons for migration appears irrelevant and, in policy terms, unmanageable. Therefore, a political economy approach which acknowledges that both sets of factors are closely intermingled is called for.

From the 1950s until the closing of the frontiers in 1974, Western Europe was experiencing one of the greatest movements of workers in its history. At that time, it was supposed or hoped that the international mobility of workers could be a factor in the transmission of development. From this standpoint, migration becomes part of the international allocation of resources which, by reducing differences in incomes, removes in the longer term the very causes that led to it in the first place. In the mid-1970s, for reasons connected with the



modification of the domestic and international economic environment, borders were closed to immigration. A new international division of labour was envisaged, consisting of a reduction in the number of foreign workers by means of a policy of incentives to return home, substitution of national for foreign labour and relocation of certain activities in third world countries. This represented a return to a specialization more in line with natural factor endowments, development of trade and increased investment in the developing countries (Tapinos and others, 1978; Hiemenz and Schatz, 1979). This new international division of labour did not have the desired effects for the old emigration countries. Attempts to relocate certain industries to these countries, using returned migrants and the financial aid of the old immigration countries, failed.

Conditions changed again in the mid-1980s, when a complex and sometimes contradictory set of factors appeared. For most Western European countries, the fundamental factor was the realization that the increase in the number of foreigners was raising fears that the continuation of illegal immigration would cause social and political breakdown. This concern could, in certain respects, have a beneficial effect on development cooperation policies. The affirmation of the need for a new international division of labour in response to the closure of frontiers in 1974 was in fact no more than a declaration of intent, an attempt by the industrialized countries to look humane. A policy of development cooperation and aid with the hope of reducing the incentive to emigrate has a greater chance of being effectively implemented if it appears to suit the interests of the industrialized countries themselves.

After having first claimed that emigration was capable of transmitting development to the sending country—a view which was subsequently replaced with the notion that development of trade and capital flows and the reinstallation of return migrants should make it possible to achieve the same ends—attention turned to development cooperation policies. These policies, which favour the development of the poor countries and keeping their populations at home, would reduce the incentive to emigrate while at the same time maintaining the possibility of opening the frontiers to a limited extent to avoid tensions in the labour market.

This shift in approach to the migration issue comes close to the current debate among economists on the nature and the outcome of economic growth. In line with Kuznets' assessment of the 1960s, but using a different form of analysis, one school of thought argues in favour of economic convergence between regions and nations (Barro and Sala-I.-Martin, 1992). An alternative view is presented by the endogenous-growth literature which asserts a widening in income gaps between initially unequal nations (Romer, 1986).

At this point, the debate is still ongoing, and unambiguous support for either side is difficult. However, examination of recent growth trends in Latin America and Africa, regions which are particularly relevant for our purpose, do not support the convergence view. The expression "a decade lost for development" has come to characterize the economic evolution in both continents, with probably a greater intercountry difference in economic performances in Latin America, where success cases are not absent, than in

Africa, where many countries in West Africa experienced a negative rate of growth.

If convergence were verified, all things being equal, one would expect a declining trend in migration flows in the future. No one conversant with the current and projected determinants of international migration would take this view.

### *From economics to political economy*

The reintroduction of the political dimension is indeed a significant change. Evidence of the deep shift in this respect relates to a wide array of issues. For one, the traditional distinction between economic migrants and refugees appears to be less significant. In a situation where there are legal barriers to entry or even, in some cases, no possibility of entering legally at all, the number of asylum seekers is bound to increase. This is all the more so because it is difficult to disentangle political oppression from economic hardship in the countries of origin. Asking whether Haitian boat people are economic migrants or political refugees is meaningless. The rise in ethnic and religious conflicts usually entails processes that also reinforce income gaps.

On the demand side, the view is also changing. To a large extent, the migration process in Europe in the 1960s and 1970s, on the one hand, and immigration to the United States, on the other, represented two polar faces of migration models. In the United States and, more generally, in traditional immigration-settlement countries, the bulk of the migration flows was not the direct result of labour market conditions, specific in place and time, but rather the result of an explicit immigration policy following some selection guidelines or a preference system. This policy was formulated through the constitutional process—Congress or Parliament—and to that extent reflected the national interest or, rather, a balance between conflicting partisan interests—i.e., economic or ethnic groups. By contrast, in Europe, the so called “guest worker programmes” were based on labour contracting arrangements, supposed to be independent from, and not leading to, settlement. In other words, though control of entry and settlement remained a prerogative of the States, one that even countries pertaining to a common market were not ready to give up, it was demand for labour by firms, driven by economic growth and labour market conditions, that was determining the flows of entries and returns. From a political perspective, the implicit assumption was that immigration had an overall positive effect on the economy, without major distributive effects either favouring or injuring specific groups. The maturing of the migration process and the shift from an anticipated temporary migration to a more permanent settlement brought to light the existence of conflicting interests and singled out winners and losers in relative and, eventually, in absolute terms. At that point the market mechanism was no longer seen as the appropriate channel, and immigration policy had to be legitimized through the parliamentary system. From this it follows that future acceptable levels of entry cannot simply be inferred by projecting labour market conditions. The political dimension has become crucial.

## MIGRATION AND NATIONAL ECONOMIC GROWTH

### *Migration and demographic transition*

In order to analyse the relations between migration, population increase and economic growth, the demographic transition theory is a convenient starting point. As a description of demographic trends, demographic transition refers to the pattern of changes in mortality and fertility levels from an initial situation with high mortality and high fertility to an ultimate state characterized by low mortality and low fertility. As an analytical explanation of this supposedly universal pattern, the demographic transition theory captures the relationship between demographic changes and what could be called the "modernization process", which comprises various indicators such as urbanization, education, division of labour and increase in income. Most modernization indicators have in common the fact that they imply some form of mobility. We are thus faced with the following paradox: the current paradigm of historical patterns of population change—indeed, the core paradigm of demographic theory—is cast in a way which excludes the very factor that is necessarily implied by the explanation of the change—i.e., mobility. The incorporation of migration into demographic theory has been attempted in various ways. Some authors (for example, Zelinsky, 1971) have thought of a mobility transition analogous to the mortality and fertility transition—that is, a historical sequence of change in type and intensity of mobility patterns but without an analytical mechanism linking the two transitions. These attempts have failed to capture the core issue: the relationship between migration and fertility in the decision-making process of the household, as a response to a mortality decline.

The theory of multiphasic demographic response is an exception to this criticism (Davis, 1963). It states that "a persistent high rate of natural increase resulting from past success in controlling mortality" leads individuals to respond in such a way so as to recover the initial equilibrium. The crucial point here is that the adjustment process can follow alternative paths. It can occur through a decrease in fertility, as assumed by the theory of demographic transition, or through a variety of other routes, including abortion, sterilization, contraception, postponement of marriage, increase in celibacy or through migration, whether temporary or permanent. Notwithstanding the importance of the issues involved, Davis's hypothesis of alternative adjustment processes did not attract much attention. This neglect is regrettable, because it has restricted not only the understanding of demographic transition adjustment processes but also the ability to take into account the feedback mechanisms that migration might confer on the sending society. It is to the latter issue that we now turn.

### *Emigration, population increase and economic growth*

Basic demographic and demo-economic models of migration do not support the view that demographic growth could be checked or economic growth be enhanced by emigration. On the demographic side, stable population theory

shows that for emigration to have a significant impact on the population growth rate, one needs a renewed outflow of individuals of child-bearing age (Keyfitz, 1971). On the demo-economic side, assuming that fertility is positively related to income and income negatively related to the size of the population, it follows from this simple Malthusian model that any decrease in population and induced increase in income due to emigration will be compensated for by the induced increase in fertility.

Clearly, these basic models have to be qualified, and more sophisticated relations have to be explored. Before tracing the analytical channels through which emigration might have an impact on the income level and growth process of a sending country or region, it is important to recall some methodological caveats. Three sets of difficulties are present.

First, the diversity of empirical settings and the fact that migration has an impact on a wide range of demographic, economic and social characteristics in a society preclude wide generalization about the effects on the sending areas. Theoretical deductions are conditional on specific assumptions (type of production functions, returns to scale, pure labour migration or composite migration etc.) and cannot be inferred independently from the institutional realities (the existence of efficient markets for labour, goods and capital). The point is that these assumptions and the value of the parameters not only affect the quantitative assessment but might also change the sign.

Secondly, migration has a time dimension. Not only has migration its own dynamics, but time is also present through the migrants' life cycle. Thus, while local conditions that explained the initial surge in emigration might have disappeared, emigration can still continue because of demand-pull factors in the receiving country. It follows that cross-section observations which try to relate, for instance, emigration with unemployment are misleading. Emigration flows can coincide with labour surpluses as well as with labour shortages in sending areas, depending on the phase of the migration process during which the observation is made. When assessments of the economic impact of emigration are made in relation to time, one should ask whether there are consistent patterns of change over time rather than look for negative or positive impact *per se*. This characterization also has policy implications for the sending country. In a situation of demand-pull migration and with effects changing over time, the relevant question is not so much what the sending country should do (allowing emigration of low qualified workers and restricting emigration of qualified personnel, or directing remittances towards investment, or favouring the return of more qualified migrants) but what the country can do.

Finally, it has to be stressed that migration, even if it is to a certain extent an individualistic microeconomic answer to a disequilibrium situation, indeed an escape from no-growth prospects, is primarily the result of disturbances introduced at an early stage of development.

Emigration might also be prompted by institutional changes. For example, structural adjustment policies should influence migration flows since they have an impact on income and employment in the short and longer run. Unfortunately, there has not been much research about the mechanisms transmitting such influence, and not much is known about their quantitative impact. The

difficulty of evaluating the impact of structural adjustment is exacerbated by the lack of adequate migration data.

### *The neoclassical apologue and its shortcomings*

Consider an economy characterized by a low capital/labour ratio, traditional technology, a dualistic structure, an absence of an efficient market allocation process, surplus labour, low productivity, low income and a skewed distribution of income and wealth. In such an economy, a question arises as to how the migration process—that is departures, remittances and returns—affects and transforms the initial conditions. More specifically: does emigration increase average earnings, does it close the income and wealth gaps, does it set into motion a growth process through capital and human capital accumulation, technological change and structural change?

The answer is simple if one accepts the neoclassical assumptions. Consider first the short-term effect on income, employment and income distribution. Departures reduce unemployment, eventually decreasing total employment also. As a result, the marginal productivity of the remaining workers increases. Remittances increase directly—and dramatically—the earnings of migrants' families, through increased purchasing power. The distribution of income improves, in as much as migrants belong to the lower wage group; more precisely, both the absolute and relative standards of living of the poor improve. There might be some inflation pressure, but it should be kept at a moderate level through the control of the money supply by the central bank.

In the longer run a growth process is put into motion. Assuming the return on capital to be higher in developing countries, emigrants are induced to invest their savings in productive activities in their country of origin. Thus remittances contribute to capital accumulation. In addition, return migrants who have acquired experience and skills increase the stock of human capital too. With matching capital and human capital accumulation and a sustained increase in demand, a growth process is set in motion which first lowers the incentive to migrate and ultimately curtails migration. Under these assumptions, migration becomes an allocation procedure.

This reasoning, however, is based on a series of contradicting assumptions (Tapinos, 1974 and 1991). It assumes efficient markets for labour, capital, goods and money, which were precisely those missing conditions which had fostered the migration process in the first place. If we accept these assumptions, we must subsequently explain how migration induced the institutional change necessary for laying the basis for organized and efficient markets, with their concomitant functions of perfect information and clearing. It also assumes a discontinuity in the decision-making process—that is, between the decision to move and the decision to return. The debate over the uses of emigrants' remittances provides an illustration in this regard. Some would have the migrants use their savings in productive activities rather than for consumer goods or housing. It has already been noted that certain uses, assumed to be unproductive, are sometimes more productive than they appear to be, but

there is more to it than this. The question is whether it is better for the migrant and his family to increase his consumption today or to invest in order to improve his economic condition in the future at the price of additional sacrifice today. Not enough stress has been placed on the paradoxical character of the desire to assign to the migrant the burden of accumulating capital, especially since the uncertainty of economic development in his country may cause him to doubt his chances of seeing his standard of living improve tomorrow as a result of his investments today. Moreover, such delayed gratification poses a problem in terms of future intergeneration solidarity, which can only increase the migrants' preference for the present.

For many reasons, the assumed market adjustment mechanisms do not work. These market failures are due to customs, habits, institutions or externalities which pervade all markets: labour, goods or capital. Thus, a shortage of labour, resulting from a decrease in unemployment in general and an increase in employment in the agricultural sector, cannot be met in rural settings by increasing women's participation rates, considering the social division of labour. Land preparation and clearing are men's tasks, while weeding and harvesting are left to the women. Important decisions in farm management, such as borrowing or changing the type of crop, remain the responsibility of men. In the market for goods, an increase in demand related to remittances or—more questionably—to an increase in marginal productivity of non-migrant workers results in price increases due to the rigidity in supply response. For inflation to be checked and real income to improve, we have to assume availability and efficient use of (all) resources. An increase in imports is another way to meet the excess demand for goods; remittances, which represent an international purchasing power, allow for that. However, the prices of non-tradable goods (land, for instance, in some societies) or housing, an essential component of assets in developing countries, are bound to increase.

The functioning of financial and monetary markets show probably the greatest contrast with theoretical models. Dozens of case studies in developing countries suggest not only that the banking system is not geared to the needs of the poor but that inefficiency precludes most of the positive effects associated with the inflow of remittances.

## MIGRATION, TRADE AND INTERNATIONAL COOPERATION

### *Migration and international trade theory*

Given existing migration flows, it is necessary to inquire whether emigration can, from a national development perspective, enhance the growth process or, from an international perspective, transmit growth from more developed to less developed economies. However, when considering migration as an instrument for development rather than as an aim by itself and taking into account the fact that, whatever the numbers involved, there will always be an excess supply of potential migrants, it makes more sense to consider routes other than migration to increase the wealth of nations.

In order to do so, we have to go back to the origins of international exchange theory and to Adam Smith's assertion that of all goods, man is the most difficult to move. Indeed, international exchange has come to be identified with international trade, the international immobility of factors of production being precisely the line dividing what is traded within and between nations. As Edgeworth put it in 1894, "international trade means exchange on the basis of immobile factors of production". Only in the case of a country having a disadvantage in all production activities is there a rationale for international factor mobility. In other words, only when goods and factors are mobile is the absolute advantage an explanation of trade structure (Ethier, 1985 and 1986).

Under assumptions of free trade, a fixed supply of factors of production, and international immobility of factors, it can be shown (under very restrictive conditions) that flows of goods lead to an equalization of factor returns, thereby making international factor mobility irrelevant. Without impediments to trade, a country will export those goods that make more intensive use of the abundant factor and import goods that make use of the scarce factor. This will lead to an increase in marginal productivity of the abundant factor, with the reverse for the scarce factor. Exchange will continue until the relative scarcities of factors between countries are equalized, which implies an equalization of marginal productivity and of returns (Ohlin, 1967). At this theoretical level, labour, being the abundant factor of production in developing countries, should improve from trade liberalization. Thus, trade should be considered as an alternative to migration. However, it is well known that the restrictions imposed upon this theory are so severe that the empirical outcome might well be the reverse.

A parallel reasoning based on trade restrictions can be made (Mundell, 1967). When factors of production, as opposed to goods, are free to move, the imposition of a tariff on a product that incorporates some of the mobile factor would lead to a price increase of the protected product and to a shift of factors of production to the protected sector. If the product is capital intensive, this transfer would free up labour more than capital, if the unprotected sector is labour intensive. Under these conditions marginal productivity and the relative price of capital increase cause an inflow of foreign capital. The shift continues until the marginal productivity of capital is the same in both countries and the initial price equilibrium is restored. These adjustment mechanisms suggest that free trade and factor mobility are alternative and equivalent ways to equalize prices and factor returns. One complication introduced by factor mobility is that it affects the pattern of trade, because it modifies factor endowments. Leaving aside the analytical complexities, the practical conclusion to be drawn is that trade and factor movement are substitutes: free trade precludes migration, and restrictions to trade favour factor mobility.

This apparently comprehensive approach tends to obscure, if not ignore, some core issues. These are brought to light, however, when free mobility of factors and goods are assumed *from the start* (Tapinos, 1974). What needs clarification is the process and the time involved in the move towards equalization of prices and factor returns. Is convergence achieved upwards or down-

wards? In other words, does it imply a significant decline in real wages in the more developed country? Is the length of the adjustment period comparable on either route? More importantly, this approach fails to explain why a country with a low capital/labour ratio would *rather* export labour-intensive goods than export labour (i.e., emigration) directly.

In real world situations, one reason for explaining the different patterns of exports is the possible existence of specific obstacles that make the export of either goods or labour more difficult. These obstacles could be tariffs on goods or immigration restrictions, but could also be relative transportation costs, risk and uncertainty etc. It also seems likely that the stage of economic development is relevant in the trade-off between flow of goods and flow of persons.

### *Migration and economic integration*

Although an assessment of the welfare impact of a worldwide liberalization of trade and factors movements (Hamilton and Whalley, 1984) constitutes an interesting intellectual exercise, its policy relevance is limited. More useful is to consider the impact of international migration on economic integration and, conversely, the implication of economic integration for international migration. Let us suppose a group of countries is linked by trade, capital flows and migration flows. The query then becomes: Is there any evidence of international migration contributing, in the long run, to a convergence in income levels in those countries? Three cases of such integrated networks will be considered: the nineteenth century Atlantic economy; the European Community in the past three decades; and the free trade agreement between Canada, Mexico and the United States.

The first case is a good illustration of the effects of integration in the absence of a specific institutional setting linking trade and migration partners. It has been shown that through migration, trade and capital flows the countries of Europe and the United States constituted an integrated system, characterized by a consistent pattern of inverse business cycles (Thomas, 1973). More recently it has been argued that international migration contributed significantly to the convergence between these geographical areas (Hatton and Williamson, 1992).

The case of the European Community is of a different nature. Here we have a common market with free movement of goods, capital and labour—in other words, an ideal setting to test the link between trade and migration. However, the implementation of the common market followed a specific time schedule, with the institutionalization of free movement of labour lagging behind free trade by a number of years (approximately 10 years for the six founder countries). Free trade appears to have had a stronger impact on migration than the lifting of legal barriers. Indeed, the history of European integration shows a decrease in intra-EEC migration and an increase in immigration originating outside the EEC. Although this result accords with theoretical expectations, it is nonetheless puzzling because there is no clear trend of convergence of labour returns and income levels either among the EEC countries as a result of trade or between the EEC and third world countries as a result of migration (Van Mourik, 1987).



The effects of the free trade agreement between the United States and Mexico have been explored in a number of studies, based on different types of modelling, mainly computable general equilibrium models (Levy and Van Wijnbergen, 1991; Hinojosa-Ojeda and Robinson, 1992; Leamer, 1992). The impact on income in both countries appears to be positive, albeit modest. In as much as the Mexican workers should gain more than American labour, the income gap would be reduced. It is more interesting to look at the effect on employment in Mexican agriculture, especially in maize production, where, as a result of trade liberalization, an important share of the labour force will be released. Some of this labour surplus will be absorbed by the Mexican labour market, but the majority will seek employment in the United States. Whatever the limitations of these simulations, it is widely thought that the agreement will, in the short run, increase the migration potential from Mexico to the United States. It is a straightforward illustration of the fact that liberalization between countries with significant differences in size, endowments and production patterns cannot in the short run simultaneously achieve two objectives: an increase in the standard of living, and a decrease in the propensity to emigrate. Of course, it is expected (as a result of the hypothesized convergence process) that in the long run, income differentials should diminish and incentives to emigrate will lessen.

The lessons to be drawn from economic integration are mixed. When countries with similar production structures and more or less comparable size are involved, integration, accompanied by a reduction in labour cost differentials, tends to reduce the incentives to move between the integrated areas while, at the same time, flows stemming from outside such countries tend to increase. Convergence of labour returns, as predicted by most theories, is a strong possibility, but the reverse trend cannot be excluded. The latter was the case between the United States and Mexico in the 1980s and among EEC countries after the oil crisis. Among countries with large differences in capital-labour ratios and size, a decrease in employment in the protected sectors of the labour-abundant country cannot be counteracted in the short run by an increase in production and employment in those sectors which are expanding as a consequence of trade liberalization and its dynamic effects. Consequently, emigration is bound to increase initially. Only in the very long run and assuming convergence should the incentive to migrate diminish. The issue is clearly an empirical one.

#### *Cooperation as an alternative to migration*

The building of customs unions or common markets and the increase in the number of potential emigrants from developing countries has strengthened the need to view migration in an international framework. This requires that policy analysis go beyond nation States. This does not mean that nation States are no longer relevant (witness the upsurge of nationalism) but rather that the efficiency of national policies depends on other countries' policies, involved in the same network of trade and capital flows. Thus, national policies have to take into account the interests of the potential sending countries. This might lead to some form of institutionalized international cooperation.

The success of these policies hinges on the extent to which they are likely to foster a development process marked by an increase in income and employment, and affect in a significant way and in the expected direction the determinants of the decision to migrate. Both issues should be considered in the short as well as the long run.

First, at the macrolevel, development-assistance policies, whatever their means (financial assistance, trade liberalization or technical transfers) or focus (rural development, food self-sufficiency etc.) do not touch upon the institutional aspects of the development process which might prove crucial to job-absorption capacity and propensity to move. More generally, development-assistance policies cannot substitute for national development policies but have to meet the targets set by the developing country itself. Thus, countries that have suffered the long-run deficiencies of import-substitution policies might not be willing to adopt development strategies that are labour-absorbing in the short run when that poses the risk of cutting down the long-run growth rate of their economies.

The second factor to be taken into account is the individual behaviour pattern. If international cooperation is to reduce incentives to emigrate, it has to modify the *values of the parameters* determining the decision of potential migrants. Migration and economic development strategies can be viewed as two ways to improve household income. The crucial difference is that migration reflects a microlevel strategy, the outcome of which (that is, the expected increase in welfare) results directly from an individual's decision and not indirectly as a consequence of the national development process. Thus, a decision to migrate is very different from development models which are designed to improve the lot of a segment of the population, if not the entire population. The individualistic strategy associated with migration may have solid rational grounds, such as a higher uncertainty of benefitting from a domestic development process and a shorter time needed to achieve the income target. Viewed this way, migration then becomes, from an individual point of view, a risk-averting strategy or a substitute for development; however, at the same time, the development process affects the propensity to move and fosters migration.

## POLICY ISSUES

### *Emigration and national development policy*

From the point of view of national development policy, sending countries face a dilemma. If migration increases the welfare of the migrant and his family, it does not follow that the macroeconomic impact on the sending country on the whole is positive. Nor does it follow that a positive impact overall is not associated with undesirable distribution effects or, more generally, that improvements in standards of living in the short run do not jeopardize the long-run growth process. Clearly externalities—positive and negative—abound in migration and call for policy interventions.

However, in practical terms, sending countries lack the incentives and tools to make such interventions relevant and efficient. In most cases migra-

tion started as an individual's response to economic hardship unrelated to any form of development strategy in the country of origin. Soon, however, migration came to be seen as a way to alleviate the burden of unemployment and of underemployment. Furthermore, it was quickly realized that remittances could raise the foreign exchange constraint in a significant way and increase the purchasing power of the upper classes to import foreign goods. It should be noted, however, that in a few countries emigration was more than simply a *fait accompli*. Rather, it was part of a development strategy designed to facilitate the take-off of the economy. Ironically, these countries were not rewarded for their sense of responsibility. In situations where demand-pull factors prevail, as in Western Europe, the United States, or the Gulf States, devising and implementing an optimal migration policy, which aims at improving individual welfare and national development, is often out of reach of the sending country.

### *Development cooperation*

Development cooperation policies devised to decrease the incentive to migrate might be severely constrained for the reasons—both analytical and empirical—given above. In addition, there are also strong doubts about the efficiency of these strategies at the policy level.

The first constraint is brought about by the externalities resulting from the enlargement of the area that is a potential source of migrants. This is not only a matter of geography with, for instance, the inclusion of the Eastern European countries and perhaps the former Soviet Union, but also a new uncertainty as to which spaces to consider. The regularization programmes revealed the existence of entirely new migratory flows from countries that were not connected with the country of immigration by any kind of tradition. After the frontier closures in Europe in 1974, the migration issue was addressed bilaterally, with the notion that certain industries would relocate in, and capital would flow into, the emigration countries. Although this approach is no longer valid, it is still not possible to identify potential emigration countries and concentrate efforts on them.

The feasibility and efficiency of a two-tier policy—that is, allowing for some entries, on the one hand, and promoting trade openness and aid, on the other—is highly questionable. As long as the potential migrant has some possibility, legal or not, of entering the immigration country, he will seize the opportunity rather than wait for an improvement in his well-being, which would depend on national development triggered by trade and aid.

Finally, there is the risk of obtaining perverse results from development assistance earmarked for containing migration. It is one thing to implement a development assistance policy for improving the general well-being in developing countries, thereby indirectly lowering, in the long run, the incentive to migrate. It is quite another matter to explicitly earmark development assistance for curtailing migration. First of all, the transition period necessary to bring about significant changes in income could take decades. At the same time and following a well observed pattern, the adjustments resulting from the

development process are prone to increase the propensity to migrate for some segments of the population. The continuation of migration flows could possibly lead to a hostile public opinion reaction in donor countries and be interpreted as a failure of development assistance policies, causing their support to wane. Such reversals would be reminiscent of the reactions that surfaced in the former colonial powers not long after their colonies gained independence. For now, the restrictive attitudes *vis-à-vis* immigration are strong enough to support aid as an alternative to migration. However, the moment that large numbers of immigrants coexist with development assistance, this view could change.

Mobility in general and international migration in particular are part of the development process. They reflect in most cases an efficient individualistic strategy for improving one's well-being. At the macrolevel it might have positive or negative effects on the sending or the receiving societies. In the best cases migration can contribute to development, but it cannot substitute for it. Migration remains fundamentally the result of a decision process at the microlevel, a process that is influenced by policy measures—but only to a certain extent. Migrants do not belong to the Government of their country of origin, nor do they act in strict accordance with the entry regulations of the receiving country.

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# EUROPE WITHOUT INTERNAL FRONTIERS AND INTERNATIONAL MIGRATION

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## SUMMARY

This paper documents the process by which the freedom of movement of workers has been established in the European Community and uses data on migrant flows and stocks to assess whether such freedom of movement has had a significant effect in increasing intra-Community migration. Although the evidence suggests that the presence of Community workers increased in newly admitted Community member States, such as the United Kingdom during the 1970s and, more recently, Greece, Portugal and Spain, the numbers involved are small in relative terms. In contrast, the enactment of freedom of movement provisions has not contributed to a noticeable increase in the outflow of workers from the poorer to the richer member States. It is still too early to assess the effects of the more general freedom of movement provisions stemming from the creation of a single market. The halting process by which a Europe without frontiers is being established is documented in some detail.

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## INTRODUCTION

One of the fundamental principles of a common market is that workers should be able to move freely within its borders. It is not surprising, therefore, that the treaties setting the basis for the formation of a European common market included provisions whose aim was to achieve eventually the free movement of workers. They thus set in motion a process that is about to culminate in the complete removal of all controls at the internal frontiers of the European Community and the granting of free movement rights within the Community to an ever larger, if not yet universal, group of people.

The purpose of this article is to document the process by which freedom of movement has been extended to an ever growing group of Community nationals and to discuss the effect that the achievement of free movement has

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had on intra-Community migration. It has been estimated that towards the late 1980s, the 12 member States of the European Community were host to nearly 13 million persons who were not nationals of the States where they resided, 5.1 million of whom were citizens of member States (Lebon, 1990). The effects of Community legislation on the evolution of that stock will also be considered.

#### FREEDOM OF MOVEMENT OF WORKERS

The right to freedom of movement was recognized in the three founding treaties of the European Communities—namely, the Treaty of Paris, establishing the European Coal and Steel Community in 1952; and the two Treaties of Rome, establishing the European Atomic Energy Community and the European Economic Community (EEC) in 1958. However, all the treaties granted freedom of movement under conditions that effectively restricted the population that might exercise such a right. Thus, although title III of part two of the EEC Treaty was entitled "Free movement of persons, services and capital", it dealt with the free movement of salaried workers and of self-employed individuals only (Burrows, 1987). In fact, as Böhning (1972) rightly pointed out, "worker is defined not in terms of international law or in terms of the municipal law of the various member states, but has acquired a distinct meaning according to *Community law*. It refers to all blue-collar and white-collar workers—that is, wage-earners and salary-earners, respectively—other than those employed in 'the public service' " (Böhning, 1972, p. 15). For the purposes of the Treaty, the public service consists of civil servants in local and national government.

The EEC Treaty makes a clear distinction between workers and the self-employed. Thus, the provisions on freedom of movement of workers (articles 48-51) differ from those that refer to the self-employed (articles 52-58). The latter are granted "freedom of establishment" rather than mere freedom of movement. Indeed, article 52 provides for the abolition, over the transitional period, of restrictions on the "freedom of establishment of nationals of a Member State in the territory of another Member State" and further specifies that "freedom of establishment shall include the right to take up and pursue activities as self-employed persons". Recognizing that the "mutual recognition of diplomas, certificates and other evidence of formal qualifications" is necessary for the movement of self-employed persons from one member State to another, the Treaty instructs the Council to issue directives in that direction (article 57).

Both article 48 on the free movement of workers and article 52 on the freedom of establishment stipulate that such rights will be granted at the end of a transitional period. The first such period lasted nearly 10 years and culminated with the issuance in October 1968 of EEC regulation 1612/68 on freedom of movement for workers within the Community. Since then, as Community membership has grown, transitional periods of varying lengths have been established for each State that has acceded to the EEC Treaty. The variety of transitional periods adopted over time has meant that a universal

regime of free movement, even with respect to workers, has taken more than 30 years to materialize. During that time, the population granted the right to free movement within the Community has grown not only territorially as Community membership has expanded but also technically as the conditions for the exercise of freedom of movement have been relaxed. Such expansion has been established by a series of Council directives and EEC regulations.

Although it is beyond the scope of this article to discuss the complete series of directives and regulations that have expanded the scope of freedom of movement over time, those establishing key changes will be considered. As Böhning (1972) explains: "Directives are binding on national authorities only with respect to the aims of the legislation; they leave the choice of forms and methods to the national legislator. Regulations, however, are more than guidelines (see Article 189 of the Treaty). They are to apply generally (i.e., they have normative character); they are binding in their entirety (i.e., all parts are valid and are the final wording of the law); and they take direct effect in each member state (i.e., the legislation becomes effective and applicable without the requirement of transformation into municipal law). The national legislatures cannot change the wording of a regulation and they have to heed its content in all subsequent national legislation." (Böhning, 1972, p. 19).

The first regulation on freedom of movement of workers was promulgated by the Council of the European Communities on 16 August 1961 (regulation No. 15/61). It authorized nationals of member States to accept offers of employment "if no suitable worker from the regular labour force of the other Member State is available . . . within a maximum of three weeks from the time the vacancy was registered at the Employment Exchange" (article 1). Regulation 15/61 applied to the European territories of the member States. It did "not affect any obligations incumbent upon Member States by reason of the special relations they maintain with certain non-European countries or territories in consequence of the institutional ties that exist, or have existed, between them" (article 42(3), as cited by Böhning (p. 11)). That article was meant to exclude from the right to freedom of movement nationals from the overseas territories of member States.

Whereas the provisions of regulation 15/61 were still fairly restrictive, EEC regulation 38/64 (of 1964) opened new possibilities by bringing under a single regime long-term, seasonal and frontier workers and by not only authorizing Community workers to take up notified vacancies but also giving them the right to do so. By eliminating the need to search for local workers over a period of three weeks and by establishing that work permits could not be tied to employers or regions and had to be renewable, regulation 38/64 represented a major step towards achieving true freedom of movement. It also contained reinforced provisions regarding equality of treatment of workers regardless of nationality and expanded the right of family reunion to include not only spouses and children under the age of 21 years but also dependent ascendants and descendants of the worker or his spouse (article 17(I)(b)). Family reunion, however, remained subject to the availability of "normal" housing. Regulation 38/64 also alluded to nationals from overseas countries or territories that had institutional ties with member States and established that "Workers from

such [non-European] countries or territories who, in accordance with this provision, carry on a wage-earning employment on the territory of one of these Member States cannot invoke the benefit of the provisions of this Regulation in the territory of other Member States" (article 53(3), as cited by Böhning, 1972, p. 14). Thus, the exclusion of citizens from the overseas territories of member States was maintained.

Regulation 38/64 was superseded by that adopted on 15 October 1968 (No. 1612/68) which still today embodies the basic provisions regarding the freedom of movement of workers within the Community. It was the first to establish equal rights among Community workers regarding access to employment. Thus:

"(1) Any national of a Member State, shall, irrespective of his place of residence, have the right to take up an activity as an employed person, and to pursue such activity, within the territory of another Member State in accordance with the provisions laid down by law, regulation or administrative action governing the employment of nationals of that State. (2) He shall, in particular, have the right to take up available employment in the territory of another Member State *with the same priority* as nationals of that State." (article 1)

The Regulation reiterates the right of family members to install themselves in the territory of the member State where the worker is employed, provided normal housing is available (article 10) and defines eligible family members in terms similar to those used in regulation 38/64. Furthermore, it again establishes that

"where a national of a Member State is pursuing an activity as an employed or self-employed person in the territory of another Member State, his spouse and those of the children under the age of 21 years or dependent on him have the right to take up any activity as an employed person throughout the territory of that same State, even if they are not nationals of any Member State." (article 11)

Like regulation 38/64, regulation 1612/68 includes in article 42(3) a paragraph that explicitly excludes workers from overseas territories of member States as beneficiaries of its provisions. However, according to the Council decision 68/359/EEC of 15 October 1968, articles 48 and 49 of the EEC Treaty and the measures taken in their implementation (i.e., regulation 1612/68) shall apply to the French overseas departments—that is, French citizens from French Guiana, Guadeloupe, Martinique and Réunion are entitled, as workers, to freedom of movement within the European Community.

As the case of France illustrates, the adoption of nationality as a criterion for identifying the beneficiaries of freedom of movement gives rise to some difficulties, not all of which have been dealt with explicitly by the Community. In the case of the United Kingdom, for instance, a declaration was appended to its Act of Accession stipulating that the term "national" in rela-

tion to the United Kingdom meant a citizen of the United Kingdom and its colonies or a British subject without citizenship having the right of abode or a citizen of the United Kingdom and its colonies by association with Gibraltar. When the United Kingdom passed a new British Nationality Act in 1981, a new declaration was made, stating that the term "United Kingdom national" was henceforth to mean a British citizen or a British subject with the right of abode or a British Dependent Territories citizen deriving that status by association with Gibraltar (Plender, 1988, p. 198).

The case of Germany also illustrates the difficulties arising from the fact that nationality is regulated in accordance with national rather than Community law. According to article 116(1) of the Basic Law of the (then) Federal Republic, a German was a person who possesses German citizenship, or has been admitted to the territory of the German Reich as it existed on 31 December 1937 as a refugee or expellee, or is of German stock. The Federal Republic indicated by means of a declaration appended to its signature of the EEC Treaty that it would prefer that the term "German national" be interpreted as in the Basic Law. Consequently, persons of German descent living in Eastern or Central Europe and the inhabitants of the former German Democratic Republic would have been entitled to freedom of movement within the Community. During the 1980s, that right became a reality for the large number of *ubersiedler* and *aussiedler* who gained access to territory in the Federal Republic, and the 1990 reunification of the two Republics had a similar effect on all Germans from the former German Democratic Republic.

#### EXTENDING THE RIGHT TO FREE MOVEMENT

On 1 July 1987, the first major amendment to the Treaty of Rome, the Single European Act, came into effect. Under the Act, a new article 8A was inserted in the Treaty of Rome stating the goal of "progressively establishing the internal market over a period expiring on 31 December 1992" and specifying that "the internal market shall comprise an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured in accordance with the provisions of this Treaty" (Commission of the European Communities, 1986a).

In accordance with the Single European Act, the Community has endeavoured to extend the freedom of movement to Community nationals who do not fit into the category of Community workers or self-employed persons. Regulatory activity has focused mainly on three groups: students, Community employees or self-employed persons who have ceased their occupational activity (i.e., retirees), and all other Community nationals. In addition, the possibility of extending the definition of "worker" is being considered, and measures to enhance the mobility of self-employed persons have been taken.

With regard to the extension of the definition of the term "worker", in 1988 the Commission decided to promote the free access of Community nationals to employment in parts of the public service, primarily to jobs in public health care services, public education or research in non-military public establishments, all of which involve tasks sufficiently removed from the spe-

cific activities of the national public service which were excluded from the freedom of movement provisions by article 48(4) of the Treaty.

Although, as noted above, the Treaty itself established the right of establishment for self-employed persons and instructed the Council to remove barriers to it, until recently progress in that direction had been particularly slow. The problem lies in the different standards regarding the training and qualifications of professionals set by each member State. Since 1960, the Community has been working towards the harmonization of national qualifications for specific professions. The greatest progress has been achieved in the health sector, where harmonization regarding basic training standards for doctors, nurses, dentists, veterinarians and midwives has been reached. Advances have also been made in the agricultural, forestry and horticultural sectors and in the mining, electricity, gas, oil and water industries. However, the attainment of harmonization at the Community level is a time-consuming process. Directives enabling architects to practise throughout the Community, for instance, took 17 years to be issued; those for pharmacists took 16. The need to establish the internal market by 1992 has prompted the Commission to promote a new strategy to facilitate the freedom of establishment of self-employed persons—namely, the mutual recognition of training and qualifications by member States. Under the principle of mutual recognition, individuals holding the equivalent qualification from one member State would be able to practise in the field of their expertise in another member State under the same conditions as individuals holding the relevant qualification of the latter State. In 1988 the Council adopted a general system for the recognition of higher education diplomas awarded on completion of professional education and training of at least three years' duration (directive 89/48/EEC). Since then the Commission has been working on a second general system of the mutual recognition of diplomas awarded on completion of post-secondary vocational training of less than three years' duration or on completion of a secondary course.

Perhaps the most important step taken so far by the Community towards the implementation of the free movement provisions of the Single European Act has been the adoption of Council directives extending the right of residence within the Community to certain groups of Community nationals who are not salaried workers or members of their families. The residence rights of the latter had been set out in 1968 by Council directive 68/360 on the abolition of restrictions on movement and residence within the Community for workers of member States and their families. That directive established, among other things, the use of a residence permit for Community workers that, under minimal conditions of employment, would be valid for five years and renewable. On 28 June 1990, the Council extended similar rights to students (directive No. 90/366/EEC on the right of residence), retired workers or self-employed persons (directive No. 90/365/EEC) and most of the remaining Community citizens (directive No. 90/364/EEC on the right of residence).

In the case of students, article 1 of Directive 90/366/EEC states that

“Member States shall . . . grant the right of residence to any student who is a national of a Member State . . . and to the student's spouse and their

dependent children, where the student assures the relevant national authority . . . that he has sufficient resources to avoid becoming a burden on the social assistance system of the host Member State during their period of residence, provided that the student is enrolled in a recognized educational establishment for the principal purpose of following a vocational training course there and that they are covered by sickness insurance in respect to all risks in the host Member State."

Residence permits restricted to the duration of the course of studies in question are to be issued to the student and his or her dependants. The latter are entitled to take up any employed or self-employed activity anywhere within the territory of the host member State irrespective of their nationality.

With respect to retired Community nationals, article 1 of Directive 90/365/EEC states:

"Member States shall grant the right of residence to nationals of Member States who have pursued an activity as an employee or self-employed person and to members of their families . . . provided that they are recipients of an invalidity or early retirement pension, or old age benefits, or of a pension in respect of an industrial accident or disease of an amount sufficient to avoid becoming a burden on the social security system of the host Member State during their period of residence, provided they are covered by sickness insurance in respect of all risks in the host Member State."

It further establishes that the resources of the applicant shall be deemed sufficient if they are higher than the minimum below which the host member State might grant social assistance to its nationals. Members of the family are defined in terms similar to those of workers, including the spouse, dependent children and dependent ascendants. Eligible persons will be granted a residence permit whose validity may be limited to five years before renewal, and member States may require the revalidation of the permit after the first two years of residence.

Lastly, article 1 of directive 90/364/EEC establishes that

"Member States shall grant the right of residence to nationals of Member States *who do not enjoy this right under other provisions of Community law* and to members of their families . . . provided that they themselves and the members of their families are covered by sickness insurance in respect of all risks in the host Member State and have sufficient resources to avoid becoming a burden on the social assistance system of the host Member State during their period of residence."

The sufficiency of resources is judged under the same terms as in the previous directive, and family members again include the spouse and dependent ascendants or descendants. Once more the validity of residence permits may

be limited to five years before renewal, and the host Member State may require their revalidation after the first two years of residence.

The text of these directives makes clear that the right to free movement and residence has only been granted to Community citizens who are not and will not become a burden on the social security or health systems of the host member State. Thus, although the eventual dismantling of the internal frontiers may indeed allow some sort of "free movement", its essential counterpart, the freedom of residence, is still far from being attained. Not only is it necessary for Community citizens wishing to relocate from one member State to another to present proof of independent economic viability for their whole period of residence in the host member State, they are also subject to considerable local control through the issuance of residence permits. From that perspective, the goals set by the Single European Act represent only a tentative step rather than a leap forward towards the creation of a "people's Europe".

#### ELIMINATION OF BORDER CONTROLS: THE LIMITATIONS OF THE COMMUNITY APPROACH

The complete removal of controls at the internal frontiers of the Community requires the implementation of common measures to deal with, among other things, the movement of nationals from non-member States. Although it has been agreed that certain issues, such as visa policy, the granting of asylum, extradition and the crossing of external borders, need a common approach, the Community has found it virtually impossible to deal with them within its legal framework. The problem stems from the fact that the control of migration is closely linked to national sovereignty and the Governments of member States are finding it difficult to reconcile their sovereign interests and security requirements with the commitment to build an internal market (Callovi, 1992). Consequently, most, if not all, negotiations regarding the movement and stay of third-country nationals have been considered within the framework of "intergovernmental cooperation" through a variety of *ad hoc* working groups.

#### *The Schengen Agreement*

One of those groups consisted of five of the original signatories of the Treaty of Rome—namely, Belgium, the Federal Republic of Germany, France, Luxembourg and the Netherlands—who signed in 1985 the Schengen Agreement aimed at eliminating internal border controls between the aforementioned countries. Although the Schengen process was not initiated by the Community, it has become a test case for the achievement of a border-free territory composed of different sovereign States.

The process of negotiation related to the establishment of a frontier-free Schengen territory culminated with the signing in June 1990 of the Convention on the Application of the Schengen Agreement by all five contracting States (Costa-Lascoux, 1991, p. 164). Italy acceded to the Agreement in November 1990, and Portugal and Spain did so in June 1991. That same year, Greece was granted observer status. Community documents recognize that "the agree-

ment represents an important first step towards the abolition of identity checks at intra-Community frontiers" (Commission of the European Communities, 1991a, p. 353).

The Convention on the Application of the Schengen Agreement establishes that all persons within the territory of a Schengen country can move to another Schengen country without being subject to any control, provided they intend to stay in the latter for at most three months. Nationals of third countries, however, must register with the local authorities within three days of arrival. Persons intending to stay more than three months are subject to the immigration laws of the receiving country (Costa-Lascoux, 1991, p. 165).

With respect to the crossing of external borders, the Schengen Agreement envisages the mutual recognition of national visas, establishes common criteria for the granting of visas and thus initiates the process towards the adoption of a common visa system. As part of this system, the signatory countries agreed on a list of 110 countries whose nationals need a tourist visa to enter Schengen territory (Costa-Lascoux, 1991, p. 166). The Agreement also establishes common regulations regarding the granting of asylum. In particular, an applicant can submit an asylum request only in one country, and the Agreement specifies the rules governing the application process.

The Agreement also foresees the harmonization of measures to combat undocumented migration, including the rules governing deportation, the establishment of an automated information system on persons denied admission and the signing of "re-admission agreements" with sending countries (Costa-Lascoux, 1991, p. 166). In April 1991, for instance, an agreement requiring Poland to take back undocumented Polish migrants was signed between the Schengen countries and Poland. The agreement came into effect before the implementation of another agreement between the two parties on the suppression of short-term visas for Polish citizens.

#### *The group of Ministers responsible for immigration*

Another effort carried out largely at the margin of the Community is that by the group of Ministers responsible for immigration. The group was created in October 1986 when, at a meeting in London, the Ministers with responsibilities for immigration, counter-terrorism and drugs and a representative of the Commission decided to set up an *ad hoc* working group to consider the coordination of visa policies, measures to eliminate the abuse of the right of asylum and fraud in connection with passports, and ways of reconciling stricter surveillance of the Community's external frontiers with the elimination of formalities at its internal frontiers by the end of 1992 (Commission of the European Communities, 1987, p. 366).

In June 1990, on the occasion of the eighth meeting of the group of Ministers responsible for immigration, held in Dublin, 11 of the member States of the Community signed a convention determining which member State would be responsible for examining an application for asylum—the so-called "Dublin Convention". The twelfth member, Denmark, signed the Convention within a year. The Dublin Convention thus represented the first concrete step



by the Community of 12 towards the harmonization of procedures regarding immigration and asylum policy. Ratification of the Convention, however, has been slow. By December 1992, only four member States had ratified it (Council of European Communities, 1992).

The group of Ministers responsible for immigration also undertook the preparation of a convention on the crossing of the Community's external borders, which was to be concluded by the end of 1990. However, as of December 1992, signing of the Convention had not yet been possible because of disagreements between Spain and the United Kingdom regarding Gibraltar (Commission of the European Communities, 1992a, p. 413, and Council of European Communities, 1992). Failure to sign the Convention has been one of the stumbling blocks to the accomplishment of free movement by 1 January 1993, as stipulated by the Single European Act. Although by February 1993, 11 out of the 12 proposals regarding the free movement of workers and professionals had been adopted by the European Council, the movement of third-country citizens, especially of asylum-seekers, continued to be a controversial issue. Nevertheless, the Schengen countries vowed to remove their border checks in 1993 (Commission of the European Communities, 1992b).

At their London meeting, held in December 1992, the Ministers responsible for immigration made some progress towards the harmonization of national asylum policies, a goal slated to receive priority attention according to the Declaration on Aylum attached to the Treaty on European Union (see below). Two resolutions were adopted, albeit with reservations from Germany (because of its Constitution) and from Denmark and the Netherlands (regarding the approval of their respective Parliaments). The resolution on manifestly unfounded applications for asylum establishes the conditions under which applications for asylum may be considered as manifestly unfounded and states that member States may subject them to an accelerated determination procedure that need not include their full examination at every level. It also states that member States may decline to subject an application to a determination procedure if it falls within the provisions of the resolution on host third countries, also adopted by the Ministers responsible for immigration at their London meeting. The latter establishes the procedural basis for applying the concept of host third country and the requirements and criteria determining whether a country is a host third country.

Once these resolutions are incorporated into national law—a process that is to be completed before 1 January 1995— asylum claims lodged in a member State will be considered manifestly unfounded if they are outside the scope of the 1951 Convention Relating to the Status of Refugees, if they lack substance or credibility, are based on deliberate deceit or are an abuse of the asylum procedures. Manifestly unfounded applications for asylum are to be reviewed within one month and may qualify for a summary appeal procedure. The accelerated asylum procedure will also be applied to asylum-seekers who are citizens of countries considered safe—that is, in which there is generally no serious risk of persecution. Furthermore, asylum-seekers who have been granted initial protection outside the Community or who have had the opportunity of seeking such protection in a third country may be returned to that coun-

try without having their claim reviewed. This host-third-country procedure takes precedence over the procedure established by the Dublin Convention, that is, an asylum-seeker who could have sought asylum in a safe country outside the Community will first be returned to that country instead of being sent to another EC Member State where he or she might have also sought asylum (Council of the European Communities, 1992).

### *The Treaty on European Union*

On 9-10 December 1991 at the meeting of the European Council held in Maastricht, the Netherlands, the member States of the European Community adopted the Treaty on European Union. It constitutes the second major amendment to the Treaty of Rome and represents a crucial step towards furthering the economic and political integration of member States. As of April 1993, all member States except Denmark and the United Kingdom had ratified the Maastricht Treaty.

The Treaty establishes a "citizenship of the Union" and reaffirms the right of free movement for all citizens of the Union (Europe Documents, 1992, article 8). With regard to migration from third countries, the Treaty asserts the Community's authority to determine the countries whose nationals need to possess a visa when they cross an external Community border (article 100c) (Callovi; 1992). Furthermore, the Treaty formalizes intergovernmental cooperation with regard to asylum policy, the crossing of external borders, conditions of entry, movement, residence and employment of third-country nationals, and undocumented migration and illegal employment (Title VI). The part of the Treaty on social policy validates the Community's role in establishing the "conditions of employment for third-country nationals legally residing in Community territory" in all member States except the United Kingdom (Europe Documents, 1992).

### THE IMPACT OF FREE MOVEMENT ON INTERNATIONAL MIGRATION

Ever since the right to free movement became a reality for salaried workers within the Community, the question of how it has affected migration flows between member States has been of interest. In particular, as different States have applied for Community membership, the likely impact of extending to their nationals the right to free movement has often been the subject of heated debate. Böhning (1972) documents the different views dominating such debate when the United Kingdom applied for membership. Generally, countries with more advanced industrial economies have been afraid lest freedom of movement might lead to the uncontrolled influx of workers originating in the less advantaged member States. However unfounded such fears may have been, measures have been taken to prevent such an eventuality from arising by establishing relatively lengthy transition periods between accession to the Community and the entry into force of freedom-of-movement provisions. Thus, although Greece joined the Community in 1981, its nationals acquired the right to free movement only on 1 January 1988. Portugal and Spain acceded to the Community in 1986, but their nationals were to enjoy freedom of move-

ment only as of 1 January 1993. Then, considering that the free movement of Portuguese and Spanish workers would not lead to a deterioration of the different national labour markets, the Council granted them free movement rights as of 1 January 1992<sup>1</sup> through Regulation No. 2194/91 (OJEC, 1991). Only for Denmark, Ireland and the United Kingdom did the provisions on free movement of workers apply from the date of accession, in 1973.

Ideally, an assessment of the effect of free movement regulations on migration would demand the availability of data on the number of foreign workers entering the different member States each year to take up new jobs. Although such data were available in some of the member States before 1974 when their policies favoured labour migration, since the discontinuation of such policies, that type of data has either disappeared or its coverage has become too narrow to be useful. (They generally refer only to non-EC nationals.) Consequently, one must have recourse to either flow data on all migrants or stock data to try to infer the impact of free movement regulations on migration.

Data on the number of migrants entering or leaving each year are available for only a handful of European countries—namely, Belgium, western Germany (corresponding to the territory of the Federal Republic of Germany before October 1990), the Netherlands, Sweden, Switzerland and the United Kingdom. For five of them, the origin of migrants is provided in sufficient detail as to permit the identification of those originating in EC member States. (The only exception is Switzerland.) However, neither the definition of migrant nor the criterion used to define "origin" is the same for all data sources (Zlotnik and Hovy, 1990). Thus, whereas the data for Belgium and the Netherlands are classified by citizenship, those for western Germany and Sweden are published according to place of previous or future residence. In the case of the United Kingdom, a combination of citizenship with place of previous or next residence is used. Thus, technically, one can identify with inflow and outflow of Community nationals only in the cases of Belgium and the Netherlands. However, despite their strict lack of comparability, the data for the five countries will be used here to assess the impact of free movement regulations on migration. To make comparisons meaningful, throughout the thirty-year period considered, migrants from the European Community will be those originating in any of the 11 member States other than the receiving one (12 in the case of Sweden)—that is, changes in Community membership do not affect the coverage of the data used. Note, however, that flow statistics for the United Kingdom do not cover the migration of Irish citizens.

Figures I and II display the 1960-1988 trends in migrant inflows originating in EC member States and directed to Belgium, the (then) Federal Republic of Germany, the Netherlands, Sweden and the United Kingdom. Most countries display an increasing intake of European Community migrants during the first half of the 1960s, when freedom of movement was not yet in force. The 1967 recession brought about a sharp decline in that inflow, so that the increase recorded from 1968 to 1971 can be interpreted more as a return to past trends than as the result of the freedom-of-movement provisions that came into effect at the end of 1968 and affected mostly the movement of Italian workers.

Figure 1. Immigration of citizens from European Community countries

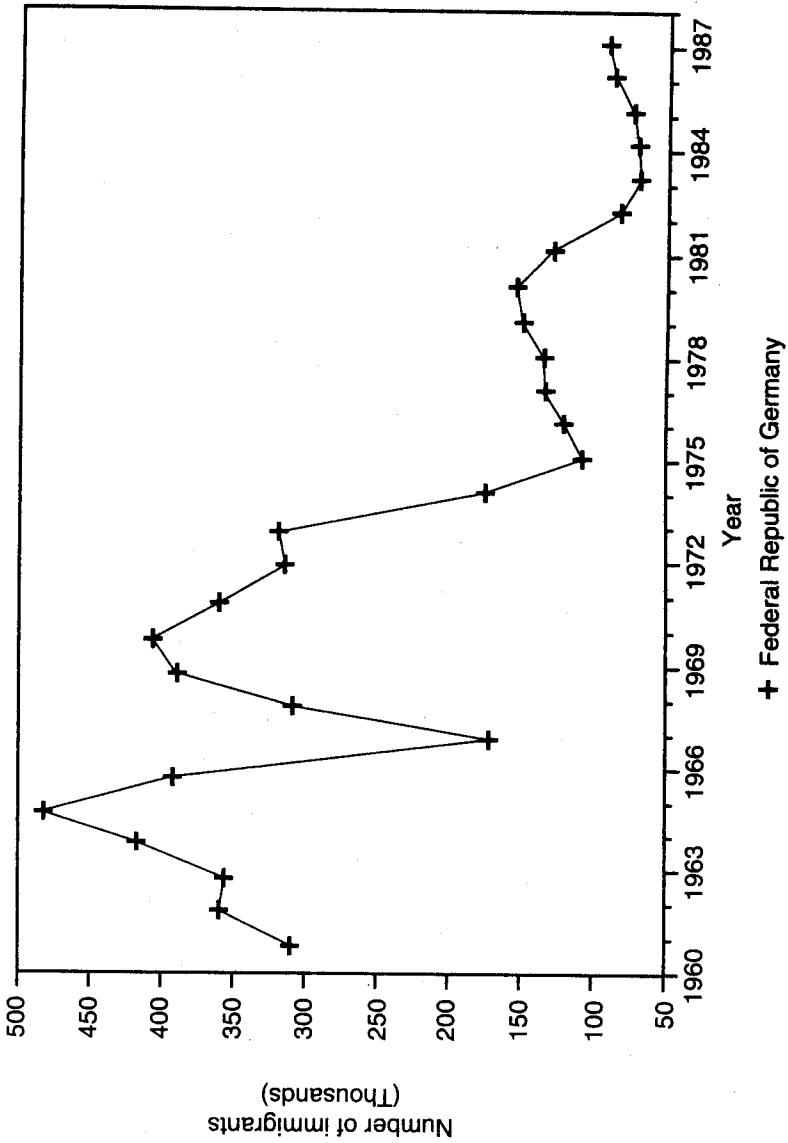
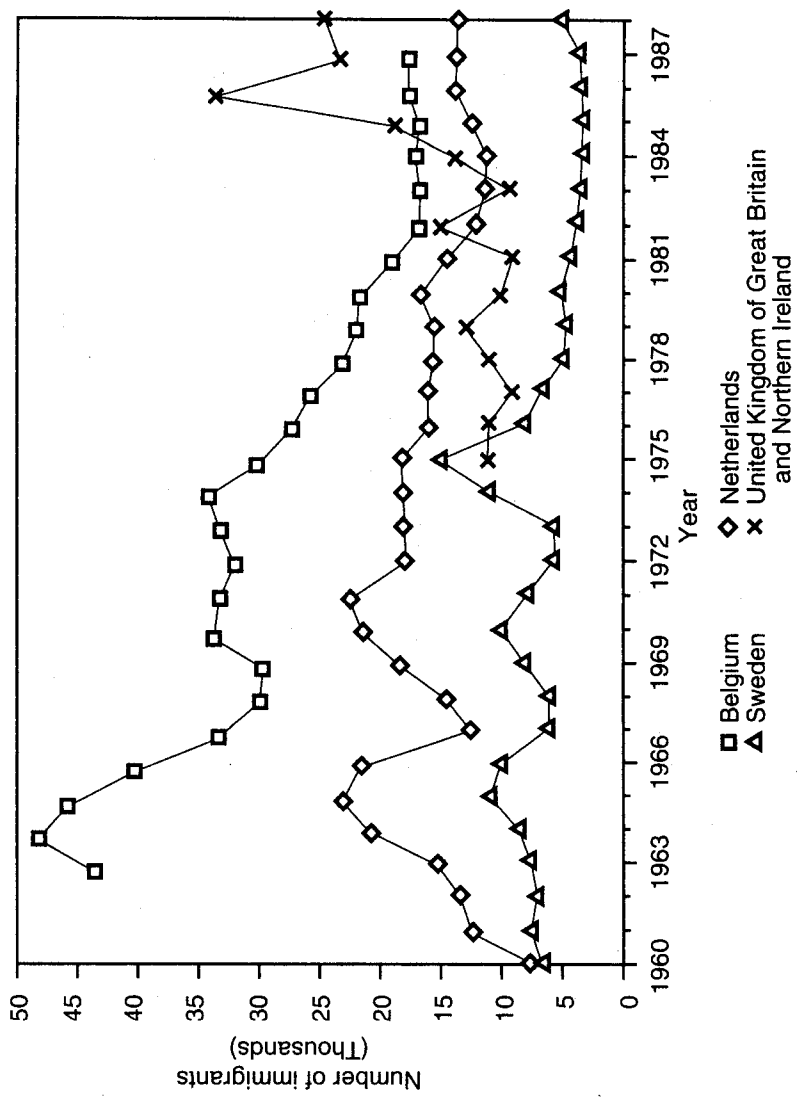


Figure II. Immigration of citizens from European Community countries



Starting in 1971 or 1972 most countries display generally declining trends in the number of incoming migrants originating in European Community member States.

Consequently, for Belgium, the Netherlands, the (then) Federal Republic of Germany and Sweden, the inflows of European Community migrants recorded during the late 1980s were among the lowest recorded during the past 30 years. Interestingly, the trends recorded by Sweden are not all that different from those of European Community member States such as Belgium or the Netherlands, suggesting, as Böhning (1972) argued on the basis of Swiss data, that the forces driving migration directed to the European Community are more likely to be economic in nature than to stem from legal constructs. In addition, the flow data available indicate that the accession of Denmark, Ireland and the United Kingdom to the Community in 1973 did not have a strongly positive effect on migration inflows to traditionally receiving States.

There is, however, one important exception to the trends described above: the United Kingdom. Unfortunately, British data do not cover the whole period 1960-1988, being available only since 1975. Yet they clearly indicate that the inflow of Community citizens to the United Kingdom has been increasing. That trend contrasts sharply with the declining trends recorded by the original Community members and is consistent with other evidence, suggesting that an increasing number of Community nationals has moved to newly admitted member States (Penninx and Muus, 1989). Thus, although the data available do not permit, as yet, an evaluation of the effects that the free movement of Greek, Portuguese and Spanish nationals will have on intra-Community flows, it appears more likely that the reverse flows—those of Community citizens to Greece, Portugal and Spain—will be more important in relative terms than the further outflow of Greek, Portuguese or Spanish workers to other Community countries.

Given that the flow data available are limited to a small number of countries, they provide at best a partial view of intra-Community flows. A more complete picture can be obtained by considering stock data, though, again, coverage is imperfect and the reliability of the information available varies considerably from country to country. Table 1 presents the number of foreign residents in nine of the 12 Member States of the European Community plus Sweden and Switzerland at various points in time, classified according to whether they are Community nationals or not. Countries are ordered according to the size of their foreign population at about 1989. Whereas the information relative to most Western European countries is fairly reliable, that for Southern countries is likely to be less so, particularly for earlier periods. Indeed, having been mostly countries of emigration, Greece, Italy, Portugal and Spain had relatively weak legal and administrative systems to deal with immigration. During the 1980s, several of those countries have been at the receiving end of sizable flows of undocumented migrants (Commission of the European Communities, 1991b) which are generally not reflected in the statistics presented in table 1. Consequently, conclusions about their experience can only be tentative.

TABLE 1. FOREIGN RESIDENTS IN SELECTED EUROPEAN COUNTRIES, BY TYPE OF NATIONALITY, 1975-CA. 1989<sup>a</sup>

Year (approx.)	Federal Republic of Germany	France	United Kingdom	Belgium	Netherlands	Italy	Spain	Greece	Portugal	Sweden	Switzerland
<i>Thousands</i>											
Foreign residents, total	1975 4 127	3 442	..	..	316	..	165	..	..	410	1 065
	1980 4 453	3 680	1 682	879	520	211	183	70	109	422	893
	1985 4 379	3 462	1 700	898	559	..	242	98	80	389	932
	1989 4 489	..	1 736	869	624	407 <sup>b</sup>	335	155	94	456	1 007
<i>Index</i>											
Foreign residents, total	1975 100	100	..	..	100	..	100	..	..	100	100
	1980 108	107	100	100	165	100	111	100	100	103	84
	1985 106	101	101	102	177	..	147	140	73	95	88
	1989 109	..	103	99	197	193	203	221	86	111	95
<i>Thousands</i>											
Foreign residents from EC	1975 1 682	1 860	..	..	145	..	93	..	..	97	864
	1980 1 503	1 514	712	598	167	79	108	19	..	82	698
	1985 1 357	1 296	729	584	173	..	142	30	21	68	700
	1989 1 276	..	754	537	160	90	193	46	25	..	727
<i>Index</i>											
Foreign residents from EC	1975 100	100	..	..	100	..	100	..	..	100	100
	1980 89	81	100	100	115	100	116	100	..	85	81
	1985 81	70	102	98	119	..	153	158	100	70	81
	1989 76	..	106	90	110	114	208	242	119	..	84
<i>Thousands</i>											
Foreign residents, non-EC	1975 2 445	1 582	..	..	171	..	72	..	..	313	201
	1980 2 950	2 166	970	281	353	132	75	51	..	340	195
	1985 3 022	2 166	971	314	386	..	100	68	59	321	232
	1989 3 213	..	982	332	464	317	142	109	69	..	280

	Index										
Foreign residents, non-EC . . . . .	1975	100	100	100	100	100	100	100	100	100	100
	1980	121	137	100	100	206	100	104	100	109	97
	1985	124	137	100	112	226	139	133	100	103	115
	1989	131	..	101	118	271	240	197	214	117	139
EC/total foreign residents . . . . .	1975	0.69	1.18	..	..	0.85	..	1.29	..	0.31	4.30
	1980	0.51	0.70	0.73	2.13	0.47	0.60	1.44	0.37	..	3.58
	1985	0.45	0.60	0.75	1.86	0.45	..	1.42	0.44	0.36	3.02
	1989	0.40	..	0.77	1.62	0.34	0.28	1.36	0.42	0.36	2.60

Sources: United Nations (1989); OECD (1990); Eurostat, as cited in Heinz Werner, "Migration movements in the perspective of the single European market", paper presented to the International Conference on Migration, OECD, Rome, 13-15 March 1991.

<sup>a</sup> Greece, Portugal and Spain are included in European Community for each year.

<sup>b</sup> Italy's total foreign resident population includes 111,000 foreigners of unknown origin.



After the stoppage of labour migration that took place around 1974, the former labour-importing members of the Community, namely, Belgium, France, West Germany and the Netherlands, adopted policies aimed at stabilizing the size of the foreign population in their territories. Since those policies included family reunification, the foreign stock tended to increase at first (e.g. France and West Germany), but during the 1980s a certain stabilization was achieved in most of those countries (only the Netherlands registered a strong increase in the foreign population). The stabilization of total numbers, however, did not imply a stable composition: it generally involved a reduction of the number of Community nationals and a relatively strong increase of third-country nationals (see table 1). Declining numbers of Community nationals stemmed from the return flows registered among Greek, Italian, Portuguese and Spanish workers and from their greater tendency to become naturalized citizens of the host countries.

Among the traditionally receiving countries, the United Kingdom again constitutes an exception, being the only one to record during the 1980s a relative stability of the number of persons from third countries and a slight increase among those originating in the Community (see table 1). The numbers of Community nationals also appear to have increased slightly in Italy and Portugal and more markedly in Spain and Greece. Although the Southern European countries started with a very low base population of Community nationals from which it was easier to record increases, the clearly divergent trends they display with respect to the original members of the Community are worth stressing. It is also important to note that they have all registered very large increases in the foreign population originating in third countries, even without taking fully into account the sizable undocumented populations.

It is interesting to compare the trends in member States of the European Community with those in non-members like Sweden and Switzerland. In those two countries, the trend since 1975 has been for the number of Community nationals to decline while the population of third-country origin has increased. (The increases recorded by Sweden are somewhat dampened by the high naturalization rates of foreigners in that country.) This evidence, though indirect in nature, indicates that freedom of movement *per se* is not enough to fuel migration and that there are other structural forces working towards the reduction of migration flows originating in the Community. The case of Switzerland is of particular interest, since that country was one of the few to record a decline in its foreign population when labour migration was stopped and to encourage an increase later in response to labour shortages. Having traditionally relied on Community nationals for its supply of foreign labour, Switzerland resorted to them on a preferential basis. Yet the increase in the Community population in Switzerland during 1980-1989 was barely 30,000 persons, whereas that from third countries increased by some 85,000.

Several reasons have been cited for what is apparently the declining mobility of Community nationals, including the very fast decline in fertility experienced by the southern countries, which is leading to rapid population ageing and to a sharp reduction in the size of the cohorts that will soon enter the labour force. The increasingly attractive economic opportunities open to Com-

munity citizens in their own countries have also been mentioned, together with the constraints imposed by different social security systems and by differences in language and culture (Simon, 1991). Although important economic disparities between the member States of the European Community persist, the attractiveness of the northern countries seems to be declining.

It is instructive to consider trends in the foreign labour force employed in the northern member States—namely Belgium, France, Germany, the Netherlands and the United Kingdom. According to EUROSTAT data cited by Werner (1991), the number of foreign salaried workers in all five countries declined from over 5 million in 1975 to just under 4 million in 1987, a drop of some 23 per cent (see table 2). Among foreign workers who were Community nationals, however, the equivalent decline amounted to nearly 35 per cent, whereas foreign workers from third countries saw their numbers reduced by only 12 per cent. Consequently, the share of Community workers in the foreign labour force declined from 48 to 41 per cent.

The data regarding specific countries show that, although during 1975-1987 most of the northern member States experienced a decline in the number of salaried workers who were Community nationals, the relative importance of that decline varied considerably from country to country (see table 3). The (then) Federal Republic of Germany and France saw their number of employees from the European Community decline by 43 and 46 per cent, respectively. Given the relatively large size of their foreign workforces, such declines meant that during 1975-1987 France and the Federal Republic lost nearly 840,000 employees from the European Community. In contrast, the reduction in the foreign labour force of extra-Community origin was only on the order of 460,000 workers. Belgium experienced similar trends, though at a much lower scale, losing only 44,000 workers from the European Community over the period and barely 10,000 among those originating outside the Community. The United Kingdom, on the other hand, experienced at first an increase in its foreign work-force of Community origin, amounting to 59,000 extra workers during 1975-1980. However, during the 1980s, the number of European Community workers declined again so that by 1987 their number stood at about the same level as in 1975. Whether the fluctuations experienced

TABLE 2. FOREIGN WORKERS IN THE NORTHERN MEMBER STATES<sup>a</sup> OF THE EUROPEAN COMMUNITY, BY NATIONALITY, 1975-1987  
(Thousands)

	1975	1980 <sup>b</sup>	1985	1987
Foreign EC workers . . . . .	2 474	2 034	1 775	1 614
Foreign non-EC workers . . . . .	2 652	2 452	2 215	2 345
Total . . . . .	5 126	4 486	3 990	3 959
Percentage from the EC . . . . .	48	45	44	41

Source: Adapted from Heinz Werner, "Migration movements in the perspective of the single European market", paper presented to the International Conference on Migration, OEGD, Rome, 13-15 March 1991.

<sup>a</sup>Belgium, France, Federal Republic of Germany, Netherlands and United Kingdom.

<sup>b</sup>For France and the United Kingdom, the data refer to 1981.

TABLE 3. FOREIGN EMPLOYEES IN SELECTED EUROPEAN COUNTRIES, BY TYPE OF NATIONALITY, 1975-1989<sup>a</sup>

	Year (approx.)	Federal Republic of Germany	France	United Kingdom	Belgium	Netherlands
<i>Thousands</i>						
Foreign employees, total . . . . .	1975	2 091	1 900	791	230	113
	1980	2 041	1 208	833	213	190
	1985	1 555	1 260	821	187	166
	1987	1 557	1 131	917	177	176
<i>Index</i>						
Foreign employees, total . . . . .	1975	100	100	100	100	100
	1980	98	64	105	93	168
	1985	74	66	104	81	147
	1987	74	60	116	77	156
<i>Thousands</i>						
Foreign employees from EC . . . . .	1975	849	1 045	347	174	59
	1980	732	653	406	159	84
	1985	520	640	398	141	76
	1987	484	569	345	130	86
<i>Index</i>						
Foreign employees from EC . . . . .	1975	100	100	100	100	100
	1980	86	62	117	91	142
	1985	61	61	115	81	129
	1987	57	54	99	75	146
<i>Thousands</i>						
Foreign employees, non-EC . . . . .	1975	1 242	855	444	56	54
	1980	1 309	555	427	54	106
	1985	1 035	620	423	46	90
	1987	1 073	562	572	47	90
<i>Index</i>						
Foreign employees, non-EC . . . . .	1975	100	100	100	100	100
	1980	105	65	96	96	196
	1985	83	73	95	82	167
	1987	86	66	129	84	167
<i>Percentage</i>						
EC/total foreign employees . . . . .	1975	41	55	44	76	52
	1980	36	54	49	75	44
	1985	33	51	48	75	46
	1987	31	50	38	73	49

Source: Eurostat, as cited in Heinz Werner, "Migration movements in the perspective of the single European market", paper presented to the International Conference on Migration, OECD, Rome, 13-15 March 1991.

<sup>a</sup>Including Greece, Portugal and Spain.

in-between were strongly determined by the free movement provisions that Community membership entailed is hard to establish. Other factors, mostly of an economic nature, are more likely to be at the root of such trends. Such interpretation is validated, to a certain extent, by the fact that the Netherlands

also experienced an increase in its workforce of Community origin during 1975-1980, followed by the relative stabilization of both the European Community and the third-country components of its foreign labour force (see table 3). That is, the increase in the number of European Community workers in the United Kingdom during 1975-1980 was not an isolated event among Community member States, even among those who had been subject to the freedom of movement régime over a longer period than the United Kingdom had at the time.

Unfortunately, equivalent information on the foreign labour force present in the southern member States is not available. Fragmentary data show that, during the 1980s, the number of foreign workers of European Community origin in Greece, Italy, Spain and, to a lesser extent, Portugal increased. Towards the end of the 1980s, Italy had over 200,000 Community workers; Spain, around 150,000; Greece, about 100,000; and Portugal, 60,000 (Werner, 1991). In Italy and Spain, Community workers constituted nearly half of the total foreign labour force in a regular situation, whereas in Greece and Portugal they accounted for well over two thirds of the foreign labour force. Thus, compared to northern member States, European Community workers were relatively important in the expatriate labour forces present legally in Southern countries.

#### CONCLUSION

Given the sparsity and lack of consistency of the data available, it is not possible to assess in detail the effects that Community decisions with respect to freedom of movement may have had on migration. However, the evidence available does not suggest that those effects were large or that they helped to increase or maintain flows to the destinations that Community migrants had favoured before the freedom-of-movement provisions came into effect. As already suggested by other authors (e.g., Böhning, 1972, and Penninx and Muus, 1989), economic factors are likely to have played a more crucial role in determining migration flows both before and after free movement was established. Freedom of movement may have even encouraged return migration, since migrants faced with increasingly stringent economic conditions in the host countries may have been more likely to try their luck at home when they felt that they still had the option of migrating again.

Although it is still too early to assess the effects that freedom of movement will have for the mobility of Greek, Portuguese and Spanish citizens or those that the new provisions regarding the freedom of movement of students, retired workers and other Community nationals may have, it is likely that they will be minor in terms of overall flows. However, given the growing needs for skilled personnel which some countries are recognizing and the efforts made by the Community to improve the mutual recognition of diplomas, the mobility of Community nationals with needed skills is likely to increase. Short-term migration or even circulation will probably rise among skilled personnel since those types of mobility foster and are fostered by growing economic integration.

With respect to unskilled or semi-skilled workers, demand for them is low in most EC countries, and demographic factors are also reducing their supply within the Community. Hence, as Penninx and Muus (1989) concluded, future flows are likely to be small. In addition, given the lack of agreement reached so far regarding the treatment of third-country nationals, it is unlikely that they will be granted freedom of movement rights in the near future. Indeed, the Community is still faced with the problem of controlling further inflows of third-country nationals. Not only has the number of asylum seekers been increasing in recent years, but the few data available for the 1990s already indicate that a very important component of the migration flows converging on selected member States is composed of Eastern Europeans. Clearly, one of the major issues in the Community's agenda is its relations with Eastern and Central European countries as well as with the successor states of the Soviet Union. With the collapse of the Soviet Union, neutral countries such as Austria and Sweden have reconsidered the possibility of joining the Community and have formally applied for accession to it (Commission of the European Communities, 1992a, p. 308). Former communist countries have also expressed their intention to seek accession, and in December 1991 the Community signed association agreements with (the then) Czechoslovakia, Hungary and Poland (Commission of the European Communities, 1992a, pp. 302-304).

In 1992 plans to create as of 1 January 1993 a European Economic Area which would have included all the Member States of the European Community plus those of the European Free Trade Association (EFTA) appeared promising. The creation of a European Economic Area would have extended the free movement provisions of the Community to nationals of Austria, Finland, Iceland, Liechtenstein, Norway, Sweden and Switzerland. However, in December 1992, the Swiss people rejected by popular referendum their Government's plan to join the European Economic Area. Thus, the need to consider the expansion of free movement to a larger number of European countries became less imminent. If, even within the Community of 12, the negotiations leading to a "Europe without frontiers" could not be concluded by 1 January 1993, the need to reach agreement between an even larger number of States would only slow the process of integration still further. On the other hand, progress is slowly but surely being made. It has taken the Community more than 33 years to establish a "citizenship of the Union" and to grant "every citizen of the Union . . . the right to move and reside freely within the territory of the Member States . . ." (Europe Documents, 1992, article 8). The rapidity of the changes that have taken place in recent years within the Community's immediate sphere of influence suggest that the full implementation of that article may not have to wait until the next century. That would be progress indeed.

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NOTE

<sup>1</sup>Free movement between Luxembourg on the one hand and Portugal and Spain on the other will be granted only as of 1 January 1996 (OJEC, 1991a).

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# DO WOMEN FORGET THEIR BIRTHS? A STUDY OF MATERNITY HISTORIES IN A RURAL AREA OF SENEGAL (NIAKHAR)

*Michel Garenne\**

## SUMMARY

Five thousand and sixty-eight maternity histories were recorded among women aged 15-89 years in a rural area of Senegal. The quality of the estimates of fertility, child mortality and perinatal mortality was analysed for consistency. There was no evidence of any major underreporting of births, deaths or still births according to age, even among the oldest women. Estimates were compared with comparable values derived from a longitudinal demographic surveillance system (DSS) in the same area. The age patterns of cumulated fertility and mortality derived from the maternity histories were consistent with those of the DSS. Differences in the levels of fertility and mortality with respect to the longitudinal records could be explained by small differences within the selected villages, by selection biases and by recent trends in demographic parameters. Values of perinatal mortality were also equivalent to those recorded by the DSS. Women did not seem to forget their births to an extent large enough to produce strong biases, even at older ages. However, an analysis of differences by field workers revealed that some 2 per cent of the births and 4 per cent of the deaths may have been omitted, which gives an idea of the potential accuracy of maternity histories for the estimation of fertility and mortality levels.

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## INTRODUCTION

Birth histories have become increasingly popular for collecting demographic data in places where no reliable vital registration is available. Birth histories are easy to record, they can be done in a single-round survey, and they provide estimates of fertility levels and differentials. When the survival of ever-born children is recorded, the proportion of children already dead to women in a given age group can be converted into the probability of dying for those children—i.e., into the common life table functions  $q(1)$ ,  $q(2)$ ,  $q(3)$ ,

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*q*(5) etc. (Brass and Coale, 1968; United Nations, 1983). When information on the dates of birth and death of each child is recorded, direct estimates of child mortality can be made, by reconstructing period or cohort mortality from the retrospective data.

Although millions of births have been recorded this way over the past 30 years, not enough attention has been devoted to the quality of data obtained and to the various techniques of interviewing. In particular, it is often found that the average parity of women decreases at older ages, instead of staying constant, and that the proportion of children already dead to those women also decreases instead of increasing with maternal age. In other words, retrospective surveys tend to record fewer births and even fewer deaths than have, in fact, occurred. This is usually interpreted as a propensity for women to forget their earliest births, especially those which have ended in an early infant death (United Nations, 1971, p. 157; Selzer, 1973). This effect is so strong in some surveys that only the first few age groups of women are used for the estimates of fertility and mortality, usually from 20 to 35 years. Major recall errors were also found when retrospective data were compared to prospective data collected in multiround surveys (Vallin, 1976; Tabutin, 1981).

On the other hand, researchers working in the field often find that women remember quite clearly all the major events in their life, especially women living in societies with oral traditions where a good memory of events has great value and importance. Since a birth is a major event in a woman's life, it is unlikely that she will totally lose any trace of it in her memory. Hence, alternative explanations need to be proposed to explain the deficit in live births and deaths of children often found in demographic surveys. Survey techniques can be questioned as well as the relationship between the enumerator and the interviewed woman. Young interviewers who are recording birth histories may feel embarrassed asking older women detailed questions about childbirth, and older women may be reluctant to talk in detail about their reproductive lives to young interviewers the age of their children or even grandchildren. In traditional societies, age is often a major criterion for social status.

Several studies on the quality of birth histories have recently been published. Becker, Mahmud and Sarder (1982) and Becker and Mahmud (1984) compared birth histories recorded with a questionnaire similar in content to that of the World Fertility Survey (WFS) with registration data in Matlab, Bangladesh. They find that 2.3 per cent of the live births that occurred during the 16 years prior to the survey were missed when birth histories were recorded. They found little correlation between the quality of the reporting and the mother's education. They showed that the backward method—i.e., from the most recent to the oldest birth—performed better than the forward method—i.e., from the first birth to the last.

In their analysis of tape-recorded interviews, Thompson, Nawab Ali and Casterline (1982) reported difficulties with the recording of pregnancy histories and births, especially with the age of mother and date of birth of the child. They found that in 24 per cent of the cases, the question whether any pregnancy or birth had occurred after the last child reported was not asked, whereas that question was explicitly stated in the questionnaire. In an earlier study,

Potter (1977) discussed missing events in birth histories, although he did not provide quantitative evidence for it. He also recommended the use of the backward method.

The aim of this article is to analyse in detail one case of recording birth histories of women above the age of 15 years, including women aged 80 or more, among the Sereer, a traditional society living in the Sine, Senegal, in the administrative region of Fatick.

#### DATA AND METHOD

The Office de la recherche scientifique et technique d'outre-mer (ORSTOM), a French research institution, has maintained a demographic surveillance system (DSS) in eight villages of a rural area in Senegal since December 1962 (Cantrelle and Leridon, 1971; Garenne and Cantrelle, 1991). The study area was extended in 1983 to 22 new villages, for research on nutritional status and mortality among children 0-5 years. Prior to further investigations, a census was taken in the extension area, which recorded 17,562 new residents. In addition to the census, maternity histories were recorded for all women born before 1968—i.e., aged 15 years and above. The maternity histories had several purposes: to record the current parity for women and the birth order for resident children, to check whether the extension area had the same fertility and mortality levels and trends as the former area, and to investigate child mortality differentials by place of residence and various socio-economic variables.

The technique of interviewing women was made as simple as possible. On a sheet of paper especially designed for the purpose, enumerators were asked to record all live births to women; for each live birth, the name of the child, the sex and the current residence or survival were recorded on the same line. For children who died before the naming ceremony, which occurs on the seventh day after birth, special mention was made (No Name). Still births and abortions were also researched systematically and recorded in the same way.

There were nine enumerators for this survey, all men. They had at least four years of secondary schooling—one of them, seven years. Four of them had extensive training in doing this type of survey, having worked with ORSTOM for 9-16 years in the same study area. The other five were recruited for this particular survey. After the aims and methods of the survey had been explained, the training was mostly practical. First, each enumerator had to accompany one of the professional enumerators in the field for three consecutive days. They changed companion every half working-day so that each new enumerator had at least half a day's training with each professional enumerator. Then, over the next three days, they practiced the interviews under the supervision of one of the professional enumerators or the principal investigator. They began interviewing by themselves during the second week of the survey. The principal investigator spent at least one half working-day with each of the enumerators during the first week. All but one were of Sereer origin; most of them were born in the study area or had relatives there. This

was of particular importance, for the vocabulary of ethnic groups is very specific and can vary from village to village. The study area was very homogeneous in this respect (96 per cent of residents being Sereer), although two slightly different historical calendars had to be used, in the eastern and western parts of the study area, which are contiguous but belong to two different administrative units (Niakhar and Diarere).

The enumerators were instructed to record birth histories by the backward method—that is, starting with the latest birth, then the previous birth and so on, up to the first live-born child. However, if the women preferred to speak in the opposite order, enumerators were free to question them accordingly. One of the enumerators preferred to follow the forward method, especially with older women. After each report of a live birth, the enumerator had to ask whether there was a previous child and whether he or she was born alive. In addition, a systematic check was made as to whether the mother had had another pregnancy, abortion or still birth between the two events. At the end, when all the births were properly recorded, birth orders were computed by reminding the woman what she had just reported. In some cases, the sequence of births had to be changed when inconsistencies were found.

Age had to be estimated from the mother's report, since only a few people in the study area had birth certificates. Very often, the women were able to provide accurate information which enabled the enumerators to compute their ages. For example, a woman might tell the enumerator that she did not know her age but that she was first married at age 16, that she never divorced and that she had spent nine years with her husband in the current household. In other cases, the women were able to recount an historical event or to locate their age with respect to the age of somebody else. When a first estimate of age was made, it was checked for consistency with the birth history.

After many trials during the pilot study, the following instructions were given to the enumerators to estimate the age of women:

- (a) If she has a birth certificate, use it;
- (b) If she knows her age exactly, compute the date of birth;
- (c) If she knows an event that occurred in the year of her birth, use the historical calendar;
- (d) If she knows her age at first marriage and the number of years of marriage, compute her age and her date of birth;
- (e) If she knows only the number of years since her first marriage, use the average age at first marriage (18 years) and proceed as above;
- (f) If the date of birth of the first-born child is known (he or she was resident), estimate the age of mother at the time of first birth or use 19 years, then compute her date of birth;
- (g) If she is a high-parity woman and the date of birth of the last child is known (he was resident) and if the birth occurred more than five years ago, use 45 years as the age at last birth;
- (h) In desperate cases, use either the age of the husband or of somebody else in the family to estimate the date of birth.

Although this lengthy procedure may appear cumbersome, it worked efficiently. Enumerators used mainly the "duration of marriage" procedure. It seemed to be the most appropriate for this particular society. This is also what was found in Bangladesh (Thompson, Nawab Ali and Casterline, 1982). Furthermore, the search on age started an exchange between the enumerator and the woman, which seems to have been important for the subsequent search for births and deaths.

All the questionnaires were checked just after the survey by the principal investigator, usually on the same day. All inconsistencies were sent back to the field, usually at the end of the week. Most of them were corrected by re-interviewing the woman. They usually related to age of the mother, but some also related to missing births or deaths, quite obviously from holes in the maternity history. Questionnaires were sent back if births were reported for a mother younger than 15 or older than 49 years or if intervals of greater than four years were reported between births. In some cases long intervals between births proved to be real and were attributed to temporary sterility. Further checking was performed with a computer after the coding was finished. Some questionnaires were sent back again at that time, weeks after the end of the survey. The last inconsistencies in age were arbitrarily corrected, using the rule that no birth could have occurred outside the interval of 15-49 years of age.

## RESULTS

Altogether, 5,068 birth histories were recorded, after 80 cases of "no answer" or "double counting" (women who were enumerated in two different households) were eliminated.

### *Fertility*

Sereer women still have a natural fertility, with a mean parity of 7.4 children ever born to women aged 15-49 (table 1, fig. I). The pattern of increasing parity with age up to age 50, then constant above age 50, appeared consistent with the expected pattern. In particular, there was no evidence of declining parity with age, even among women aged 80 or more. A precise comparison of the cohort parity was made with the cumulated period fertility expected from age-specific fertility rates recorded in the demographic surveillance system in the eight villages from 1963 to 1982. There was no evidence that parity recorded in the maternity histories was underestimated, even above age 50 when random fluctuations were taken into account. The average parity of women above age 50 was 7.33 children ever born, which was 3 per cent higher than the expected value of 7.11 of the period total fertility rate (TFR) in the DSS. The difference between the two estimates was even significant at the  $P=0.007$  level. The fact that the average parity was slightly higher than the TFR can be attributed to selection biases: women who survive and stay in the study area may be slightly more fertile than the average resident population. Sterile women may be more likely to out-migrate and women with poor health status more likely to die and have lower fertility at the same time. There was

TABLE 1. COMPARISON OF MEAN PARITY BY AGE OF MOTHER FROM MATERNITY HISTORIES RECORDED IN THE EXTENSION AREA (TOUCAR-DIOHINE, 1983) WITH CUMULATED FERTILITY FROM THE DEMOGRAPHIC SURVEILLANCE SYSTEM (NGAYOKHEME, 1963-1982)

Age of mother (years)	Maternity histories (1983)				DSS (1963-1982)	Ratio parity/ cumulated fertility
	Number of women	Children ever born	Mean parity	Standard error	Mean cumulated fertility	
15-19 ..	721	216	0.30	0.021	0.48	0.63
20-24 ..	760	1 322	1.74	0.045	1.68	1.04
25-29 ..	649	2 138	3.29	0.060	3.23	1.02
30-34 ..	430	2 202	5.12	0.091	4.72	1.09
35-39 ..	379	2 451	6.47	0.119	5.91	1.09
40-44 ..	394	2 854	7.24	0.141	6.65	1.09
45-49 ..	354	2 629	7.43	0.166	6.99	1.06
50-54 ..	343	2 538	7.40	0.183	7.11	1.04
55-59 ..	285	2 194	7.70	0.169	7.11	1.08
60-64 ..	223	1 602	7.18	0.201	7.11	1.01
65-69 ..	182	1 289	7.08	0.244	7.11	1.00
70-74 ..	145	1 038	7.16	0.246	7.11	1.01
75-79 ..	112	775	6.92	0.266	7.11	0.97
80+ ...	91	688	7.56	0.361	7.11	1.06
TOTAL	5 068	23 936	4.72	0.050	4.52	1.05

virtually no difference in fertility between women of 15 and 30 years, ages at which selection biases were likely to be negligible. Differences above age 30 were small (3.5 per cent), and in any case there was no evidence of any important underestimation of live births, whatever the age of the mother. This indicates that Sereer women do not forget their live births to a significant extent and that, when properly conducted, birth histories can lead to valuable estimates of fertility, even for older women.

### Mortality

Mortality was high among the offspring of these women: at age 45-49, women had lost 43.1 per cent of their live-born children (table 2, fig. II). The average proportion of children dead to women in given age groups had an expected pattern of increasing values with age, with a plateau between ages 35 and 55, which corresponds to the low mortality between ages 10 and 29 for children and a new rise after age 60. The curve determined by the proportion of children dead was compared to the  $q(x)$  functions of the period life table derived from the demographic surveillance system, in the eight villages from 1963 to 1981. The  $q(x)$  function was properly interpolated to match the exact age ( $\hat{a}$ ) at which the proportion of children dead ( $D_i$ ) corresponds to the equivalent value in the life table:  $q(\hat{a})$ . Computations were done by applying the standard formulae of the Brass method to the observed age-specific fertility and mortality rates in the DSS. Here again, the pattern of the proportion dead followed the pattern of the life-table function. This indicates that older women did not have a propensity to forget deaths to a large extent, and even women above age 80 reported a number of deaths among their children ever born close to the expected value.

Figure 1. Comparison of mean parity with expected cumulated fertility  
(Niahar, 1983)

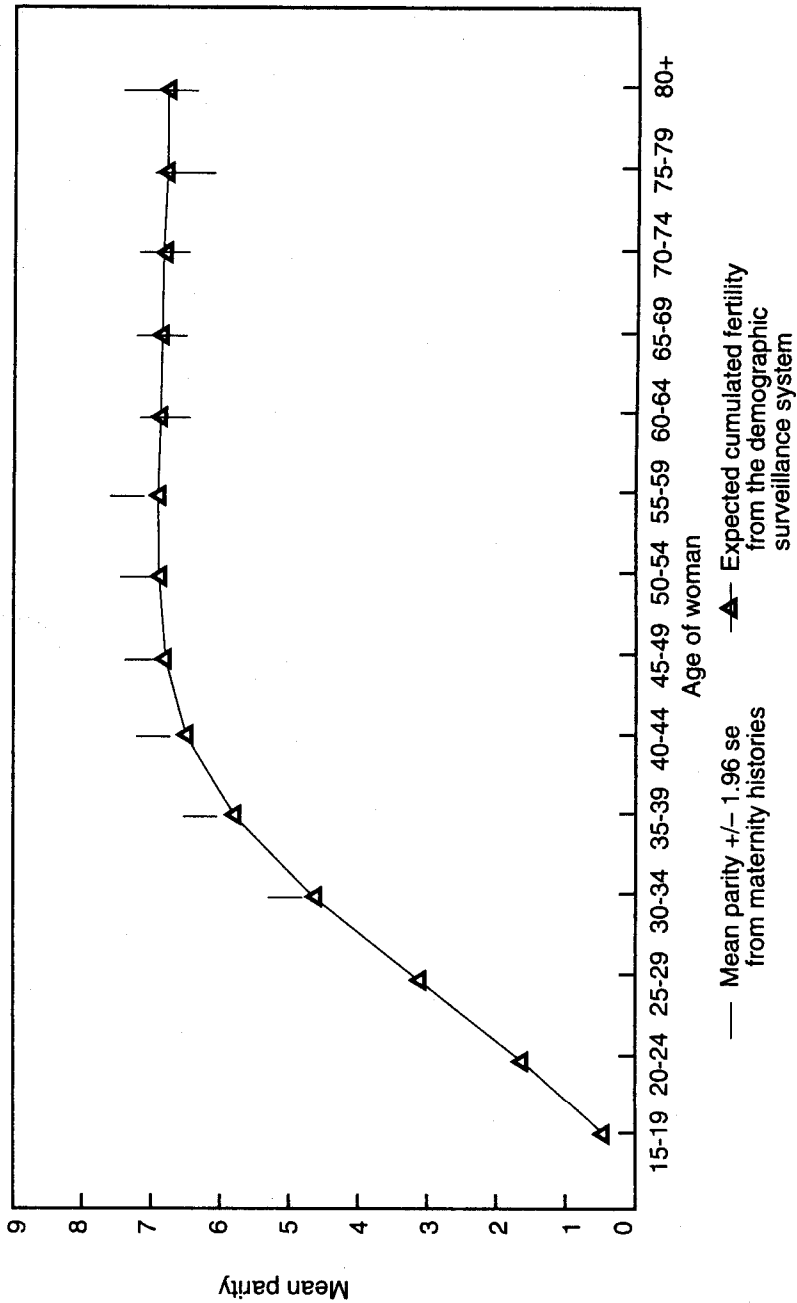


TABLE 2. COMPARISON OF MEAN PROPORTION OF CHILDREN DEAD BY AGE OF MOTHER FROM MATERNITY HISTORIES RECORDED IN EXTENSION AREA (TOUCAR-DIOHINE, 1983) WITH CUMULATED MORTALITY FROM THE DEMOGRAPHIC SURVEILLANCE SYSTEM (NGAYOKHEME, 1963-1982)

Age of mother (years)	Maternity histories (1983)				DSS (1963-1982)		Ratio proportion dead/ cumulated probability of death
	Number of children	Number who died	Proportion dead/1,000	Standard error	Cumulated probability of death	Age to apply	
15-19 ..	216	32	148	24.2	203	1.2	0.73
20-24 ..	1 322	340	257	12.0	309	2.2	0.83
25-29 ..	2 138	612	286	9.8	370	3.1	0.77
30-34 ..	2 202	783	356	10.2	404	4.0	0.88
35-39 ..	2 451	941	384	9.8	431	5.8	0.89
40-44 ..	2 854	1 179	413	9.2	454	9.6	0.91
45-49 ..	2 629	1 134	431	9.7	477	18.0	0.90
50-54 ..	2 538	1 129	445	9.9	497	24.2	0.90
55-59 ..	2 194	1 000	456	10.6	514	29.1	0.89
60-64 ..	1 602	745	465	12.5	533	34.1	0.87
65-69 ..	1 289	699	542	13.9	554	38.7	0.98
70-74 ..	1 038	505	487	15.5	576	43.9	0.84
75-79 ..	775	413	533	17.9	601	49.7	0.89
80+ ...	688	397	577	18.8	649	57.3	0.89
TOTAL	23 936	9 909	414	3.2	468		0.88

The mean value of the proportions dead in the maternity histories was consistently lower than the expected value of the life table. There can be many reasons for this difference. First, data collected later revealed that there was a small difference in mortality between the former area and the extension area. The mortality of the eight villages was 3 per cent higher than the mortality of the 22 villages between 1983 and 1989 (difference not significant). Secondly and more important, there was evidence of consistent and marked mortality decline during the 1963-1982 period in the eight villages of Ngayokheme (Garenne and Cantrelle, 1991). In this context where child mortality has been reduced by more than one third, with most of the decline concentrated in the 10 years prior to 1983, accurate comparisons between period and cohort mortality are extremely difficult. Thirdly, there may also be selection biases operating: mothers who were at higher risk of mortality were more likely to have lost their children and less likely to be resident in 1983. Therefore, the 1983 sample may have induced a selection of lower-risk women. In any case, there was no evidence of any major differential underestimation with the age of the mother, and here lies the important point. Above age 30, the ratio of observed to expected values remained consistently around 0.90—that is, a 10-per-cent lower mortality in maternity histories in comparison with the 1963-1982 life table.

Another control for evaluating to what extent women properly reported early deaths was performed by computing the proportion of births that have ended in a death prior to the naming ceremony. This ratio is equivalent to the "early neonatal mortality rate"—i.e., the probability of dying between 0 and 1 week. Results are shown in table 3. Here again, despite random fluctuations,

Figure II. Comparison of mean proportion dead with life-table values  
(Niakhar, 1983)

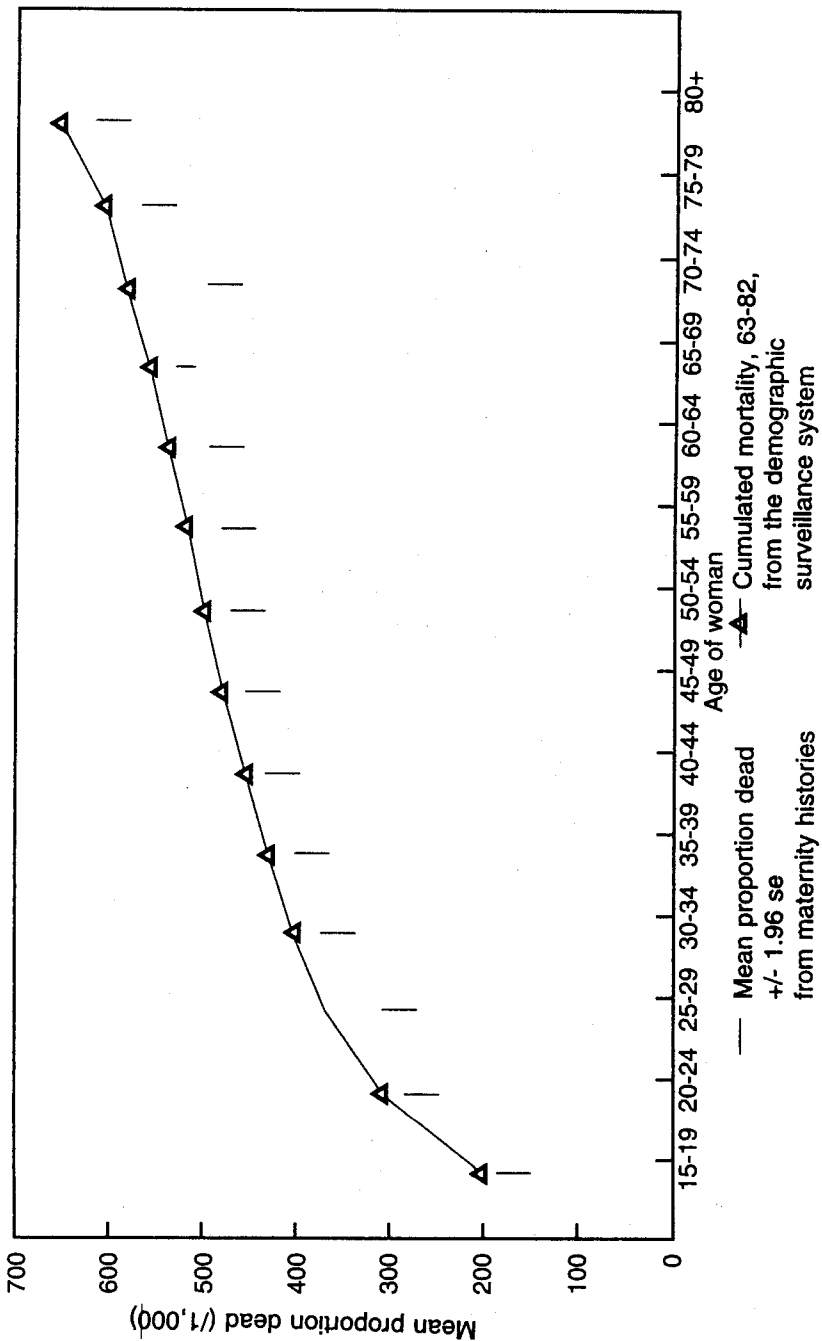




TABLE 3. MEAN PROPORTION OF EARLY NEONATAL DEATHS AND OF STILL BIRTHS BY AGE OF MOTHER, FROM MATERNITY HISTORIES RECORDED IN EXTENSION AREA (TOUCAR-DIOHINE, 1983)

Age of mother (years)	Number of children ever born	Number who died before naming	Proportion early neonatal/ 1,000	Standard error	Number of still births	Proportion still births/ 1,000	Standard error
15-19 ..	216	6	28	11.2	15	69	17.3
20-24 ..	1 322	45	34	5.0	78	59	6.5
25-29 ..	2 136	59	28	3.5	94	44	4.4
30-34 ..	2 202	73	33	3.8	90	41	4.2
35-39 ..	2 451	82	33	3.6	107	44	4.1
40-44 ..	2 854	89	31	3.3	111	39	3.6
45-49 ..	2 629	84	32	3.4	119	45	4.1
50-54 ..	2 538	87	34	3.6	112	44	4.1
55-59 ..	2 194	75	34	3.9	91	41	4.3
60-64 ..	1 602	40	25	3.9	59	37	4.7
65-69 ..	1 289	42	33	4.9	52	40	5.5
70-74 ..	1 038	26	25	4.9	36	35	5.7
75-79 ..	775	27	35	6.6	36	46	7.6
80+ ...	688	36	52	8.5	29	42	7.7
TOTAL	23 934	771	32.2	1.1	1 029	43.0	1.3

there was no evidence that older women reported fewer early neonatal deaths than younger women. The rate was 31.3/1,000 among women less than 45 years old and 32.8 among women above age 45, the difference being not statistically significant at the 0.05 level. Similarly, the still-birth rate, defined as the number of reported still births per live birth, was as high among older women as it was among younger ones (43.0/1,000). The level of perinatal mortality was also consistent with that reported by the demographic surveillance system: during the 1983-1989 period, early neonatal mortality was estimated to be 31.9/1,000, which is virtually identical to the 32.2/1,000 found in the maternity histories. Comparison of the still-birth rates was more difficult, since there was no attempt to record the duration of pregnancy in the maternity histories. However, the reported value of 43.0/1,000 was again consistent with the estimate of 43.2/1,000 for still births of the third trimester recorded in the 30 villages over the 1983-1989 period.

This indicates that valuable estimates of mortality levels can be obtained from women of all ages in traditional societies. In the present study, older women did not seem to forget births or deaths to a larger extent than did younger ones.

## DISCUSSION

Data collected in tropical Africa are known to be "imperfect". There is much evidence that birth histories recorded in Niakhar also show some of the defects common to most demographic data. At the individual level, checking conducted after the end of the survey or for other purposes has revealed that some births or deaths were missing in certain birth histories. For instance,

TABLE 4. AGE-STANDARDIZED PROPORTION OF CHILDREN DEAD, BY ENUMERATOR, FROM MATERNITY HISTORIES RECORDED IN THE EXTENSION AREA (TOUCAR-DIOHINE, 1983)

Enumerator number	Number of births	Age-standardized proportion dead	Standard deviation	Ratio enumerator (1 + 2 + 3)
1 . . . . .	3 982	0.444	0.008	1.03
2 . . . . .	4 254	0.424	0.008	0.98
3 . . . . .	1 989	0.421	0.011	0.98
4 . . . . .	2 963	0.405	0.009	0.94 <sup>a</sup>
5 . . . . .	2 030	0.400	0.011	0.93 <sup>a</sup>
6 . . . . .	2 926	0.399	0.009	0.93 <sup>a</sup>
7 . . . . .	3 175	0.397	0.009	0.92 <sup>a</sup>
8 . . . . .	917	0.392	0.016	0.91 <sup>a</sup>
9 . . . . .	1 700	0.390	0.012	0.90 <sup>a</sup>
TOTAL	23 936	0.414	0.003	0.96 <sup>a</sup>

<sup>a</sup>P < 0.05

in the case of a woman registered in two different compounds during the first census (she had moved between the time of the survey in the first village and the time of the survey in the second village), a difference of one birth between the two recorded birth histories was noticed. However, individual discrepancies did not seem to affect the estimates of fertility at the aggregate level.

Another way to investigate possible misreporting in birth histories is to compare the results by enumerator. For each of the nine enumerators, an age-standardized proportion of children dead was computed by taking the mean age distribution of women. The age-standardized proportion of children dead varied significantly by enumerator (table 4); for example, enumerator number 9 recorded on the average 11 per cent fewer deaths than the three best enumerators (numbers 1, 2, 3). Although differences were small and despite the high consistency in the data, this result suggests that probably 4 per cent of deaths and 2 per cent of the corresponding live births were missing. But at an aggregate level, this can be considered as an acceptable degree of accuracy for demographic data, even in developed countries.

It is difficult to evaluate the reasons behind the differences in the enumerators' reports. Differences were not closely associated with individual cleverness, although a small correlation existed. What seemed to be more important was the relationship between the enumerator and the interviewed woman. Number 1 was, by far, the most polite enumerator of the team, the most careful and respectful when talking with older women, the one who made the greatest effort to explain why the survey was important and why women should do their best to report births and deaths correctly. On the other hand, number 9 was the least at ease with adults and was the youngest on the team.

A major determinant of the quality of the data seems to be the relationship between the enumerator and the interviewee. The fact that the enumerators were male rather than female did not seem to be a handicap in the Sereer society. However, this situation may be peculiar to West Africa, where relationships between the sexes are rather open.

The quality of the recording of birth histories is of particular importance in evaluating the levels and trends of mortality in children in developing countries. Birth histories have been used recently for evaluating child survival interventions (Becker, Diop and Thornton, forthcoming). Research to improve the quality of birth histories in developing countries is a worthwhile pursuit. The selection of enumerators, their training in interviewing techniques, systematic checking of their work, and a formal post-enumeration survey could be done more systematically in the future.

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## RECENT TRENDS IN CONTRACEPTIVE USE\*

*Mary Beth Weinberger\*\**

### SUMMARY

Rising use of contraception is indisputably the main proximate determinant of the ongoing fertility decline in developing countries. Between 1960-1965 and 1985-1990, the United Nations estimates that the total fertility rate in less developed regions declined by 35 per cent, from 6.1 births per woman to 3.9. During that period, as indicated by recent surveys, whose dates center on 1987/1988, contraceptive prevalence—the percentage currently using contraception among couples with the woman of child-bearing age—grew from a level that was probably under 10 per cent before 1965 to 48 per cent. Modern contraceptive methods—principally surgical sterilization, oral pills and intra-uterine devices (IUDs)—accounted for most of that increase.

This article reviews trends in contraceptive prevalence and methods used in developing countries. It also briefly examines trends in contraceptive use for education and rural/urban subgroups of the population, drawing on information for 15 of the countries that participated in both the World Fertility Survey (WFS) and the Demographic and Health Surveys (DHS). In general, contraceptive prevalence has increased substantially within both rural and urban areas and among women with all levels of educational attainment. Rural/urban and education differentials in contraceptive prevalence narrowed in a few countries and widened in others, but on average the differentials did not change much over the roughly 10-year period between the surveys. The difference in use levels between highly educated women and those with no schooling averages nearly 30 percentage points.

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Today we have a reasonably good idea of the global level of contraceptive use, the relative importance of specific contraceptive methods in different parts of the world and recent trends. In preparing this review, it was possible to draw upon one or more national survey measurements of contraceptive prevalence for 105 countries containing over 85 per cent of the world's population.

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In 60 countries, including 47 developing countries, it is possible to examine trends between two or more surveys.

Population-based surveys such as the WFS and the DHS are virtually the sole source of this information. The development of demographic survey methods made it feasible to study national patterns of contraceptive practice for a large number of countries. At the same time, the increasing official commitment to family planning programmes in developing countries has helped to stimulate the demand for surveys to measure changes in contraceptive practice and detect other demographic trends. As a result, contraceptive prevalence may be the only variable of major demographic importance that is better measured for developing than for developed countries. As of this writing, at least one survey measure of contraceptive prevalence is available for countries containing 90 per cent of the population of the less developed regions, as compared to 70 per cent of the more developed regions. The information tends to be more recent for developing countries, too; the average (population-weighted) date of the most recent survey in developing countries was late 1987, compared to 1985 for the developed countries.

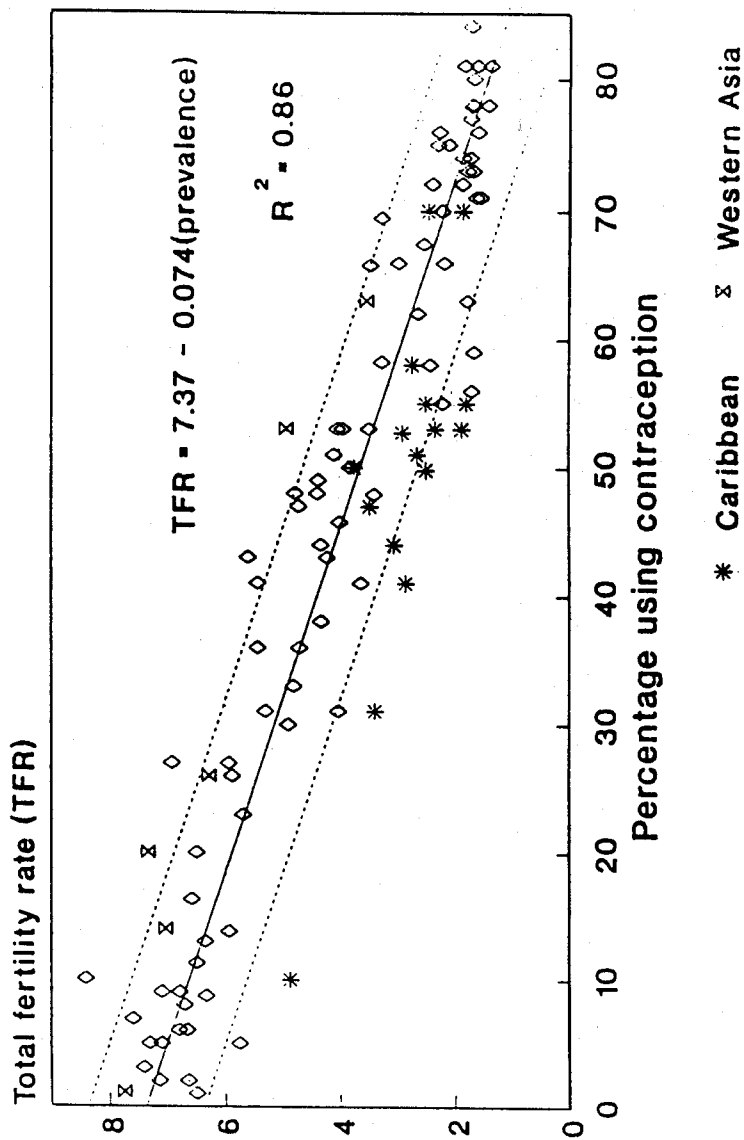
This article first presents an overview of contraceptive prevalence and methods used in the major regions of the world. Next is a discussion of recent trends in the level of contraceptive use and trends in use of the predominant contraceptive methods in developing countries. Finally, data for 15 of the countries that participated in both the WFS and the DHS programmes are used to examine trends in contraceptive prevalence within rural and urban sub-groups of the population, and for women classified by educational attainment.

#### GLOBAL OVERVIEW OF LEVELS AND TRENDS IN CONTRACEPTIVE USE

Rising use of contraception is indisputably the main proximate determinant of the ongoing fertility decline in developing countries. Between 1960-1965 and 1985-1990, the United Nations estimates that the total fertility rate in less developed regions declined by 35 per cent, from 6.1 births per woman to 3.9. During that period contraceptive prevalence—the percentage currently using contraception among couples with the woman of child-bearing age—grew from a level that was probably under 10 per cent before 1965 to 48 per cent, as indicated by recent surveys. Given recent trends, contraceptive prevalence in developing countries probably exceeded 50 per cent by 1990 or 1991.

The level of fertility is strongly related to contraceptive prevalence (fig. I)—remarkably so, considering that the level of contraceptive use is only one of several major proximate determinants of fertility levels.<sup>1</sup> Approximately 80 per cent of countries have total fertility rates (TFR) within 1 child of the regression line relating contraceptive prevalence to the total fertility rate. (The dotted lines in fig. I show the 1-child range on either side of the regression line.) At the same time, figure I also shows that some countries have considerably higher or lower fertility than other countries with similar prevalence levels. Though measurement error is probably involved in some cases, the deviations

Figure 1. Total fertility rate by contraceptive prevalence in 104 countries



show a degree of regional patterning which suggests cultural influences on other proximate determinants such as marriage patterns and breast-feeding. Notably, most Caribbean countries have lower fertility than expected from their levels of contraceptive prevalence, a phenomenon that is probably related to marriage patterns that include a high proportion of relatively unstable informal unions, including "visiting" unions, and a relatively high proportion of women who are not currently in a union.<sup>2</sup> Conversely, most Western Asian countries have higher fertility than expected. Those societies tend to have rather early marriage and relatively short periods of breast-feeding, which favours high marital fertility. However, although the other proximate fertility determinants are plainly important, no country has approached replacement-level fertility without reaching a level of contraceptive prevalence of at least 50 per cent, and no country with contraceptive prevalence under 10 per cent has a TFR lower than 5.5 children per woman.

Estimates of contraceptive prevalence by method are presented for the world and regional groups in table 1, based on the most recent survey data available.<sup>3</sup> Fifty-three per cent of the world's couples are estimated to be using contraception. The main methods are surgical sterilization, employed by 20 per cent of couples (16 per cent female sterilization and 4 per cent male); intra-uterine devices (IUDs), employed by 11 per cent of couples; and oral pills, 7 per cent of couples. Condoms, rhythm and withdrawal are each employed by 4-5 per cent of the world's couples, while the remaining methods have considerably fewer users. Although the more developed regions have a much higher level of contraceptive use overall, for some contraceptive methods the level of use is higher in the less developed regions. These methods include female sterilization (18 per cent of couples in less developed regions as compared to 8 per cent in the more developed), IUDs (12 per cent as compared to 6 per cent) and male sterilization (5 per cent as compared to 4 per cent).<sup>4</sup>

Africa is the only major region where the level of use remains low in a majority of the countries. The average level of use is estimated to be a moderate 31 per cent in northern Africa, but only 13 per cent in sub-Saharan Africa. Of 22 sub-Saharan countries with data available, 10 per cent of couples or less are using some type of contraception in over half of the countries, and in over two thirds of countries, under 5 per cent of couples are using the relatively effective clinic and supply methods (see table 2). However, most of the countries in the southern portion of the continent have achieved moderate prevalence levels; in Botswana, Namibia, South Africa, Swaziland and Zimbabwe, prevalence ranges from 20 to 48 per cent, and in all the latter cases the relatively effective clinic and supply methods account for over 80 per cent of contraceptive practice.

In the less developed regions, East Asia has by far the highest level of use, 72 per cent, which is essentially the same as the average prevalence in the more developed regions. Although the figures for East Asia are dominated by the population of China, the other East Asian countries for which data are available also have high levels of use: 81 per cent in Hong Kong and 77 per cent in the Republic of Korea. In the rest of Asia the average prevalence is 40 per cent, ranging from levels below 10 per cent recorded in Afghanistan,

Pakistan and Yemen to prevalence levels between 60 and 75 per cent in Singapore, Thailand, Sri Lanka and Turkey.

In Latin America the average prevalence is estimated to be 57 per cent. Most countries of that region have reached at least a moderate level of contraceptive use. Haiti, Guatemala and Nicaragua are the only countries where prevalence is below 30 per cent at the most recent survey. Prevalence is in the range of 60-70 per cent in Brazil, Colombia, Costa Rica, Cuba, Panama and Puerto Rico.

The relative contribution of specific types of contraception also varies considerably by region (table 1, section B). As noted earlier, female sterilization is the most important single method for the world as a whole, accounting for around 30 per cent of total contraceptive use, and 37 per cent of use in the developing countries. This method is especially important in Asia and Latin America, but it also makes up more than 10 per cent of total use in sub-Saharan Africa, a region noted for the high value traditionally placed on fecundity and large families. Male sterilization is estimated to account for around 10 per cent of all contraceptive use in Asia, but this method is hardly used in most countries of Africa and Latin America.

The oral pill is an important method in most countries, and it accounts for 20 per cent of contraceptive practice in the more developed regions, 28 per cent in Latin America and sub-Saharan Africa, and 50 per cent in northern Africa. The pill is, however, a minor method in the two largest countries, China and India, which considerably depresses the contribution of this method to prevalence in Asia as a whole.

Although injectable hormonal contraception accounts for only two per cent of contraceptive practice for developing countries as a whole, this is a relatively important method in much of sub-Saharan Africa where it accounts for an average of 16 per cent of reported contraceptive practice. The IUD accounts for one fifth of contraceptive use worldwide. A sizeable majority of the world's users of IUDs live in China, where, despite a recent trend away from IUDs and towards sterilization, IUDs still account for around 40 per cent of contraceptive practice. However, IUDs also contribute a substantial proportion of use in other less developed regions. In Latin America and sub-Saharan Africa, 10-11 per cent of contraceptive users employ IUDs, and do 25 per cent of users in northern Africa.

Condoms are much more widely employed in developed than in developing countries, with a prevalence among couples of 13 per cent and 3 per cent, respectively. In most of the less developed regions shown in table 1, condoms account for 3-4 per cent of contraceptive practice. They account for 9 per cent in Asia, excluding East Asia. In sub-Saharan Africa, less than 7 per cent of couples are currently using condoms within marriage. Condom use has recently been heavily promoted in Africa and elsewhere for health reasons, especially to decrease transmission of the human immunodeficiency virus (HIV). Although the available surveys indicate a very limited use of condoms in Africa, it should be borne in mind, first, that some of the surveys took place before publicity about AIDS was widespread and, secondly, that questions asked in the DHS and similar surveys are not designed to measure use of



TABLE 1. AVERAGE PREVALENCE OF SPECIFIC CONTRACEPTIVE METHODS, BY REGION  
(Based on most recent available survey data: average date, 1987)

Region	All methods (1)	Sterilization		Modern methods <sup>a</sup> (2)	Contraceptive methods						Other methods (12)	
		Female (3)	Male (4)		Pill (5)	Injectable (6)	IUD (7)	Condom (8)	Vaginal barrier methods (9)	Rhythm (10)		Withdrawal (11)
A. Percentage of couples with the wife in the reproductive ages												
World	53	16	4	44	7	1	11	5	1	4	4	1
More developed regions <sup>b</sup>	71	8	4	47	14	—	6	13	2	9	13	2
Less developed regions	48	18	5	44	5	1	12	3	0.3	2	1	1
China	72	28	8	71	3	0.2	30	2	0.3	0.5	—	0.3
Other countries	38	14	3	32	6	1	4	3	0.3	3	2	1
Africa	17	1	—	13	7	1	3	1	0.2	2	1	1
Northern Africa	31	2	—	27	16	0.3	8	1	0.3	2	2	1
Sub-Saharan Africa	13	1	—	9	4	2	1	0.5	0.2	2	1	1
Asia and Oceania <sup>c</sup>	53	21	6	49	3	0.2	14	3	0.3	2	1	1
East Asia <sup>c</sup>	72	28	8	71	3	0.2	29	2	0.4	1	0.2	0.3
Other countries	40	16	5	34	4	1	4	4	0.3	2	2	2
Latin America	57	20	1	47	16	1	6	2	1	5	3	1
B. Percentage of contraceptive users												
World	100	29	8	83	14	2	20	9	1	7	8	2
More developed regions <sup>b</sup>	100	11	6	66	20	—	8	18	3	13	19	2
Less developed regions	100	37	9	91	11	2	25	5	1	4	3	2
China	100	38	11	99	5	0.3	41	3	0.4	1	—	0.4
Other countries	100	36	8	84	16	4	12	8	1	7	5	4
Africa	100	9	—	79	40	8	18	4	1	9	5	6
Northern Africa	100	6	—	88	51	1	25	4	1	5	5	2
Sub-Saharan Africa	100	11	—	70	28	16	10	4	1	13	6	11
Asia and Oceania <sup>c</sup>	100	39	11	92	7	2	27	6	1	3	2	2
East Asia <sup>c</sup>	100	39	11	98	5	0.3	40	3	1	1	0.2	0.4

Other countries .....	100	85	39	11	11	4	11	9	1	6	5	4
Latin America .....	100	84	36	1	28	2	11	4	1	9	6	2

Source: *World Contraceptive-use Data Diskettes, 1991: User's Manual (ST/ESA/SER. R/120)*, and data files maintained by the Population Division, Department for Economic and Social Information and Policy Analysis of the United Nations Secretariat.

NOTE: These estimates reflect assumptions about contraceptive use in countries with no data.

<sup>a</sup> Includes methods in columns (3) through (9).

<sup>b</sup> Australia, New Zealand, Europe, North America and Japan.

<sup>c</sup> Excluding Japan.

condoms to prevent the spread of sexually transmitted diseases. Special surveys enquiring about condom use in all sexual relationships are needed for that purpose.

The genuinely traditional European method of contraception—withdrawal (*coitus interruptus*)—remains important in parts of eastern and southern Europe, although in many places it is being rapidly displaced by modern methods. Withdrawal does not appear to be a well-established, genuinely traditional method in most developing countries, apart from a few cases, including Turkey (where the European influence is plain) and Sri Lanka. In most developing countries periodic abstinence (mostly calendar rhythm) is more widely practised than withdrawal. Together rhythm and withdrawal account for under 10 per cent of contraceptive use in the less developed regions, but they contribute 15-20 per cent of total contraceptive practice in Latin America and in sub-Saharan Africa. The “other methods” category (table 1, column 12) includes abstinence other than periodic abstinence, douching for contraceptive reasons and folk methods.<sup>5</sup> It sometimes also includes methods that were used in combination or that were not reported separately. This is a minor category overall. However, in sub-Saharan Africa “other methods,” chiefly abstinence, make up over 10 per cent of use.

TABLE 2. PERCENTAGE OF MARRIED WOMEN OF REPRODUCTIVE AGE CURRENTLY USING CONTRACEPTION  
(Most recent available survey)

Region and country	Date	Age range	Percentage using	
			Any method	Clinic or supply method <sup>a</sup>
<i>A. Less developed regions</i>				
<b>Africa</b>				
<b>Eastern Africa</b>				
Burundi	1987	15-49	9	1
Kenya	1988/89	15-49	27	18
Malawi	1984	All 15-49	7	1
Mauritius	1985	15-49	75	46
Rwanda	1983	15-49	10	1
Uganda	1988/89	15-49	5	3
Zimbabwe	1988	15-49	43	36
<b>Middle Africa</b>				
Cameroon	1978	15-49	2	1
<b>Northern Africa</b>				
Algeria	1986/87	15-49	36	31
Egypt	1988/89	15-49	38	35
Morocco	1987	15-49	36	22
Sudan (North)	1989/90	15-49	9 <sup>c</sup>	6 <sup>c</sup>
Tunisia	1988	15-49	50	40
<b>Southern Africa</b>				
Botswana	1988	15-49	33	32
Lesotho	1977	15-49	5	2
Namibia	1989	EM 15-49 <sup>d</sup>	26 <sup>c</sup>	26 <sup>c</sup>
South Africa	1981	15-49	48	45
Swaziland	1988	15-49 <sup>e</sup>	20	17

TABLE 2 (continued)

Region and country	Date	Age range	Percentage using	
			Any method	Clinic or supply method <sup>a</sup>
<b>Western Africa</b>				
Benin	1981/82	15-49	9 <sup>f</sup>	0.5 <sup>f</sup>
Côte d'Ivoire	1980/81	15-49	3	0.5
Ghana	1988	15-49	13	5
Liberia	1986	15-49	6	5
Mali	1987	15-49	5	1
Mauritania	1981	15-49 <sup>8</sup>	1	0.3
Nigeria	1990	15-49	6	4
Senegal	1986	15-49	11	2
Togo	1988	15-49	16 <sup>f</sup>	3 <sup>f</sup>
<b>Asia</b>				
<b>Eastern Asia</b>				
China	1988	15-49	72	71
Hong Kong	1987	15-49	81	74
Republic of Korea	1988	15-49	77	70
<b>Southeastern Asia</b>				
Indonesia	1987/88	15-49	48	44
Malaysia <sup>b</sup>	1984	15-49	51	29
Philippines	1986	15-49	44	21
Singapore	1982	15-49	74	59
Thailand	1987	15-49	68	65
Viet Nam	1988	15-49	53	35
<b>Southern Asia</b>				
Afghanistan	1972/73	EM 15-49	2	1
Bangladesh	1989	15-49	31	22
India	1988	15-49	43	39
Nepal	1986	15-49	14	13
Pakistan	1990/91	15-49	12 <sup>c</sup>	9 <sup>c</sup>
Sri Lanka	1987	15-49 <sup>i</sup>	62	40
<b>Western Asia</b>				
Iraq	1974	15-49	15 <sup>b</sup>	12
Jordan	1990	15-49	35 <sup>c</sup>	27 <sup>c</sup>
Lebanon	1971	15-49	53	22
Syrian Arab Republic	1978	15-49	20	15
Turkey	1988	15-49	63	31
Yemen	1979	15-49	1	1
<b>Latin America</b>				
<b>Caribbean</b>				
Antigua	1988	15-44	53	51
Barbados	1988	15-44	55	53
Cuba	1987	15-49	70	68
Dominica	1987	15-44	50	48
Dominican Republic	1986	15-49	50	47
Grenada	1985	15-44	31	27
Guadeloupe	1976	15-44	44	31
Haiti	1989	15-49	10 <sup>c</sup>	9 <sup>c</sup>
Jamaica	1989	15-49	55	51
Martinique	1976	15-44	51	39
Montserrat	1984	15-44	53	52
Puerto Rico	1982	15-49	70	62
St. Kitts and Nevis	1984	15-44	41	37

TABLE 2 (continued)

Region and country	Date	Age range	Percentage using	
			Any method	Clinic or supply method <sup>a</sup>
St. Lucia . . . . .	1988	15-44	47	46
St. Vincent . . . . .	1988	15-44	58	55
Trinidad and Tobago . . . . .	1987	15-49	53	44
<b>Central America</b>				
Costa Rica . . . . .	1986	15-44	70	58
El Salvador . . . . .	1988	15-44	47	43
Guatemala . . . . .	1987	15-44	23	19
Honduras . . . . .	1987	15-49	41	33
Mexico . . . . .	1987	15-49	53	45
Nicaragua . . . . .	1981	15-49	27	23
Panama . . . . .	1984/85	15-44	58	54
<b>Tropical South America</b>				
Bolivia . . . . .	1989	15-49	30	12
Brazil . . . . .	1986	15-44	66	56
Colombia . . . . .	1990	15-49	66	55
Ecuador . . . . .	1989	15-49	53	41
Guyana . . . . .	1975	15-49	31	28
Paraguay . . . . .	1990	15-49	48	35
Peru . . . . .	1986	15-49	46	22
Venezuela . . . . .	1977	15-44	49	37
<b>Oceania</b>				
Fiji . . . . .	1974	15-49	41	35
<b>B. More developed regions</b>				
<b>North America</b>				
Canada . . . . .	1984	15-49	73	69
United States of America . . . . .	1988	15-44	74	69
<b>Asia</b>				
Japan . . . . .	1988	15-49	56	52
<b>Europe</b>				
<b>Eastern Europe</b>				
Bulgaria . . . . .	1976	FM 18-44	76	7
Czechoslovakia . . . . .	1977	FM 18-44	95 <sup>n</sup>	49 <sup>n</sup>
Hungary . . . . .	1986	15-39	73	62
Poland . . . . .	1977	<45	75 <sup>k</sup>	26 <sup>k</sup>
Romania . . . . .	1978	FM 15-44	58 <sup>k</sup>	5 <sup>k</sup>
<b>Northern Europe</b>				
Denmark . . . . .	1975	18-44	63 <sup>a</sup>	59 <sup>a</sup>
Finland . . . . .	1977	FM 18-44	80	77
Norway . . . . .	1988	. . . <sup>s</sup>	84	73
Sweden . . . . .	1981	20-44	78	71
United Kingdom . . . . .	1986	16-49	81	78
<b>Southern Europe</b>				
Italy . . . . .	1979	FM 18-44	78 <sup>j</sup>	32 <sup>j</sup>
Portugal . . . . .	1980	15-49	66	32
Spain . . . . .	1985	FM 18-49	59	38
Yugoslavia . . . . .	1976	15-44	55 <sup>k</sup>	12 <sup>k</sup>
<b>Western Europe</b>				
Austria . . . . .	1981/82	. . . <sup>l</sup>	71	56
Belgium <sup>m</sup> . . . . .	1982	20-44	81	63
France . . . . .	1988	18-49	80	64

TABLE 2 (continued)

Region and country	Date	Age range	Percentage using	
			Any method	Clinic or supply method <sup>a</sup>
Germany (Federal Rep.) . . . . .	1985	15-44	77 <sup>o</sup>	67 <sup>o</sup>
Netherlands . . . . .	1988	18-37	76	72
Switzerland . . . . .	1980	. <sup>p</sup>	71	64
Oceania				
Australia . . . . .	1986	20-49	76	72
New Zealand . . . . .	1976	. <sup>r</sup>	70	61

Source: World Contraceptive-use Data Diskettes, 1991: User's Manual (ST/ESA/SER/R/120).

NOTES: Age range: except as separately noted, the statistics are based on women currently in a union, of the ages specified. Consensual unions are included where possible, including visiting unions in many Caribbean countries. All = all women. EM = ever married. FM = in first marriage.

<sup>a</sup>Including sterilization, IUD, hormonal methods and barrier methods.

<sup>b</sup>Adjusted from source to exclude breast-feeding.

<sup>c</sup>Preliminary.

<sup>d</sup>Excluding Ovamboland and the white population.

<sup>e</sup>Including never-married women who have a child.

<sup>f</sup>Women who have not resumed sexual relations since last pregnancy are not counted as users of contraception.

<sup>g</sup>Sedentary population.

<sup>h</sup>Peninsular Malaysia.

<sup>i</sup>Excluding areas containing roughly 15 per cent of the population.

<sup>j</sup>Use since last pregnancy (since marriage, if no pregnancy).

<sup>k</sup>Excluding sterilization.

<sup>l</sup>Marriage cohorts of 1974 and 1978.

<sup>m</sup>Flemish population.

<sup>n</sup>Ever use.

<sup>o</sup>Women who did not provide an answer (13 per cent) are assumed not to be using a method.

<sup>p</sup>Sample of husbands and wives married between 1970 and 1979.

<sup>q</sup>Percentage using a method other than sterilization within the past two months.

<sup>r</sup>Married women aged 15 and over who considered they were at risk of pregnancy.

<sup>s</sup>Women born in 1945, 1950, 1955, 1960, 1965 or 1968 who were sexually active in the past four weeks; base also includes infecund women (including those sterilized for contraceptive reasons) who were ever sexually active.

### Trends in contraceptive prevalence

Contraceptive use has increased in nearly all developing countries for which trend data are available (table 3 and fig. II).<sup>6</sup> During the period covered in table 3, which typically spans the late 1970s to the late 1980s, contraceptive prevalence grew by at least one percentage point per year in 64 per cent of the countries. It grew at two points or more annually in 23 per cent of the countries.

The amount of change observed during the period in table 3 is related to the level of prevalence that had been reached by the period's start (table 4). Annual increases of 1.0 percentage point or more occurred in over 80 per cent of countries where prevalence was initially moderate (20-49 per cent), as compared to about half of the countries with prevalence initially below 20 per cent of couples and only 20 per cent of countries where prevalence had already surpassed 50 per cent (table 4).

Figure II. Trends in the percentage of married women of child-bearing age currently using contraception, developing countries

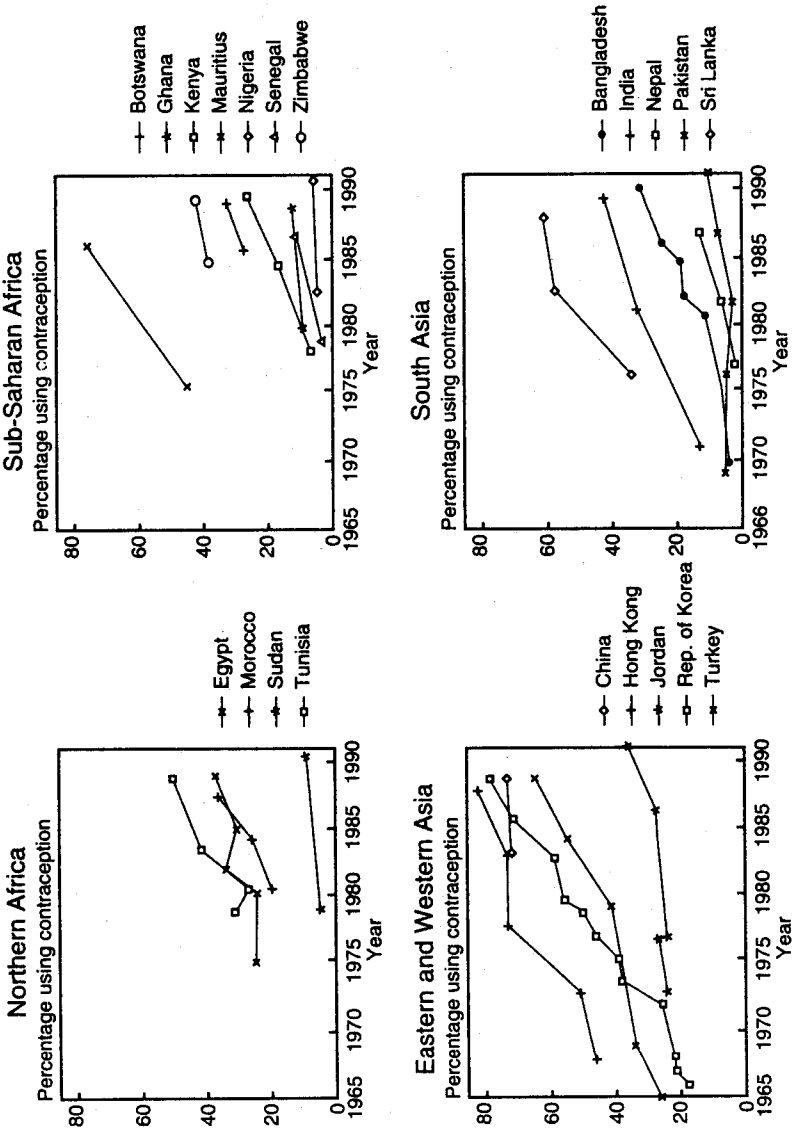


Figure II (continued)

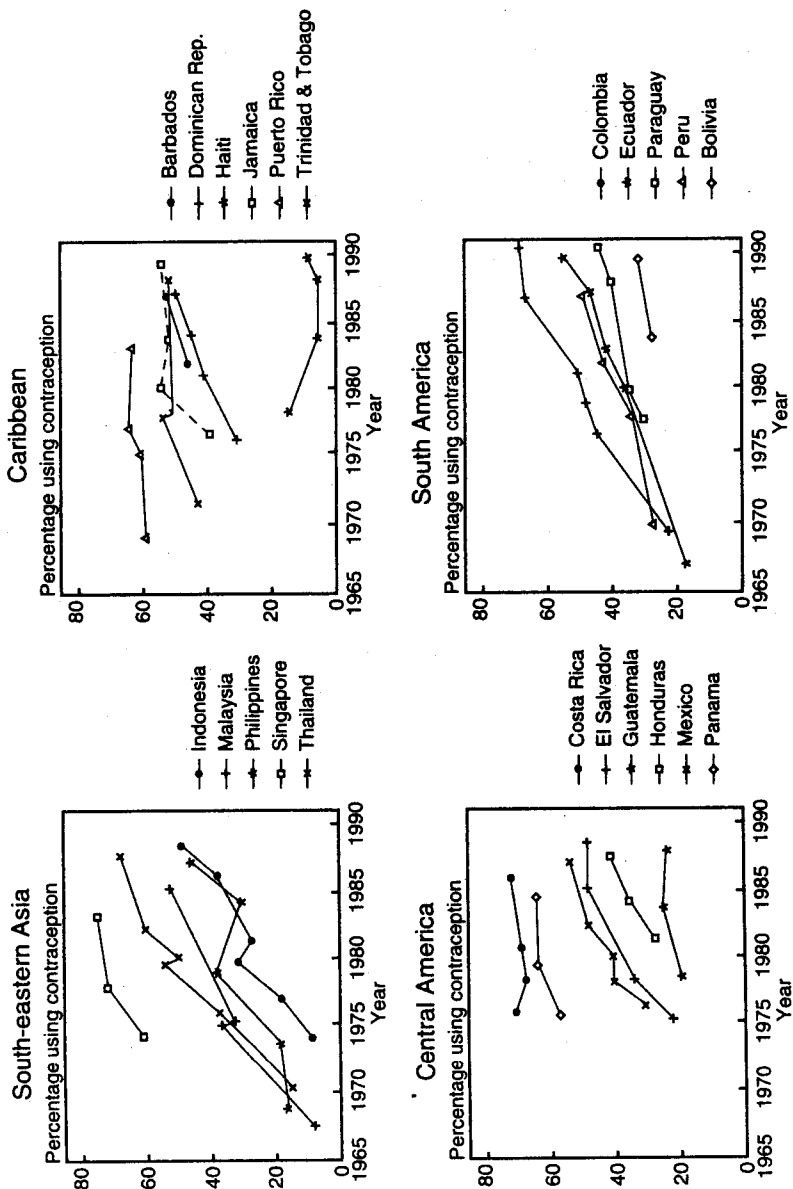




TABLE 3. RECENT TRENDS IN CONTRACEPTIVE PREVALENCE IN DEVELOPING COUNTRIES WITH TWO OR MORE SURVEYS

Region and country	Age range	Earlier survey		Most recent survey		Average annual change <sup>a</sup>	
		Year	Percentage using a method	Year	Percentage using a method	Any method	Clinic or supply method <sup>b</sup>
<b>Africa</b>							
<b>Northern Africa</b>							
Egypt	15-49	1980	24	1988/89	37	1.4	1.5
Morocco	15-49	1980	20	1987	36	2.3	1.8
Sudan (North)	15-49	1978/79	5	1989/90	9	0.4	0.2
Tunisia	15-49	1978	31	1988	50	1.8	1.5
<b>Other Africa</b>							
Botswana	15-49	1984	28	1988	33	1.1	3.0
Ghana	15-49	1979	10	1988	13	0.3	0.0
Kenya	15-49	1977/78	7	1988/89	27	1.8	1.2
Mauritius	15-49	1975	46 <sup>c</sup>	1985	75	3.0	1.6
Nigeria	15-49	1981/82	5	1990	6	0.1	0.4
Senegal	15-49	1978	4	1986	11	1.0	0.2
Zimbabwe	15-49	1984	38	1988/89	43	1.1	2.2
<b>Asia</b>							
<b>East Asia</b>							
China	15-49	1982	71	1988	72	0.3	0.5
Hong Kong	15-49	1977	72	1987	81	0.9	1.1
Republic of Korea	15-44	1974	37	1988	77	2.9	3.1
<b>Southeastern Asia</b>							
Indonesia	15-40	1976	18	1987	48	2.7	2.4
Malaysia	15-49	1974	33	1984	51	1.9	0.7
Philippines	15-44	1978	38	1986	44	0.9	0.6
Singapore	15-44	1973	60	1982	74	1.6	—
Thailand	15-44	1978/79	53	1987	68	1.7	1.9
<b>Southern Asia</b>							
Bangladesh	<50	1979	12	1989	31	2.0	1.6
India	15-44	1980	34	1988	43	1.1	1.5
Nepal	15-49	1976	2	1986	14	1.1	1.1
Pakistan	15-49	1975	5	1990/91	12	0.4	0.3
Sri Lanka	15-49	1975	34 <sup>d</sup>	1987	62	2.4	1.8
<b>Western Asia</b>							
Jordan	15-49	1976	25	1990	35 <sup>f</sup>	0.7	0.7
Turkey	15-49	1978	38	1988	63	2.6	1.8
<b>Latin America</b>							
<b>Caribbean</b>							
Antigua	15-44	1981	39	1988	53	2.0	1.9
Barbados	15-44	1980/81	46 <sup>e</sup>	1988	55	1.1	1.1
Dominica	15-45	1981	49	1987	50	0.1	0.2
Dominican Republic	15-49	1975	32	1986	50	1.6	1.8
Haiti	15-49	1977	15 <sup>f</sup>	1989	10 <sup>f</sup>	-0.4	0.4
Jamaica	15-49	1975/76	38	1989	55	1.2	1.1
Puerto Rico	EM 15-49	1968	60	1982	64	0.3	0.5
Saint Lucia	15-44	1981	43	1988	47	0.7	0.8
St. Vincent	15-44	1981	42	1988	58	2.4	2.2
<b>Trinidad and Tobago</b>							
Tobago	15-49	1977	52	1987	53	0.1	-0.1

TABLE 3 (continued)

Region and country	Age range	Earlier survey		Most recent survey		Average annual change <sup>a</sup>	
		Year	Percentage using a method	Year	Percentage using a method	Any method	Clinic or supply method <sup>b</sup>
<b>Central America</b>							
Costa Rica . . . . .	20-44	1976	70 <sup>g</sup>	1986	71 <sup>g</sup>	0.1	0.1
El Salvador . . . . .	15-44	1978	34	1988	47	1.3	1.1
Guatemala . . . . .	15-44	1978	18	1987	23	0.6	0.4
Honduras . . . . .	15-44	1981	27	1987	41	2.1	1.6
Mexico . . . . .	15-49	1976	30	1987	53	2.1	2.0
Panama . . . . .	20-44	1976	57 <sup>f,g</sup>	1984	64 <sup>f,g</sup>	0.5	0.9
<b>South America</b>							
Bolivia . . . . .	15-44	1983	26	1989	30 <sup>d</sup>	0.7	0.0
Colombia . . . . .	15-49	1976	42	1990	66	1.7	1.7
Ecuador . . . . .	15-49	1979	34	1989	53	1.9	1.6
Paraguay . . . . .	15-49	1979	36	1990	48	1.1	1.1
Peru . . . . .	15-49	1977/78	31	1986	46	1.6	1.3

Source: World Contraceptive-use Data Diskettes, 1991: User's Manual (ST/ESA/SER/R/120).

NOTES: Unless otherwise noted, the base population is women currently in a union, of the ages shown. EM = ever married.

<sup>a</sup>Calculated as the difference in percentage using a method divided by the number of years between surveys. The timing of surveys within the years shown is taken into account, when possible.

<sup>b</sup>Sterilization, hormonal methods, IUDs and barrier methods.

<sup>c</sup>For ever-married women.

<sup>d</sup>For the geographical areas covered in 1987.

<sup>e</sup>For ages 15-49.

<sup>f</sup>Excluding douche, abstinence and folk methods.

<sup>g</sup>Including sterilization for health reasons.

TABLE 4. SUMMARY OF ANNUAL AVERAGE INCREASE IN CONTRACEPTIVE PREVALENCE IN LESS DEVELOPED COUNTRIES, BY REGION AND BY PREVALENCE AT EARLIER SURVEY

Region and prevalence level	Number of countries	Proportion of countries with annual increase in prevalence	
		(Percentage points/annum)	
		≥ 1.0	≥ 2.0
Total . . . . .	47	0.6	0.2
Prevalence at earlier survey			
< 20 per cent . . . . .	11	0.5	0.2
20-34 per cent . . . . .	15	0.9	0.3
35-49 per cent . . . . .	13	0.8	0.4
≥ 50 per cent . . . . .	8	0.2	0.0
Region			
Africa . . . . .	11	0.7	0.2
Asia . . . . .	15	0.7	0.3
Latin America . . . . .	21	0.6	0.2

Source: Table 3.

For countries with trend data, rapid growth was no less common in Africa than in the other regions. Among the sub-Saharan countries, prevalence increased only slightly in Ghana and Nigeria,<sup>7</sup> but in Botswana, Kenya, Senegal and Zimbabwe contraceptive prevalence grew at a pace of 1.0-1.8 percentage points per year. The latter rates of growth are in the middle of the range observed in other less developed regions for the recent period. African countries with trend information, however, are likely to have experienced more rapid growth in contraceptive prevalence than the region as a whole. There are clear associations between the availability of surveys to measure contraceptive practice, strength of a country's family programme and its level of social and economic development (Weinberger, 1989). An increased national commitment to family planning itself tends to give rise to a demand that changes in fertility and contraceptive practice be measured on a regular basis.

Most of the recent growth in contraceptive prevalence is due to the relatively effective clinic and supply methods. Indeed, the median annual increase in use of those methods is approximately the same as that for all types of contraception considered together. In roughly 60 per cent of the countries in table 3, prevalence of the clinic and supply methods increased at an annual pace of at least 1 percentage point per year. Prevalence of the clinic and supply methods sometimes grew more than did contraceptive prevalence overall—that is, use of the non-supply methods (rhythm, withdrawal etc.) decreased. In Botswana and Zimbabwe use of clinic and supply methods grew much more rapidly than did overall contraceptive prevalence.

Although the period covered in table 3 averages only 8-9 years,<sup>8</sup> the mix of contraceptive methods changed substantially (table 5). In general, female sterilization is the method showing the greatest increase in use. In China, India, the Dominican Republic, Panama and Puerto Rico, use of female sterilization increased as much as or more than did the overall level of contraceptive use, and in 14 more of the 47 countries in table 3, female sterilization contributed over half of the total growth in contraceptive prevalence. Most countries where use of female sterilization has grown rapidly are located in Asia or Latin America, and the group includes many of the most populous countries. The amount of recent increase in the use of female sterilization, as well as the current overall prevalence of that method, therefore appears greater if population size is taken into account (table 5, panel B) than if results for the countries are averaged without weighting (table 5, panel A). However, whether statistics are weighted or not, this method stands out as having the greatest increase in prevalence and the highest current prevalence of any method.

Oral pills and occasionally other modern methods fell in prevalence in many of the countries that experienced rapid growth in use of sterilization. Although pill use increased substantially in some places—notably in a number of African and Caribbean countries—the average prevalence of pill use did not grow over the period, and the pill's share of total contraceptive use therefore declined. If countries' population size is not taken into account (table 5, section A), pills accounted for an average of 31 per cent of total use at the earlier time but only 24 per cent at the most recent survey. Weighted by population size, pills accounted for a markedly lower proportion of use at both times—12

TABLE 5. CHANGE IN PREVALENCE OF USE OF SELECTED CONTRACEPTIVE METHODS

	Any method	Clinic or supply method	Non-supply method	Female sterilization	Pill	IUD	Condom
<i>A. Average for countries weighted equally</i>							
Percentage of married women of reproductive age							
Earlier survey . . . . .	34	26	7	7	11	3	3
Most recent survey . . . . .	45	37	8	13	11	5	4
Percentage of total contraceptive use							
Earlier survey . . . . .	100	79	21	20	31	10	9
Most recent survey . . . . .	100	82	18	28	24	12	9
<i>B. Average for countries weighted by number of married women of reproductive age</i>							
Percentage of married women of reproductive age							
Earlier survey . . . . .	43	38	5	14	5	14	2
Most recent survey . . . . .	52	48	4	22	5	14	3
Percentage of total contraceptive use							
Earlier survey . . . . .	100	82	12	32	12	32	5
Most recent survey . . . . .	100	92	8	42	9	26	6

NOTE: Average for 47 developing countries with trend data, based on the countries and dates in table 3. Figures shown above in panel B differ from those in table 1 because of differences in the number of countries included in the calculations and because of adjustments for missing data in table 1.

per cent at the earlier and 9 per cent at the later survey. This disparity between weighted and unweighted statistics is due primarily to the fact that pill use is uncommon in the two largest countries, China and India.

Other clinic and supply methods slightly increased or approximately maintained their share of total contraceptive practice over the period. In the case of the IUD, the direction of change differs between the population-weighted and the unweighted statistics. Use of IUDs increased in many countries, but because IUD prevalence in China declined from a remarkable 35 per cent of couples in 1982 to 30 per cent in 1988, the weighted figures suggest no overall change in the percentage of couples using the IUD.

Levels of use of "traditional", or non-supply, methods, as measured in surveys, sometimes fluctuate in an implausible manner; measurement problems, rather than genuine change, may be responsible for some cases of substantial change in levels of use of these methods (and some of the irregularities seen in figure II for countries such as the Philippines, where the non-supply methods are relatively widely used). Overall, non-supply methods as a group showed little change in prevalence among couples, and their percentage contribution to total prevalence declined.

*Is growth in prevalence stagnating?* Figure II suggests that the growth in prevalence was often more rapid earlier than in recent years. In certain cases—Colombia and Thailand, for instance—growth in prevalence has, not surpris-

ingly, slowed as the level of use has approached that typical of the developed countries. A study that examined this issue found that the attainment of high prevalence levels by an increasing number of developing countries did indeed contribute to a slower pace of growth in the more recent years (Weinberger, 1989). However, even when attention was restricted to countries with low or moderate prevalence at the start of each of two periods examined, the pace of change was somewhat slower in the most recent period. In particular, instances of very rapid increase—2.0 percentage points or more annually—have been less common in recent years. Nevertheless, it remains true that once prevalence has begun to increase from very low levels, growth has usually persisted up to the most recent observation available. There are instances of stagnation of the level of use at a moderately low level—Guatemala and Jordan, for example—but such cases are few.

So far, only a few developing countries have reached levels of contraceptive prevalence as high as those seen in most developed countries. In East and Southeast Asia, China, Hong Kong, the Republic of Korea, Singapore and Thailand have reached levels in the range of 68-81 per cent; these countries also have low fertility, ranging from a TFR of 1.4 to 2.6 during 1985-1990.

In Latin America there are a few cases where contraceptive prevalence has levelled off at a moderately high level but with fertility still substantially above replacement level. It is still too soon to say whether this will become a more general phenomenon in the region. In Latin America and the Caribbean the only countries to have reached a prevalence level as high as 65 per cent are Brazil, Colombia, Costa Rica, Cuba, and Puerto Rico, and of these, only Cuba and Puerto Rico have TFRs below 2.5.<sup>9</sup> In Brazil and Colombia the level of fertility was still falling up to the most recent observation, but in Costa Rica the TFR was in the range of 3-3.5 throughout the 1980s. In Panama prevalence reached approximately 60 per cent around 1980 and then levelled off (see fig. II), and the TFR remained above 3 during 1985-1990. In a few Caribbean countries, too, recent surveys indicate a levelling off of contraceptive prevalence between 50 and 65 per cent (fig. II and table 3) in Dominica, Jamaica, and Trinidad and Tobago. However, as noted above, Caribbean countries tend to have lower fertility levels than would be expected from their levels of contraceptive use, and in Dominica and Jamaica substantial fertility decline evidently continued during the period of stagnation in contraceptive prevalence. TFR in the latter countries was estimated to be in the range of 2.5-2.6 by 1985-1990 (Guengant, 1990). (Fertility also declined in Trinidad and Tobago but remained at around 3 during the late 1980s.) Several of the smaller Caribbean countries, in addition to Cuba, currently have TFRs below the replacement level of 2.1 (Guengant, 1990). By contrast, among the South and Central American countries, only Colombia had a TFR below 3 during 1985-1990.

#### TRENDS IN CONTRACEPTIVE USE ACCORDING TO RURAL/URBAN RESIDENCE AND EDUCATION

The levels of contraceptive practice in developing countries often differ considerably between rural and urban areas, between couples with more and

less education and between members of different ethnic groups. Large differentials in contraceptive practice contribute to fertility differentials between social groups which sometimes exceed three or four children. Such large fertility differences imply imbalances in the needs of different social and economic groups for social services such as schooling and have the potential to exacerbate tensions between social groups whose rates of population growth differ greatly. Studies have consistently shown that large differentials in contraceptive practice and fertility are not primarily the result of a desire for much larger families by the uneducated and rural portions of the population—though those groups do tend to want somewhat larger families—but rather to the greater success of the urban and more educated at limiting their fertility to the number of children desired (Westoff and Pebley, 1981; Westoff and Moreno, 1989 and 1990; Bongaarts and Lightbourne, 1990).

Differential use of contraception according to education and rural and urban residence is examined below for 15 countries that participated in both the WFS and DHS programmes. The countries include three each in North Africa, sub-Saharan Africa and Asia, and six in Latin America, including two Caribbean countries. The main questions to be addressed are whether contraceptive use has increased in all social groups and whether the differentials in levels of use between social strata have widened, narrowed, or stayed the same.

*Contraceptive prevalence in rural and urban areas.* At the time of the WFS surveys, the mean level of contraceptive use in rural areas, at 20 per cent, was 16 points below that observed in urban areas. The rural/urban difference was under 10 points in the three sub-Saharan countries (where the level of use was low even in urban areas), in Trinidad and Tobago, Indonesia and Sri Lanka (table 6). The difference was over 20 points in the three North African countries and in the four non-Caribbean Latin American countries.

At the DHS surveys, the mean level of use had risen to 36 per cent in rural areas, the same level as seen in urban areas roughly 10 years earlier. Contraceptive prevalence had risen to 51 per cent in the urban areas, leaving the average rural/urban difference nearly the same as at the time of the earlier surveys. In individual countries, the size of the rural/urban differential changed by 5 or more percentage points in only four cases: Colombia, the Dominican Republic and Thailand, where the differential narrowed; and Indonesia, where it widened. Countries where the differential was over 20 points at the time of the earlier survey still had much higher levels of use in urban areas at the DHS survey.

In many countries family planning services were made available in urban areas before being extended to rural areas, and differential availability of services is probably important in giving rise to large urban/rural differentials in levels of current contraceptive use. For instance, the large rural/urban differentials seen in Latin America can plausibly be traced to the way family planning services evolved in the region. Early family planning programmes were "largely confined to urban centres, were small in scale, and originally served the unmet need for family planning of urban middle-class groups" (Mundigo, 1990). By the time family planning services began to be extended to the gen-

TABLE 6. TRENDS IN CONTRACEPTIVE PREVALENCE BETWEEN WFS AND DHS SURVEYS BY URBAN AND RURAL RESIDENCE  
(Percentage)

Country	Year	Total	Rural	Urban	Urban minus rural
<b>Northern Africa</b>					
Egypt	1980	24	12	40	28
	1988	38	25	52	27
Morocco	1980	20	10	37	27
	1987	36	25	52	27
Tunisia	1978	31	20	44	23
	1988	50	35	61	26
<b>Sub-Saharan Africa</b>					
Ghana	1979	10	8	14	6
	1988	13	10	20	10
Kenya	1977	7	6	12	6
	1989	27	26	31	4
Senegal	1978	4	4	4	0
	1986	11	10	14	4
<b>Latin America</b>					
Colombia	1976	43	27	52	25
	1986	65	54	70	17
Dominican Republic	1975	32	23	41	18
	1986	50	46	52	6
Ecuador	1979	34	22	47	25
	1987	44	33	53	21
Mexico	1976	30	14	42	28
	1987	53	32	62	30
Peru	1977	31	11	43	32
	1986	46	24	59	35
Trinidad and Tobago	1977	52	50	52	2
	1987	53	52	54	2
<b>Asia</b>					
Indonesia	1976 <sup>a</sup>	26	26	29	3
	1987	48	45	54	9
Sri Lanka	1975	32	30	38	8
	1987	62	61	65	4
Thailand	1975	33	31	46	15
	1987	66	65	68	3

Source: *World Contraceptive-use Data Diskettes, 1991: User's Manual (ST/ESA/SER.R/120)* Tabulated from WFS and DHS standard recode tapes.

<sup>a</sup>Java and Bali.

eral population, contraceptive use was already well established in the urban middle class, and socio-economic differentials in fertility were already large. By contrast, in a few Asian countries where Government programmes have heavily stressed service provision in rural areas—Indonesia and the Republic of Korea, for example—rural/urban differences in use levels have consistently been small.<sup>10</sup> In those cases, Governments invested heavily in rural family planning services at a point when contraceptive prevalence was still fairly low in both rural and urban areas.

The results for the 15 countries examined here indicate that large rural/urban differentials, once they have arisen, are not short-lived. In most of the countries where urban prevalence levels greatly exceeded rural levels at the time of the WFS, the differentials were essentially unchanged 10 years later, although prevalence had grown in both rural and urban places.

*Contraceptive prevalence according to women's education.* At the WFS surveys, an average of 48 per cent of women with 10 or more years of schooling were using contraception—three times the average level for uneducated women (16 per cent). The difference in use levels between those two education groups was over 20 percentage points in all but the three sub-Saharan countries, where under 20 per cent of even the most highly educated women were currently using a method (table 7). In two of the North African countries and all six Latin American countries the difference was at least 30 points, with the largest gaps (43-47 percentage points) seen in Colombia, Ecuador, Mexico, Morocco and Peru.

At the DHS surveys, the average level of current use had risen to 58 per cent for the highly educated women and to 31 per cent for the uneducated; the average differential between the two groups was slightly smaller (28 percentage points) at the DHS than at the WFS surveys—32 points. Between the two surveys, the education differentials widened in Kenya and Senegal, where contraceptive prevalence among the most educated women grew from only 18 per cent to 41-45 per cent. Levels of use also grew among less educated women in those countries, but not so much as for the better educated. By contrast, in Ghana the best educated women still had a prevalence level of around 20 per cent at the time of DHS. In several countries—Colombia, Dominican Republic, Egypt, Sri Lanka and Thailand—the education differential between the lowest and highest education groups narrowed by 10-25 points between surveys. In the latter two countries differences in use levels by education are now quite small. However, DHS surveys in Ecuador, Mexico and Peru showed that uneducated women still had levels of contraceptive prevalence more than 40 percentage points below those seen for highly educated women.

Colombia, Sri Lanka and Thailand—three countries that maintained a rapid pace of growth in contraceptive prevalence over the period between the WFS and DHS surveys—did so to a considerable degree through rapid adoption of contraception by the less educated and rural sectors of their populations. Contraceptive prevalence grew by 30-35 percentage points among the least educated women and by 27-34 points in rural areas over a period of 10-12 years.

Since educated women tend to be in the vanguard of the fertility transition, the more highly educated might also be the first to reach a saturation point, after which contraceptive prevalence will not change very rapidly or very much. At the time of WFS, the level of current use among the most highly educated women was under 60 per cent, except in Colombia, but by the DHS, prevalence for that group had risen to 65-73 per cent in roughly half of the countries. In Ecuador, Egypt, the Dominican Republic and Trinidad and Tobago the level of use for the highly educated women was around 55-60 per



TABLE 7. TRENDS IN CONTRACEPTIVE PREVALENCE BETWEEN WFS AND DHS SURVEYS, BY WOMEN'S EDUCATION (Percentage)

Country	Year	Total	Years of education completed					Difference (10+ minus 0 yrs.)
			0	1-3	4-6	7-9	10+	
<b>Northern Africa</b>								
Egypt	1980	24	16	26	32	52	55	39
	1988	38	28	40	51	52	55	27
Morocco	1980	20	16	36	53	54	59	43
	1987	36	31	52	60	63	69	38
Tunisia	1978	31	27	42	41	72	56	29
	1988	50	42	43	61	64	69	26
<b>Sub-Saharan Africa</b>								
Ghana	1979	10	6	12	11	12	19	13
	1988	13	9	9	14	15	21	12
Kenya	1977	7	4	6	8	12	18	14
	1989	27	18	22	28	31	45	26
Senegal	1978	4	3	6	8	23	18	15
	1986	11	10	8	19	23	41	31
<b>Latin America</b>								
Colombia	1976	43	22	34	51	64	67	45
	1986	65	53	61	65	73	73	20
Dominican Republic	1975	32	17	26	37	46	55	37
	1986	50	38	47	51	49	57	19
Ecuador	1979	34	12	21	36	49	59	46
	1987	44	19	37	43	50	61	43
Mexico	1976	30	13	23	37	55	59	47
	1987	53	25	44	58	70	69	44
Peru	1977	31	12	25	43	51	56	44
	1986	46	19	33	46	60	67	48
Trinidad and Tobago	1977	52	30	43	44	53	59	30
	1987	53	31	42	49	51	58	26
<b>Asia</b>								
Indonesia	1976 <sup>a</sup>	26	22	29	32	39	51	29
	1987	48	33	45	51	60	67	34
Sri Lanka	1975	32	19	26	33	38	46	27
	1987	62	54	62	65	62	61	7
Thailand	1975	33	26	30	34	36	47	21
	1987	66	56	59	67	67	66	11

Source: World Contraceptive-use Data Diskettes, 1991: User's Manual (ST/ESA/SER.R/120). Tabulated from WFS and DHS standard recode tapes.

<sup>a</sup>Java and Bali.

cent at both surveys, suggesting that the ceiling for use in those countries may be lower than the values of 70 per cent or above that are usual in the developed countries.

## DISCUSSION AND CONCLUSIONS

The DHS programme has been a major source of information about levels and trends in contraceptive use in recent years, particularly for sub-Saharan Africa. At the time of this writing, DHS survey results had been published for 11 sub-Saharan countries. In five of them—Burundi, Liberia, Mali, Togo and Uganda—the DHS survey provided the first national data about knowledge and use of contraception, and for all but one of the remaining countries, the DHS survey is the second with national coverage and thus offers the first chance to see trends in contraceptive use.<sup>11</sup> It is worth noting too that virtually no other national trend data on this topic exist for sub-Saharan Africa.<sup>12</sup> Although the level of use of contraception remains low in the region as a whole, the DHS has established that contraceptive prevalence is rising in several sub-Saharan countries. The DHS results also reveal aspects of contraceptive practice in sub-Saharan Africa that challenge common assumptions and may call for a reassessment of the types of family planning services to offer. For instance, the view that permanent methods have little appeal in sub-Saharan countries is drawn into question by DHS results showing that in Botswana, Kenya and Zimbabwe, 2-5 per cent of married women of reproductive age and 9-16 per cent of those aged 40-44 have adopted sterilization as their contraceptive method (see also Dwyer and Haws, 1990). Also, in several of the sub-Saharan countries, contraceptive prevalence is higher among women who are not in a union than among the currently married, which is the reverse of the pattern observed elsewhere. Even more than in other regions, the contraceptive needs of unmarried women need to be taken into account in making assessments of unmet needs and in delivering services in many of the sub-Saharan countries.

In summary, an estimated 53 per cent of the world's couples are currently using contraception. Although the average level of use in developing countries (48 per cent) is lower than in the developed countries (71 per cent), prevalence of female sterilization and IUDs is significantly higher in the developing countries, on average. Indeed most of the difference in levels of use between the developing and developed countries is due to higher levels of use of traditional methods such as rhythm and withdrawal in the latter group of countries. Most of the recent growth in contraceptive prevalence is also due to increased use of modern methods and particularly of female sterilization, which currently accounts for over 35 per cent of contraceptive practice in developing countries. Together male and female sterilization, IUDs and the pill account for about 80 per cent of contraceptive use in those countries.

During the recent past, in nearly two thirds of the developing countries where trends can be measured, contraceptive prevalence grew by at least one percentage point per year and by two points or more annually in roughly one quarter of the countries. Rapid growth was most common in countries which had achieved a moderate prevalence level (20-49 per cent of couples) at the start of the period examined; in over 80 per cent of such countries prevalence grew annually by at least 1 per cent of couples, and in 30-40 per cent of the countries, prevalence grew by 2 per cent of couples annually. However, substantial growth in the level of contraceptive use also occurred in a number of

countries where the level of use was initially quite low, including, as noted above, some countries in sub-Saharan Africa.

Several developing countries, mainly in East and South-east Asia, have levels of contraceptive prevalence above 70 per cent and fertility near or below replacement level. In Latin America there are signs in a few countries of a levelling off of contraceptive prevalence somewhat below 70 per cent and with the total fertility rate still above three births per woman. However, in most countries of that region, as elsewhere, contraceptive prevalence was still increasing up to the most recent observation. Cuba and a few smaller Caribbean countries have achieved quite low fertility, in some cases with contraceptive prevalence only in the range of 50-60 per cent; most Caribbean countries have lower fertility than other countries with similar levels of contraceptive use.

Trends in contraceptive use in rural and urban areas and according to women's education were also examined above for 15 countries that participated in both WFS and DHS. The differentials were in general quite large, with contraceptive prevalence over 20 percentage points higher in urban areas at one or both dates in roughly half the countries and with differences between uneducated and highly educated women *averaging* around 30 percentage points. While sizeable education differentials were evident in nearly all the countries at one or both times, not all countries have developed large rural/urban differentials. However, especially wide gaps in use levels between education groups tend to occur in countries where the rural/urban differential is also large. Other studies have consistently shown that the differentials are not due mainly to social differences in number of children desired, but rather to differing levels of contraceptive practice among women who would like to delay or limit births.

Where the rural/urban and education differentials changed markedly during the period between surveys, the patterns for the most part accord with the expectation that social differentials in contraceptive use widen during the course of a societal transition to lower fertility—since educated, urban couples tend to adopt contraception first—and narrow as the transition is completed. However, these differentials are not necessarily short-lived. In most of the countries examined here, the rural/urban and education differentials changed very little over the period of roughly a decade separating the WFS and DHS; levels of use grew by comparable amounts in all social groups. Wide social differentials in fertility may thus persist for decades, if not for generations.

It may also be noted that the many of the populations with large rural/urban gaps in contraceptive practice are relatively highly urbanized. Where the population is heavily rural, as it is in most of Asia, this fact may have influenced Governments wishing to lower fertility to stress family-planning services; raising the level of contraceptive practice in the urban areas of such countries could have had at most a moderate effect on national fertility. Where the population was more concentrated in urban areas, the need to reach the rural hinterland may well have seemed less pressing at a time when family planning services in the cities still needed to be improved. Nevertheless, in all

of the countries for which differentials were examined, over 30 per cent of married women still lived in rural areas at the time of DHS, and in a majority of the countries, the population was over half rural. In many cases contraceptive prevalence is now approaching, or has exceeded, 60 per cent in the cities and among highly educated women. In such cases the pace of future fertility decline will depend largely on growth of contraceptive practice among the less educated and in the rural areas.

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#### NOTES

<sup>1</sup>For figure I, total fertility rates (TFR) were based on those given in United Nations 1992 estimates and projections, medium variant (United Nations, forthcoming), interpolated to the year following the reference date for contraceptive prevalence. TFRs for Antigua, Dominica, Grenada, Montserrat, St. Kitts-Nevis, St. Lucia and St. Vincent were taken from Guengant (1990, table 2).

<sup>2</sup>Induced abortion may also contribute to lower-than-expected fertility in the Caribbean, although adequate statistics regarding abortion incidence are not available, except in Cuba and Puerto Rico.

<sup>3</sup>Table 1 incorporates assumptions about prevalence in countries lacking a survey-based measurement of contraceptive use. Data are least complete for Africa, with a survey available for countries containing approximately 65 of the region's population, as compared to 95 per cent for Asia and 89 per cent for Latin America. The statistics in table 1 are calculated assuming that contraceptive prevalence for countries with no data averaged 10 per cent in Africa and 33 per cent in Asia; these levels are lower than observed in countries with data. In Latin America, where the relatively economically developed countries of Argentina, Chile and Uruguay contain most of the population for which a prevalence measure is not available, and in the more developed regions, the countries without a prevalence measure were assumed to have the same average prevalence as countries with data. Within each region, the average method distribution for countries with data was assumed to apply to countries lacking data. The population of the former USSR was assumed to have the method distribution observed for Eastern Europe. Newly available DHS survey data for Jordan (1990) and Pakistan (1990/91) have been added to tables 2 and 3, but table 1 and other summary tables reflect earlier survey measurements for those countries; adjustment for the new data would not affect the conclusions drawn.

<sup>4</sup>Table 1 may somewhat understate the current prevalence of sterilization and other "modern" methods whose prevalence has been increasing in the more developed regions, because the surveys there are on average somewhat older than in the developing countries. In addition, because a number of the developed-country surveys have focussed on young couples, they may understate the prevalence of sterilization among all women of reproductive age.

<sup>5</sup>Some surveys do not count abstinence, douching or folk methods as "contraception". In sub-Saharan countries where long periods of post-partum abstinence are observed, that type of abstinence has sometimes been reported as contraception, but more often surveys in countries where the practice is common have not counted it as contraceptive use. Prolonged breast-feeding is not counted as contraception in the statistics shown in this paper, except as separately noted.

<sup>6</sup>Where more than two surveys were available, table 2 includes the most recent survey and an earlier survey as close as possible to 10 years earlier. In a few cases another survey was used instead of the one closest to 10 years earlier, in order to improve comparability in coverage between the figures shown.

<sup>7</sup>Prevalence also increased only slightly in the northern part of Sudan, which is grouped with northern Africa, following the classification used by the United Nations.

<sup>8</sup>The average is around 9 years if countries are given equal weight and around 8 years if they are weighted by the number of married women of reproductive age.

<sup>9</sup>Total fertility rates referred to in this paragraph were taken primarily from United Nations (1993). See footnote 1 for other data sources.

<sup>10</sup>For trends in urban and rural areas of the Republic of Korea, see Cho, Arnold and Kwon, 1982; and Choe and Park, 1989. There is also evidence from a multivariate study of Malaysia that

differential availability of family planning services can account for differing levels of contraceptive use in rural and urban areas (DeVanzo, Ann and Othman, 1989).

<sup>11</sup>The exception is Kenya, which had two previous surveys, in 1977/78 and 1984.

<sup>12</sup>The island of Mauritius is the only exception.

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# A DECADE OF CHANGE IN CONTRACEPTIVE BEHAVIOUR IN LATIN AMERICA: A MULTIVARIATE DECOMPOSITION ANALYSIS

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## SUMMARY

This study relies on World Fertility Survey (WFS) and Demographic and Health Surveys (DHS) data to examine recent trends and determinants of contraceptive use in five Latin American countries: Colombia, Dominican Republic, Ecuador, Mexico and Peru. These countries experienced a substantial increase in contraceptive prevalence in the inter-survey period. Within countries, however, the increase was not equally shared by all social and demographic groups. The study found that relatively disadvantaged groups experienced greater gains in contraceptive use. Despite the prevailing tendency towards convergence, wide differentials in contraceptive behaviour among social sectors still persist. A decomposition analysis based on logistic regression revealed that certain shifts in the population composition—i.e., increased proportion of urban and better educated women and a growing proportion of mothers who want to discontinue child-bearing—contributed substantially to the aggregate increase in contraceptive prevalence in most countries. Structural changes, understood as changes in the relations between the explanatory variables and the likelihood of using contraception, were also found to play a significant role in contraceptive use trends, particularly in Colombia.

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## INTRODUCTION

Since the mid-1960s, most countries in the Latin American region have experienced significant reductions in fertility (Chackiel and Schkolnik, 1990). The downward trend of fertility persisted throughout the 1980s, despite a context of financial and economic crisis (ECLAC, 1991; World Bank, 1991; UNDP, 1992), which had adverse effects on family and individual well-being (Minujin, 1992).

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Increased contraceptive use is largely responsible for the observed decline in fertility (Potter, 1983; Moreno and Singh, 1990). In the late 1980s, the level of contraceptive prevalence in Latin America was estimated to be 57 per cent among married women of reproductive age, a level above that in other developing regions (e.g., 17 per cent in Africa, 40 per cent in South Asia), though still below the estimated average for the developed world (71 per cent) (Weinberger, 1993).

The transformation in women's contraceptive practices in Latin America has resulted from a variety of social and economic forces, changes in public and private attitudes, implementation of policies and improvement in service provision (Ochoa and Tsui, 1991). Although most Governments initially endorsed a pronatalist ideology or practised an ambivalent *laissez-faire* with regard to fertility regulation, since the 1970s family planning has been gradually incorporated into the institutions of public health (Mundigo, 1990). The institutionalization of family planning has reinforced the legitimation of birth control practices (Lerner and Quesnel, 1992), despite opposition from the formal Catholic church.

Although per capita income in Latin America is higher than in many other areas of the developing world, the region is noted for the persistent inequity in income distribution (Psacharopoulos and others, 1992). The gap between groups positioned at the upper and lower end of the social spectrum has traditionally been large and is likely to remain so in the near future. The debt crisis and, more recently, structural adjustment policies, have led in many countries to the deterioration of social services, an important mechanism of economic redistribution (ECLAC, 1989; Samaniego, 1993), reducing the prospects for narrowing the social gap. This highly polarized social structure, in which the high living standards of a relatively small elite are in sharp contrast to those of a sizeable majority that lives in poverty, must necessarily shape demographic patterns (Schoemaker, 1991). Inequality in living conditions generates inequality in choices and opportunities, which ultimately underlies differentials in reproductive and contraceptive behaviour (Bronfman and others, 1990). It is, hence, not surprising that Latin America stands out in the literature as the region displaying the largest within-country disparities in fertility and contraceptive use (United Nations, 1987).

Although the prevailing view is that the upward trend in contraceptive use in Latin America has been mainly demand-led—i.e., built on an increasingly strong motivation for smaller families—there is widespread recognition that it has been facilitated and accelerated by an expanded provision of family planning services, through a mix of commercial, private not-for-profit and public programmes, with substantial international funding (Townsend and others, 1992). The interplay of deliberate policies and spontaneous social diffusion processes has contributed to an expansion of changes in reproductive behaviour, initially restricted to the urban middle class, to the whole social spectrum (Bravo, 1990). This study assesses whether the contraceptive behaviour of different social sectors has followed a tendency towards convergence.

Data limitations have generally shaped a static view of contraceptive use. Cross-sectional fertility surveys can provide relevant information on the deter-

minants of contraceptive behaviour at one point in time but are not well suited to reveal how key relationships evolve over time. Change in the structure of the relation between contraceptive use and its determinants is sometimes inferred from differences observed across societies at consecutive stages of development. However, inferences of this nature might not be valid. A more sound test is provided by comparing two (or more) surveys for the same society (Hermalin, 1985). The study focuses on five Latin American countries that participated in both the WFS and DHS programmes: Colombia, Dominican Republic, Ecuador, Mexico and Peru. The availability of two fertility surveys with analogous information, conducted approximately one decade apart, provides an unusual opportunity to incorporate a time trend dimension to the study of contraceptive-use patterns.

The five countries under consideration have experienced a substantial increase in contraceptive prevalence over the past decade (Weinberger, 1990, 1991). In analytical terms, there are two main mechanisms through which the aggregate level of contraceptive use can increase. One potential source of change is the expanded proportion of women belonging to social groups which typically have high rates of contraceptive use (e.g., better educated women, urban women). Aggregate change may also result from an increase in the likelihood of using contraception among all subgroups (presumably reflecting greater demand and improved access to services throughout the whole social spectrum) or among those subgroups which had lower rates of contraceptive use at an earlier time (reflecting diffusion processes, convergence of reproductive behaviour among social strata and conceivably deliberate programme targeting of less favoured groups). This study disaggregates overall change into these two underlying forces: *compositional change* and *rate change*, an analytical exercise which should provide relevant insights into the causal mechanisms that underlie observed trends. The decomposition approach makes it possible to address one dimension of the micro/macro complex: the interplay of individual-level processes and structural change in building up aggregate trends (Collins, 1981; Alexander and others, 1987; Firebaugh, 1992).

The article is organized into several sections. First, recent trends in contraceptive use are examined at the national level. A trend analysis is also carried out at the subgroup level in order to assess whether the increase in contraceptive use has been equally shared by all social groups, and whether socio-demographic differentials in contraceptive behaviour have narrowed in the inter-survey period. Secondly, the role of various social and demographic factors on the likelihood of using contraception is assessed in a multivariate framework for the two survey points, in order to ascertain whether the structural linkages between the explanatory variables and contraceptive use were static or dynamic throughout the period. Lastly, a regression decomposition technique is employed to assess whether shifts in population composition, many of them linked to socio-economic development and/or changes in contraceptive behaviour within specific subgroups, can account for the overall increase in contraceptive prevalence during the inter-survey period. The decomposition procedure allows us to quantify to what extent societal compo-



sitional changes have promoted the observed upward trend in fertility regulation. Special attention is paid to the role of female education.

## DATA

The study focuses on five Latin American countries for which both WFS and DHS data are available: Colombia, Dominican Republic, Ecuador, Mexico and Peru. Although these countries cannot be considered representative of the Latin American region, they display considerable variation on several dimensions relevant to contraceptive prevalence, such as socio-economic development and family planning programme effort. Table 1 presents various economic, social and demographic indicators for those countries as measured in the mid-1970s and mid-1980s, the time periods roughly corresponding to the two survey dates. According to those indices, the record of economic growth is mixed: per capita gross national product (GNP) increased considerably in Colombia, Ecuador and Mexico but was practically stagnant in the Dominican Republic and even declined in Peru (ECLAC, 1991). Despite the economic setbacks of the 1980s, school enrolment has continued to increase and female educational attainment improved in all the countries surveyed. Support given to family planning programmes is not uniform within the region: programme strength is rated as weak in Ecuador and Peru, moderate in the Dominican Republic, and strong in Colombia and Mexico. Apparently associated with the intensity of institutional commitment to family planning, fertility decline has been sharpest in Mexico (the total fertility rate went from 6.2 to 4.1 children in merely one decade) and in the Dominican Republic (from 5.7 to 3.8 children per woman).<sup>1</sup>

WFS and DHS data sets are sufficiently similar to allow the construction of analogous variables which can be used in a comparative framework. Both surveys obtained detailed data on contraceptive use and extensive background information for large, nationally representative samples of women of reproductive age. Table 1 presents sample sizes and fieldwork dates.

The analysis focuses on non-pregnant, fecund<sup>2</sup> women currently in union. The proportion of contraceptors among women *exposed* to the risk of pregnancy should provide a more accurate measure of contraceptive coverage, by excluding women with no reason to use contraception.<sup>3</sup> In principle, all sexually active women, regardless of marital status, should be considered as "exposed". However, the large majority of single women in Latin America report no contraceptive use, presumably reflecting the prevailing normative context which censures female sexuality outside marriage. Because of the large amount of underreporting suspected in that group, this study focuses on women currently in union, whether legal or consensual.<sup>4</sup> Also included in the "exposed" subpopulation are women who have been sterilized, under the rationale that those women are using 100 per cent effective contraception.<sup>5</sup>

The discussion focuses entirely on *current* contraceptive use.<sup>6</sup> By concentrating on current experience, the analysis of differentials does not make heavy demands on the quality of the data, since different types of women may vary in their ability to recall past contraceptive episodes.

TABLE 1. ECONOMIC, SOCIAL AND DEMOGRAPHIC INDICATORS FOR FIVE LATIN AMERICAN COUNTRIES AND CHARACTERISTICS OF THE WORLD FERTILITY SURVEY AND THE DEMOGRAPHIC AND HEALTH SURVEY

	Circa 1975			Circa 1985			WFS			DHS	
	GNP per capita (\$)	Mean years of school, women	TFR	GNP per capita (\$)	Mean years of school, women	TFR	Family planning programme effort	Year of fieldwork	Sample size	Year of fieldwork	Sample size
Colombia .....	550	4.4	3.8	1 270	5.8	3.3	Strong .....	1976	5 378	1986	5 329
Dominican Republic ..	660	4.6	5.7	790	6.8	3.8	Moderate ..	1975	3 115	1986	7 649
Ecuador .....	540	5.7	5.3	1 180	7.1	4.3	Weak .....	1979	6 797	1987	4 713
Mexico .....	1 360	4.0	6.2	2 180	6.2	4.1	Strong .....	1976	7 310	1987	9 310
Peru .....	1 000	3.7	5.6	980	5.4	4.5	Weak .....	1977/78	5 640	1986	4 999

Sources: Economic Commission for Latin America and the Caribbean, "The dynamics of social deterioration in Latin America and the Caribbean in the 1990s", (LC/G.1557), J. A. Ross and others, *Family Planning and Child Survival Programs as Assessed in 1991* (New York, Population Council, 1992); and World Fertility Survey and Demographic and Health Surveys standard recode files.

NOTES: Total fertility rates (TFR) based on a five-year period prior to WFS and DHS.

Mean years of schooling are estimated for women in reproductive ages. Family planning programme effort is measured as of 1982.

## EXPLANATORY FACTORS CONSIDERED IN THE ANALYSIS

Studies based on WFS (Vaessen, 1980) and DHS data (Rutenberg and others, 1991) show that awareness of contraceptive methods is almost universal in Latin America. However, a considerable amount of demand for family planning remains unmet (Westoff, 1988; Westoff and Ochoa, 1991). Although knowledge is a precondition for fertility control, the decision to use contraception is determined by need, willingness and access to contraceptive methods, factors which in turn are conditioned by women's position in the life cycle (age, parity), family context (union type, age at union), socio-economic background (women's education, husband's education, rural/urban residence) and motivation to avoid pregnancy (child-bearing intentions) (Johnson-Ascadi and Weinberger, 1980).

A woman's *age* is expected to increase her motivation for fertility regulation, though not necessarily in a linear fashion. WFS studies have shown that age is curvilinearly related to contraceptive use, presumably because of its association with biological fecundity and frequency of sexual relations, two factors that influence a woman's perceived risk of pregnancy (Nortman, 1982). Age also measures a "cohort effect", with older women belonging to a generation that was not socialized in the idea of fertility control but exposed to it once their family formation was well under way.

*Parity*<sup>7</sup> positions a woman in the family life cycle and is assumed to condition her motivation to prevent additional pregnancies. However, since there is a selection process implied by the fact that women with low propensity to use contraception are more likely to reach high parities, this effect might be partly masked. Though closely associated with age, parity captures a different dimension of the reproductive process and may not necessarily follow an identical pattern.

A distinctive feature of the marriage system in Latin America and the Caribbean is the relatively high proportion of consensual unions (Quilodrán, 1985). Since informal unions differ from legal unions in terms of actual and perceived stability, *union status* might affect the motivation to prevent pregnancy.

Although changing marriage patterns are not considered to have played a major role in the Latin American fertility transition (Rosero-Bixby, 1990), early *age at marriage* can be regarded as a proxy for family-oriented norms and traditional lifestyles, which might influence attitudes and behaviour towards fertility regulation.

*Female education* has been consistently shown to be positively associated with contraceptive use (Cochrane, 1979; Weinberger, Lloyd and Blanc, 1989). Education increases awareness, acceptability and access to family planning services. Accordingly, better educated women are more likely to implement successfully their family size preferences. Education is also a relevant indicator of social class, especially in the developing countries, where an advanced education is generally attainable only by the more affluent strata of the society (Schoemaker, 1991).

Since data on household income are not available, and given women's marginal position in the salaried economy, *husband's education* is used as a proxy for the socio-economic status and standard of living of the family.

The large gap in contraceptive prevalence between *rural and urban* areas is a constant theme in the literature (Lightbourne, 1980), and it has been explained both in demand terms (distinct economic systems favour different "optimal" family sizes) and supply terms (urban areas provide better access and higher quality family planning services). In Latin America, however, during the 1980s, poverty and lack of services became as much an urban as a rural problem, as a consequence of the rapid growth of urban slums (Psacharopoulos and others, 1992). Unfortunately, the data available do not draw a distinction between urban-core and urban-marginal areas.

Since the attainment of reproductive goals typically underlies the decision of contraceptive adoption (Cochrane and Guilkey, 1991), *child-bearing intentions* are incorporated into the explanatory models of contraceptive use. It is expected that women who have completed their family formation process have higher rates of contraceptive use. The inclusion of fertility intentions in the modelling of contraceptive behaviour is not devoid of problems. The validity and reliability of survey responses on fertility preferences have been often questioned. However, recent research suggests that most information on preferences is useful and not seriously flawed, especially when it is about the desire for an additional child rather than about a hypothetical ideal family size (Bongaarts, 1991). Furthermore, the reported intentions of the protagonists of the reproductive process cannot be disregarded in the analysis of contraceptive behaviour, since it is the implementation of those intentions that provides the rationale for contraceptive adoption (Westoff, 1990). Another type of criticism is based on the belief that desired family size is endogenous to the decision-making process of contraceptive use, in the sense that desired fertility is affected by access to family planning services (Rosenzweig and Schultz, 1985). Given the difficulties involved in correcting for the endogeneity of fertility intentions, models with and without desire for additional children will be compared in order to assess whether the inclusion of this variable significantly modifies the rest of the estimates.

All above-mentioned covariates are coded as categorical in order to capture non-linear and non-monotonic relationships. Obviously, this set of variables cannot claim to capture all potential determinants of contraceptive behaviour. Among the missing explanatory factors are hard-to-measure normative variables which influence the perceived legitimacy of fertility regulation. The formal Catholic church, for example, has traditionally proscribed the use of contraception other than abstinence-based rhythm methods. Despite weakening adherence to these proscriptions, religiosity may still exert some influence on matters of reproductive behaviour. At the macrolevel, contextual variables such as accessibility of family planning services are also relevant explanatory factors of individual behaviour, since they constrain the range of options actually available to women. At the psychological level, the perceived risk of pregnancy, the strength of motivation to avoid pregnancy, personality

traits related to planning disposition, or the degree of dissatisfaction with available contraceptive methods, are also factors which play a role in the decision-making process of contraceptive adoption but could not be considered in this analysis.

## METHODS

The determinants of contraceptive use are examined in a multivariate framework using logistic regression (Aldrich and Nelson, 1984). The logit model is most appropriate because the dependent variable is dichotomous with two possible outcomes, use or non-use of contraception.<sup>8</sup> The model can be written as follows:

$$\ln[p/(1-p)] = \beta'X$$

where  $p$  denotes the probability of using contraception,  $[p/(1-p)]$  represents the *odds* of using contraception as opposed to not using,  $X$  is a vector of covariates, and  $\beta$  is a vector of regression coefficients which, depending on their sign, represent increments or reductions in the log odds of contracepting. These coefficients are to be interpreted relative to the omitted category.

The comparison of WFS and DHS logit coefficients enables us to assess the change in strength, and occasionally in direction, of the effect of the various explanatory variables on contraceptive use and hence infer how underlying causal linkages have evolved over time.

In order to explore the processes which have contributed to the upward trend in contraceptive prevalence, a regression decomposition analysis is performed. The disaggregation of overall change into shift in *composition* and shift in *rates* is a well-established demographic technique, built upon Kitawaga's (1955) classical work on rate standardization. The conventional procedure is often limited by the difficulty of handling multiple confounding factors. A decomposition analysis based on logistic regression follows the same rationale but incorporates the advantages of a multivariate framework (Iams and Thornton, 1975; Clogg and Eliason, 1986; Liao, 1989; Njogu, 1991).

The decomposition procedure applied in this study is based on the logit models estimated for the two surveys. The difference  $\ln[p/(1-p)]_{(DHS)} - \ln[p/(1-p)]_{(WFS)}$  is decomposed using the following equation (which considers WFS as the base period):

$$\begin{aligned} \text{Logit}_{(DHS)} - \text{Logit}_{(WFS)} &= \\ &= (\beta_{0(DHS)} - \beta_{0(WFS)}) + \sum P_{ij(WFS)}(\beta_{ij(DHS)} - \beta_{ij(WFS)}) + \\ &+ \sum \beta_{ij(WFS)}(P_{ij(DHS)} - P_{ij(WFS)}) + \\ &+ \sum (P_{ij(DHS)} - P_{ij(WFS)})(\beta_{ij(DHS)} - \beta_{ij(WFS)}) \end{aligned}$$

where

- $P_{ij(DHS)}$  = proportion of the  $j^{\text{th}}$  category of the  $i^{\text{th}}$  covariate in DHS
- $P_{ij(WFS)}$  = proportion of the  $j^{\text{th}}$  category of the  $i^{\text{th}}$  covariate in WFS
- $\beta_{0(DHS)}$  = regression constant in DHS

$\beta_{\alpha(\text{WFS})}$  = regression constant in WFS

$\beta_{ij(\text{DHS})}$  = coefficient for the  $j^{\text{th}}$  category of the  $i^{\text{th}}$  covariate in DHS

$\beta_{ij(\text{WFS})}$  = coefficient for the  $j^{\text{th}}$  category of the  $i^{\text{th}}$  covariate in WFS

This procedure yields three components: the *rates* component, which reflects the differences in slopes (regression coefficients and intercept); the *composition* component, which indicates the portion of the overall change attributable to the variation in the means of the covariates; and the *interaction* component, which alludes to the covariation between the means and the coefficients in the two time periods.

#### RECENT TRANSFORMATION IN CONTRACEPTIVE BEHAVIOUR: AGGREGATE AND SUBGROUP TRENDS

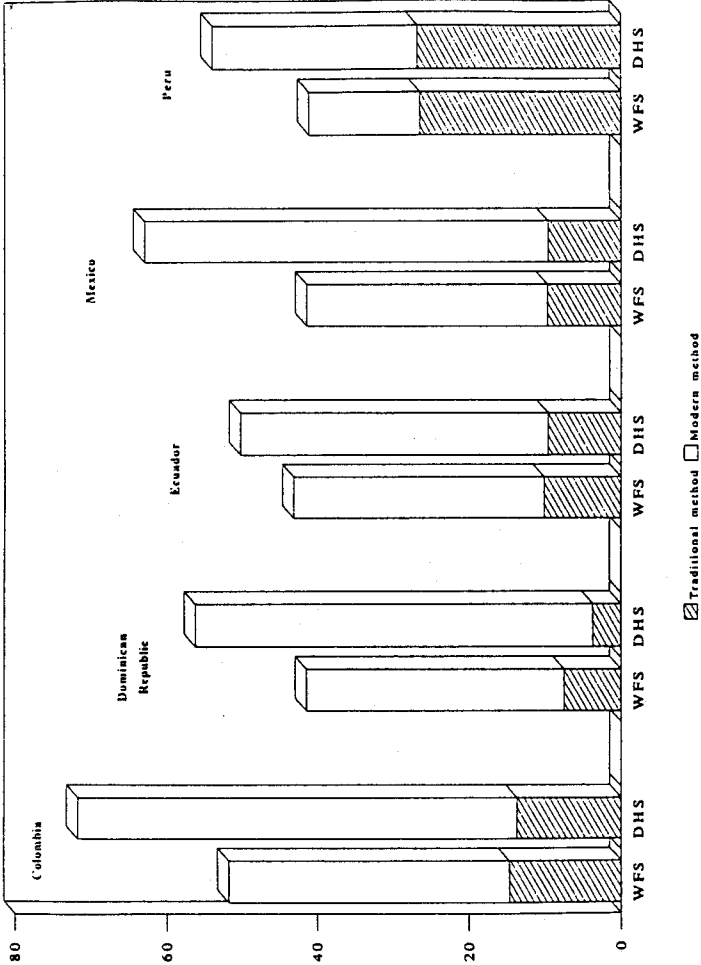
Latin America has experienced a substantial increase in contraceptive use over the past decades. It is estimated that the level of contraceptive prevalence in the region rose from 14 per cent in 1960-1965 to 43 per cent in 1980-1981 and to 57 per cent in 1987 (United Nations, 1989; Weinberger, 1993).

The figure displays national trends in contraceptive use during the inter-survey period. It is evident that all countries examined have experienced significant increases in their contraceptive prevalence levels. The magnitude of the increase, however, has not been uniform: slight in Ecuador (7 percentage points), moderate in Peru and the Dominican Republic (13 and 15 points, respectively), and quite substantial in Mexico and Colombia (22 and 20 points, respectively). The latter country has reached a level of contraceptive prevalence analogous to the levels prevailing in the developed world (over 70 per cent). In all countries, the increase in contraceptive use has been entirely confined to modern methods. The proportion of women relying on traditional methods of birth control has either declined or remained unaltered.

An important feature that emerges from these data is that the largest increase in contraceptive prevalence has occurred in countries which rank higher in the development continuum and have active family planning programmes: Mexico (Juárez, Pullum and Casterline, 1985; Llera, 1991) and Colombia (Ochoa and Tsui, 1991). Conversely, countries with weak economies and weak family planning programmes, Ecuador and Peru, have experienced the smallest gains in contraceptive use (Leyton, 1993). The Dominican Republic, despite having the lowest GNP per capita, ranks third with regard to the increase in contraceptive prevalence, presumably because of its moderately strong family planning programme (Tactuk and others, 1990). There is no obvious relationship between the initial level of contraceptive prevalence and the pace of increase. The Dominican Republic, Ecuador, Mexico and Peru all displayed similar levels of contraceptive use in the mid-1970s, but each country experienced a different rate of increase.

National averages usually conceal broad differentials within countries. Table 2 presents levels of contraceptive use for different social and demographic groups. As expected, women with higher education, women whose partners are highly educated and those who reside in urban areas exhibit sub-

Figure. Contraceptive prevalence: comparison of World Fertility Survey and Demographic Health Survey data



Source: Demographic Health Surveys and World Fertility Survey standard record files.  
 NOTE: Based on fecund, non-pregnant women aged 15-49, currently in union.

stantially higher contraceptive use rates than their counterparts. With regard to demographic characteristics, high-parity women and women who want to cease child-bearing also show higher reliance on contraception, a pattern congruent with the family formation cycle. Contraceptive rates are also higher for women who have entered marriage at a later age and who are currently in a formal union. The curvilinear pattern found for consecutive age groups may be attributed to the interplay of life cycle and cohort factors.

Comparison of contraceptive use rates in the WFS and the DHS programmes makes it possible to trace the evolution of contraceptive behaviour for various subgroups and to assess whether differentials have narrowed or widened over the recent period. According to the data in table 2, most socio-demographic groups have experienced notable increases in contraceptive use during the intersurvey period, but not universally so. Highly educated women and women with highly educated partners have experienced only slight gains in contraceptive use and, in some cases, even a reduction (e.g., Dominican Republic and Ecuador).

Among the subgroups that shared the increase, the change in contraceptive behaviour has not been uniform either. It is noteworthy that the largest increases in contraceptive use occurred among disadvantaged social groups, such as poorly educated women, women with poorly educated partners and rural women. This pattern becomes particularly salient when the increase is measured in relative terms. For instance, while change in contraceptive prevalence among women with 10 or more years of schooling ranges from -5 to 11 per cent across the countries examined, the increase for women with no formal education ranges from 38 to 117 per cent. Similarly, while the relative change in contraceptive use ranges from -1 to 26 per cent among urban women, it ranges from 35 to 109 per cent among rural women.

With regard to demographically defined groups, the pattern of change tends to be country-specific and therefore difficult to summarize. In absolute terms, the increase in contraceptive prevalence appears to be larger among women aged 35-44, women with 3-4 children, and women who desire no more children (except in Peru), reflecting life-cycle changes in the need for contraceptive protection. In relative terms, the largest gains are frequently observed, though not universally, among subgroups that initially had the lowest rates of contraceptive use, such as young women (in Mexico), childless women (in Mexico, Peru and Ecuador), women who married early (in all countries, but particularly in Mexico), women in consensual unions (in all countries, but especially in Colombia and Mexico) and women who want more children (in all countries, except Colombia).

As a result of these patterns of change, subgroup differentials in contraceptive use have narrowed considerably over the study period. The picture portrayed by WFS data was one of huge disparities in contraceptive behaviour among social strata (Weinberger, Lloyd and Blanc, 1989). In a comparative perspective, Latin America stood out in the world as the region having, on average, the largest differentials in fertility and contraceptive use by women's education (United Nations, 1987): highly educated women had a level of contraceptive use three or four times that of uneducated women. Although dispari-



TABLE 2. PERCENTAGE OF WOMEN USING CONTRACEPTION BY SOCIAL AND DEMOGRAPHIC CHARACTERISTICS: COMPARISON OF WFS AND DHS DATA

	Colombia				Dominican Republic			
	WFS	DHS	Change		WFS	DHS	Change	
	Percentage		Absol.	Relat.	Percentage		Absol.	Relat.
<b>Education</b>								
0 .....	28	60	32	117	24	43	19	79
1-3 .....	43	67	24	57	35	51	16	45
4-6 .....	61	73	11	18	45	59	13	30
7-9 .....	75	80	5	7	60	56	-4	-6
10+ .....	79	80	1	2	70	66	-3	-5
<b>Husband's education</b>								
0 .....	31	56	25	81	20	46	26	130
1-3 .....	44	68	25	56	39	57	19	48
4-6 .....	56	73	17	30	48	60	12	24
7-9 .....	72	78	6	9	50	57	7	13
10+ .....	80	83	3	4	65	61	-4	-6
<b>Residence</b>								
Rural .....	34	61	27	81	31	52	21	66
Urban .....	62	77	15	24	52	59	6	12
<b>Age cohort</b>								
<25 .....	49	65	17	34	33	44	12	35
25-34 .....	60	79	19	31	51	63	12	24
35-44 .....	49	76	27	54	43	62	20	45
45+ .....	31	48	16	52	27	43	16	58
<b>Parity</b>								
0 .....	24	30	6	25	15	11	-5	-30
1-2 .....	56	75	19	35	37	50	13	33
3-4 .....	58	80	22	39	51	69	19	37
5+ .....	49	65	17	34	45	63	18	41
<b>Age at 1st union</b>								
<18 .....	50	70	20	40	38	53	15	40
18+ .....	53	73	20	38	46	60	14	30
<b>Union type</b>								
Consensual .....	40	67	27	69	34	50	16	47
Formal .....	56	74	19	33	53	66	13	24
<b>Desire for children</b>								
More .....	45	57	12	26	25	31	6	25
Undecided .....	39	68	29	76	26	20	-6	-23
No more .....	56	78	22	39	57	71	14	24
TOTAL	52	72	20	39	42	56	15	35

Sources: World Fertility Survey and Demographic and Health Surveys standard recode files.

NOTES: Based on fecund, non-pregnant women aged 15-49, currently in union.

ties in contraceptive behaviour according to women's social background remain sizeable in the DHS programme, the gap has narrowed substantially. The reduction of social distances, however, has not occurred to the same extent across countries. The contrast between the upper and lower educational groups, for example, narrowed by 31 points in Colombia and 23 points in the Dominican Republic but by merely 10 points in Ecuador and less than 5 points

Ecuador				Mexico				Peru			
WFS	DHS	Change		WFS	DHS	Change		WFS	DHS	Change	
Percentage		Absol.	Relat.	Percentage		Absol.	Relat.	Percentage		Absol.	Relat.
16	22	6	38	19	31	12	60	17	24	7	44
27	42	15	56	33	52	19	60	32	40	8	26
47	49	2	5	48	68	20	41	54	55	1	2
61	56	-6	-9	70	83	14	19	64	69	6	9
71	67	-3	-5	75	83	8	11	72	76	5	6
18	35	16	89	18	35	17	90	15	19	4	28
25	39	13	52	31	54	23	73	21	33	12	59
43	46	3	7	46	64	18	39	44	47	3	8
65	56	-9	-13	66	73	6	10	53	65	12	22
68	66	-2	-3	73	85	12	16	66	70	3	5
29	39	10	35	23	47	25	109	15	30	14	94
59	59	0	-1	61	76	16	26	55	67	12	22
33	37	4	11	32	55	23	72	35	46	11	30
48	56	8	16	47	67	19	41	47	60	13	27
48	56	8	17	44	68	25	57	41	56	15	37
31	35	4	14	33	50	17	52	31	37	5	17
16	23	8	48	13	30	17	135	16	29	13	86
45	49	4	10	44	67	23	52	44	59	16	36
48	59	11	22	46	71	25	53	46	61	15	33
41	48	6	15	40	55	15	37	38	44	6	17
40	49	9	24	34	58	24	70	35	48	13	36
46	51	5	12	48	67	19	40	45	57	12	27
39	47	9	22	28	51	23	83	33	45	12	35
45	52	7	15	44	65	22	50	44	58	14	32
33	38	5	16	34	52	18	52	36	51	15	42
28	22	-6	-21	14	30	16	111	19	27	7	38
52	58	6	11	48	70	22	46	46	56	9	20
43	50	7	16	42	63	22	52	41	54	13	31

Absolute and relative change calculated from unrounded figures.  
 Relative change:  $(DHS - WFS)/WFS \times 100$ .

in Peru and Mexico. Despite the recent tendency towards convergence in contraceptive behaviour, large inequalities remain: uneducated women still have levels of contraceptive use far below those observed for highly educated women: differentials are modest in Colombia and Dominican Republic (about 20 percentage points) and large in Ecuador, Mexico and Peru (about 50 percentage points).

In sum, WFS studies documented very large socio-economic differentials in contraceptive use for most Latin American countries in the mid-1970s; accordingly, fertility decline was mainly confined to the upper social strata. Since then, contraceptive prevalence has increased steadily and, in some countries, at an accelerated pace. Given this trend, it is of considerable interest and policy relevance to assess whether the global increase has led to a convergence in contraceptive behaviour among social strata or whether unsurmountable inequalities persist. Comparison of WFS and DHS data revealed that social differentials in contraceptive behaviour have lessened (though only slightly in Mexico and Peru). This pattern suggests both a "ceiling" reached by early adopters of contraception and a diffusion process of attitudes and behaviours related to fertility regulation which gradually permeate the whole social structure. Educated, urban and middle-class women are typically regarded as fore-runners in the process of contraceptive adoption, but they are also the first to reach a saturation point, after which contraceptive use cannot increase very rapidly or very much. At the time of WFS, the upper social strata had already reached high levels of contraceptive use: contraceptive prevalence among women with 10 or more years of schooling was already in the range of 70-79 per cent, the typical coverage in developed countries, leaving little room for improvement. Consequently, the countries that have experienced a substantial growth in contraceptive prevalence over the recent period did so to a considerable extent due to the rapid adoption of contraception by the less educated and rural sectors of their populations.

#### NET SOCIAL AND DEMOGRAPHIC DIFFERENTIALS: CONVERGENCE OR POLARIZATION?

This section examines the linkages between women's background characteristics and contraceptive behaviour in a multivariate framework. A logistic regression model is estimated for each country and for each survey point for this purpose. The comparison of the models run for WFS and DHS data can provide relevant insights into how key relationships have evolved over time, incorporating a dynamic dimension to the study of contraceptive determinants. By contrasting the logit coefficients from the two surveys, we can infer whether the impact of a particular variable has changed in any important fashion. If the effect increases over time, it implies a tendency towards polarization, while weakened effects suggest convergence among initially distant groups.<sup>9</sup>

Table 3 presents the results of the analysis. According to those estimates, all covariates included in the models, with the exception of age at marriage, are significant predictors of contraceptive use. As expected, *female education* exerts a powerful influence on contraceptive behaviour. The effect is quasi-linear: the likelihood of using contraception rises monotonically with increasing education. Congruent with previous studies (United Nations, 1987), the gap between women in the upper and lower educational strata is remarkably large in WFS: the odds of using contraception among women with 10 or more years of education are from three to seven times greater than for women who

have not attended school, even after other factors are held constant.<sup>10</sup> Differentials among educational groups have declined in the inter-survey period, except in Mexico, where they have actually increased. The narrowing of the gap has been sharpest in Colombia, where practically all the increase in contraceptive use has been concentrated among less educated women.

*Husband's education* also has a positive influence on the rate of contraceptive use, but its net effect is weaker than that of female education in all countries. Analogous to the pattern of change observed for women's education, husband's education becomes a weaker predictor of contraceptive use in DHS, except in Peru, where differentials by husband's educational status have remained practically unaltered.

*Place of residence* conditions the access to family planning services; accordingly, rural/urban differentials in rates of contraceptive use are usually very pronounced. At the time of WFS, women residing in urban areas had from two to three times higher odds of contracepting than rural women. The urban/rural gap narrowed considerably in DHS for all countries but Peru. The magnitude of residential differentials decreased most dramatically in Colombia and in the Dominican Republic.

*Parity* appears as one of the variables with the strongest effect on the probability of using contraception in WFS. The odds of contracepting among women with five or more children are from four to 10 times greater than among women with no children, though the main contrast is between mothers and childless women, not between high-parity and low-parity women. At the time of DHS, women with a large number of children remain more likely to use contraception, but differentials based on family size have narrowed considerably in Colombia (suggesting the massive adoption of contraception by low-parity women), moderately in Ecuador and Peru and only slightly in Mexico. The pattern of change has been the opposite in the Dominican Republic, where net differentials by parity have actually increased.<sup>11</sup>

The effect of *age*, once parity is controlled, is presumed to capture the increasing willingness to regulate fertility, regardless of family size, among younger cohorts. Since age and parity have been grouped in broad categories, cohort and life cycle effects cannot be accurately disentangled. However, there is some indication that women belonging to earlier cohorts are less likely to use contraception, once their achieved family size is held constant.<sup>12</sup> Differentials by age have diminished in DHS for some countries (Colombia and Ecuador), but have increased in others (Dominican Republic, Mexico and Peru).

*Age of entry into marriage* has no statistically significant effect on current contraceptive behaviour. *Type of union*, however, exerts a visible influence on contraceptive use: women in legally established unions are more likely to control their fertility, except in Ecuador. Differentials have increased over time, except in Colombia.

*Desire for additional children* also emerges as an important predictor of contraceptive use.<sup>13</sup> As expected, women who want no more children are considerably more likely to be using a contraceptive method to avoid pregnancy than those who want more children. Women who are undecided about future

TABLE 3. LOGIT ESTIMATES OF THE EFFECT OF SELECTED SOCIAL AND DEMOGRAPHIC FACTORS ON CONTRACEPTIVE USE:  
COMPARISON OF WFS AND DHS DATA

	Colombia		Dominican Republic		Ecuador		Mexico		Peru	
	WFS	DHS	WFS	DHS	WFS	DHS	WFS	DHS	WFS	DHS
<b>Education</b>										
(0)										
1-3	0.412*	0.041*	0.408*	0.195	0.539*	0.806*	0.464*	0.592*	0.583*	0.449*
4-6	0.907*	0.064*	0.680*	0.587*	1.216*	1.093*	0.782*	1.269*	1.176*	0.840*
7-9	1.332*	0.077*	1.296*	0.668*	1.610*	1.267*	1.202*	1.616*	1.550*	1.291*
10+	1.265*	0.100*	1.517*	1.070*	1.922*	1.708*	1.690*	1.850*	1.819*	1.670*
<b>Husband's education</b>										
(0)										
1-3	0.220	0.105*	0.567*	0.392*	0.185	0.039	0.428*	0.354*	0.030	0.460
4-6	0.368*	0.127*	0.931*	0.580*	0.558*	0.159	0.724*	0.424*	0.584*	0.602*
7-9	0.739*	0.149*	1.021*	0.484*	1.051*	0.341	1.255*	0.693*	0.653*	0.937*
10+	1.056*	0.173*	1.160*	0.536*	0.970*	0.578*	1.383*	0.959*	0.761*	0.631*
<b>Residence</b>										
(Rural)										
Urban	0.746*	0.090*	0.569*	0.145	0.692*	0.377*	1.112*	0.782*	0.718*	0.959*
<b>Age cohort</b>										
(<25)										
25-34	0.207	0.011	0.080	-0.055	0.527*	0.559*	0.302*	0.032	0.435*	0.322*
35-39	-0.307	-0.032	-0.389	-0.477*	0.539*	0.587*	0.185	0.149	0.382*	0.346*
45+	-1.175*	-0.282*	-1.027*	-1.502*	-0.261	-0.141	-0.390	-0.583*	0.035	-0.438*
<b>Parity</b>										
(0)										
1-2	1.549*	0.339*	1.070*	1.575*	1.360*	0.728*	2.058*	1.556*	1.267*	0.926*
3-4	1.670*	0.356*	1.277*	1.890*	1.466*	0.944*	2.293*	1.993*	1.354*	1.101*
5+	1.777*	0.349*	1.371*	2.132*	1.501*	0.830*	2.326*	1.837*	1.311*	0.991*



child-bearing do not differ significantly in their contraceptive behaviour from women who want additional children.<sup>14</sup> The evolution of the effect of fertility intentions on contraceptive behaviour has not been uniform: the impact of desiring no more children has weakened in Colombia, Peru and Ecuador, suggesting the expansion of contraceptive use for birth-spacing purposes, but has grown larger in the Dominican Republic and Mexico.

In sum, most socio-demographic factors measured in DHS influence contraceptive behaviour basically in the same fashion as they did in WFS. However, a precise comparison of the WFS and DHS logit coefficients reveals that the effect of most covariates has in general weakened, reflecting a tendency towards diminishing differentials in contraceptive behaviour among social strata and demographic groups. The degree of convergence differs across societies, making it difficult to talk about a general pattern of evolution: convergence was highest in Columbia and lowest in Mexico and Peru. The comparison of the two logit models also revealed a large intercept increase, indicating that even when all explanatory variables are set equal to their omitted categories, the probability of using contraception was significantly higher in DHS than in WFS.

#### DECOMPOSITION OF CHANGE IN CONTRACEPTIVE BEHAVIOUR: WORLD FERTILITY SURVEY AND DEMOGRAPHIC AND HEALTH SURVEYS

The preceding sections have documented that all countries examined have experienced substantial increases in contraceptive use during the inter-survey period. In an abstract sense, there are two major mechanisms through which the level of contraceptive prevalence can rise in a population. Overall change may result from an increase in the proportion of women belonging to subgroups which typically have high rates of contraceptive use. For instance, an increase in the proportion of educated and urban women should have a positive impact on overall contraceptive prevalence, even if contraceptive behaviour within those subgroups remains unaltered (Weinberger, Lloyd and Blanc, 1989).

As can be seen in table 4, the composition of the population in all countries examined has changed in a direction that could plausibly promote aggregate increase in contraceptive use. For example, women's education, husband's education and urban residence have increased in all countries during the inter-survey period. The proportion of women who want to discontinue child-bearing has also grown in all societies, reflecting a decline in the demand for children. With regard to other demographic variables, the age composition of currently married, fecund, non-pregnant women has shifted upward, the proportion of women with large families has decreased, the incidence of early marriages has declined, and the prevalence of consensual unions has risen. Many of these compositional shifts are likely to have contributed to the overall increase in contraceptive prevalence.

A second component of aggregate change may result from an increase in the propensity to use contraception among all subgroups or among those segments of the population whose rates of contraceptive use were low at an earlier

time. For example, if contraceptive-use rates among rural women increase over time, overall contraceptive prevalence would rise even if there is no trend towards urbanization and rural residents remain a large proportion of the population. The former analysis of trends in contraceptive use revealed that the largest increases were observed among those subgroups less likely to use contraception in WFS. The multivariate analysis of the determinants of contraceptive use also documented that differentials in contraceptive behaviour by education and residence were narrower in DHS than in WFS, as a result of the disproportionate increase in contraceptive use among poorly educated and rural women. This type of structural change in the relationship between background factors and contraceptive use should translate into an aggregate increase in contraceptive prevalence.

In this section, a multivariate decomposition procedure is employed to evaluate the relative contribution of changes in the socio-demographic configuration of the population versus structural changes (understood as changes in the relations between the explanatory variables and the likelihood of using contraception) to the overall increase in contraceptive prevalence between WFS and DHS. The results of this analysis, based on the logit coefficients in table 3 and the proportional distribution of the population in table 4, are presented in table 5. The contribution of each of the covariates previously examined cross-sectionally at the individual level is now evaluated longitudinally at the aggregate level (though still based on micro-level data) and partitioned into three components: composition, rates and interaction.

The relative contribution of *compositional* and *rate* factors varies widely among countries. According to the estimates in table 5, compositional change explains nearly all the increase in contraceptive use in Peru and Ecuador and a large amount of the increase in the Dominican Republic. Conversely, most of the inter-survey change in contraceptive behaviour in Columbia and Mexico, the two countries that experienced the largest expansion in contraceptive prevalence, is attributable to changes in the propensity to use contraception.

With regard to the specific dimensions of the social and demographic configuration of the population that may have favoured the upward trend in contraceptive use, the results in table 5 point to female education as the most influential factor, particularly in Ecuador and Peru. The improvement in women's education alone explains roughly one third of the overall increase in contraceptive prevalence in most countries, regardless of change in contraceptive behaviour within educational groups. By comparison, the contribution of husband's education is, though relevant, more modest. The trend towards urbanization has also favoured the rise in contraceptive prevalence, particularly in Peru and Ecuador. The growing proportion of women who desire no more children also appears to account for an important share of the increase in contraceptive use in the Dominican Republic, Ecuador and Peru. In general, the shift in demographic composition (age, parity, age at marriage and union type) has not made a significant contribution to overall change.

The results in table 5 also show that the signs of the propensity factors are mostly negative, indicating that the direction of the change in rates has been towards declining differentials among subgroups with respect to the omitted



TABLE 4. PERCENTAGE DISTRIBUTION OF WOMEN BY SOCIAL AND DEMOGRAPHIC CHARACTERISTICS: COMPARISON OF WFS AND DHS DATA  
(Percentage)

	Colombia		Dominican Republic		Ecuador		Mexico		Peru	
	WFS	DHS	WFS	DHS	WFS	DHS	WFS	DHS	WFS	DHS
Education										
0	15	9	15	8	14	10	20	15	28	14
1-3	37	31	37	28	24	18	33	22	25	23
4-6	30	32	29	27	35	36	29	36	24	25
7-9	12	17	12	16	12	14	14	18	9	13
10+	6	11	7	21	15	23	5	9	15	25
Husband's education										
0	15	10	17	10	11	7	17	13	10	4
1-3	35	27	29	18	21	15	29	21	26	17
4-6	30	30	26	19	41	39	29	29	31	29
7-9	12	14	14	18	9	11	11	19	10	12
10+	9	17	9	23	18	27	11	18	24	38
n.s.	0	2	5	12	..	1	3	1	..	1
Residence										
Rural	36	32	52	38	52	42	50	45	59	35
Urban	64	68	49	62	48	58	50	55	41	65
Age cohort										
<25	23	19	28	24	24	21	26	22	21	17
25-34	39	41	35	39	40	42	41	42	39	40
35-44	30	29	29	28	28	29	28	29	32	34
45+	8	11	8	10	8	8	5	8	8	9
Parity										
0	6	5	10	8	5	6	6	5	3	4
1-3	31	40	28	33	33	38	28	35	31	33
4-6	27	31	27	31	28	32	28	31	31	33
5+	36	24	35	27	34	25	38	29	35	30



TABLE 5. DECOMPOSITION OF TRENDS OF CONTRACEPTIVE USE, WFS/DHS: PROPORTION OF OVERALL CHANGE DUE TO CHANGES IN COMPOSITION, RATES AND INTERACTION

	Colombia			Dominican Republic			Ecuador			Mexico			Peru		
	Compo- sition	Rates	Inter- action	Compo- sition	Rates	Inter- action	Compo- sition	Rates	Inter- action	Compo- sition	Rates	Inter- action	Compo- sition	Rates	Inter- action
Education .....	0.20	-0.95	-0.19	0.28	-0.28	-0.09	0.40	-0.14	-0.10	0.11	0.20	0.04	0.38	-0.23	-0.04
Husband's education ..	0.13	-0.40	-0.12	0.17	-0.40	-0.13	0.22	-0.38	-0.09	0.12	-0.16	-0.06	0.16	0.17	-0.08
Residence .....	0.05	-0.66	-0.04	0.10	-0.27	-0.08	0.18	-0.40	-0.08	0.05	-0.13	-0.01	0.25	0.15	0.08
Age cohort .....	-0.04	0.13	0.03	-0.02	-0.15	-0.02	0.05	0.10	0.01	-0.01	-0.10	-0.01	0.02	-0.14	-0.01
Parity .....	-0.02	-1.94	0.02	-0.01	0.77	-0.01	-0.05	-1.56	0.03	0.01	-0.32	0.00	-0.01	-0.44	0.01
Age at marriage .....	-0.01	0.03	0.01	0.01	-0.06	-0.01	-0.01	-0.05	-0.01	0.01	-0.01	0.00	0.01	-0.07	-0.01
Union type .....	-0.05	-0.34	0.04	0.01	0.05	0.00	0.01	0.10	-0.01	-0.01	0.16	-0.01	-0.01	0.11	-0.01
Desire for children ..	0.09	-0.34	-0.06	0.25	0.13	0.07	0.20	-0.24	0.05	0.03	0.15	0.03	0.15	-0.37	-0.04
Intercept .....		5.42			0.69			3.26			0.94			0.99	
Total change .....	0.37	0.96	-0.32	0.79	0.47	-0.26	1.00	0.20	-0.20	0.30	0.72	-0.01	0.93	0.16	-0.09

Sources: World Fertility Survey and Demographic and Health Surveys standard recode files.

category. The narrowing of socio-demographic differentials in contraceptive use rates has been largest in Colombia, particularly with regard to parity, female education and type of residence. These results also reveal that the propensity change contributing most to the overall increase in contraceptive use was the intercept. The change in the intercept was particularly large in Colombia and Ecuador. This feature suggests that the increase in contraceptive prevalence was largely influenced by factors not explicitly considered in the model. Among the obvious candidates are the improved availability and quality of family planning services (Mauldin and Ross, 1991),<sup>15</sup> which can attenuate social differentials by expanding service access to less privileged groups (Tsui, 1985).

In sum, the changing socio-demographic composition of the population in the Latin American countries examined has had an important impact on the aggregate increase in contraceptive use. Educated mothers tended to be a smaller and more heavily selected minority in the 1970s than a decade later. The growth in size of the educated and urban strata, together with the social diffusion of new values and habits, has had the expected effect of diluting some of the originally large disparities in contraceptive behaviour. An analogous process has occurred with regard to women's position in the family life cycle: contraception was initially adopted by high-parity women in order to discontinue child-bearing, whereas at a later phase, contraceptive use tends to spread out to all women regardless of their stage in the family-building process.

#### SUMMARY AND DISCUSSION

During the past decade, most Latin American countries have experienced a substantial increase in contraceptive prevalence, confined entirely to modern methods. Despite the economic setbacks faced by those countries in the 1980s, linked to the increasing burden of international debt, and despite major financial cuts in expenditures for social development, the secular trend in fertility decline has not stagnated (Guzmán, 1992). Also, despite the persistence of a large economic gap among social classes, the tendency in contraceptive behaviour has been towards convergence.

The availability of repeated survey data with analogous information has made it possible to examine aggregate trends as well as different subgroup trajectories. The results showed that the recent increase in contraceptive prevalence was not equally shared by all social and demographic groups. In fact, the most advantaged groups, such as highly educated women, have experienced virtually no gain, since they had already reached high levels of contraceptive use in the past. Gains have been disproportionately larger among the least favoured social groups, such as poorly educated women, low socio-economic strata and rural dwellers, sectors of the population that have traditionally displayed low reliance on contraceptive methods. The increase in fertility regulation has also been relatively larger among women in the midst of their family formation process, suggesting an expansion of the role of contraception from birth limitation to birth planning.

Socio-demographic differentials regarding contraceptive use in the mid-1970s were compared to those observed in the mid-1980s. Despite disproportionate gains by the least advantaged groups, the social gap in contraceptive behaviour remains quite large. Multivariate analysis confirmed the strong association between education, social class, urban residence and contraceptive use. Women with higher education, with educated partners, and living in an urban environment were much more likely to use contraception than their counterparts in both time periods, once their cohort affiliation and position in the life cycle were taken into account.

With the exception of Mexico, where the gap between educated and uneducated women regarding contraceptive use has actually increased, educational differentials have narrowed significantly in the rest of the countries, particularly in Colombia. Most of the social covariates, including urban residence, have seen their effect on contraceptive use weakened over time. This pattern suggests that when education ceases to be a scarce commodity to which only a few have access and when health services are available to all women regardless of social origin and place of residence, personal characteristics of families and mothers may start losing their primacy as determinants of contraceptive use.

The observed evolution suggests that contraception is initially adopted by educated, urban couples, creating a wide gap in contraceptive behaviour. At a later period, partly as a result of the institutionalization of family planning, contraception becomes an increasingly common behaviour and the practice filters down to lower social strata. Besides this diffusion process, other mechanisms underlie the observed tendency towards convergence. For instance, the upper strata had already reached a ceiling in contraceptive use which left little room for improvement. Educated sectors of the society had levels of contraceptive use in the past analogous to the levels prevailing in the developed world. Hence, it has been mainly the behavioural change within the lower strata that has marked the evolution at the national level of contraceptive prevalence. Also, given an environment of economic stagnation and rising educational aspirations, the perceived costs of child-bearing may be rising faster among lower social classes (Guzmán, 1990).

The decomposition exercise revealed that shifts in the social and demographic configuration of the population were relevant sources of aggregate change in contraceptive prevalence between the mid-1970s and the mid-1980s. Today's mothers are more likely to be educated, to be living in an urban setting and to have an educated partner than mothers in previous generations. It is also well known, from extensive analyses of WFS and DHS data, that the likelihood of using contraception increases with socio-economic status, mother's educational attainment being a particularly strong predictor. Accordingly, a shift in the composition of the population towards a growing proportion of educated women should lead to an increase in overall contraceptive prevalence, even if contraceptive use rates within each educational group remain unchanged over time. The improvement in maternal education was estimated to account for one tenth to one third of the national trend in contraceptive use. The study also documented a sizeable increase in the proportion of

women desiring no more children, reflecting a normative change in family size preferences, and this compositional shift was shown to influence the aggregate increase in contraceptive prevalence.

Structural changes, understood as changes in the relations between the explanatory variables and the likelihood of using contraception, were also found to be important, particularly in Colombia. The weakening of the effect of education or parity in determining contraceptive behaviour is a relevant structural change, since it implies increasing homogenization of contraceptive practices among women from different social strata and at different life cycle stages. However, it was also noted that the explanation for a large amount of the propensity change lay in the intercept—i.e., in the influence of factors not explicitly considered in the analysis.

In sum, in all countries examined, trends associated with social and economic development, such as enhanced female education, urbanization and preferences towards smaller families, have contributed to an increase in the overall level of contraceptive prevalence, simply by enlarging the proportion of women belonging to social and demographic groups which typically have higher rates of birth planning. Concomitantly, the increased propensity to use contraception among socially disadvantaged groups and among women in the midst of their family-building process was also shown to contribute to a rising prevalence rate. Though the predominant tendency has been towards convergence in contraceptive behaviour, exceptions to this pattern should not be downplayed. In Mexico, for example, in spite of considerable increase in overall contraceptive prevalence, educational disparities in contraceptive behaviour did not lessen. And, contrary to the general trend, the gap in contraceptive behaviour between rural and urban areas widened in Peru. It can be speculated that, as fertility regulation becomes an increasingly normative behaviour, contraceptive use could eventually transcend those traditional geographical, economic and social class divisions. However, further increase and social homogenization in contraceptive behaviour will largely depend on achievements in the reduction of poverty (Torres Adrian, 1993), on the promotion of women's education (Jejeebhoy, 1992), and on the extent to which family planning programmes are able to show a genuine commitment to expanding women's reproductive choices, emphasizing quality in the delivery of contraceptive and sexual health services (Hartmann, 1987; Dixon-Mueller, 1993).

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#### NOTES

<sup>1</sup> Although Colombia also had a strong family planning programme, fertility decline was not so spectacular within this time-frame, mainly because fertility had already reached a moderate level in the mid-1970s.

<sup>2</sup> In WFS, fecundity status was based on women's self-assessment of their own reproductive capability. DHS used a more behavioural approach to determine infecundity: non-pregnant women in union for at least five years who have not used contraception and have not given birth are classified as infecund, as are non-pregnant women who have not had their menstrual period in the past 12 weeks.

<sup>3</sup> Women seeking to become pregnant could also be excluded from the population potentially in "need" of contraceptive protection. Instead, we have opted to include child-bearing intentions as a covariate.

<sup>4</sup> Another pragmatic reason for restricting the analysis to women currently in union is that information on contraceptive use was collected only for that subgroup in WFS.

<sup>5</sup> Although sterilized women are not, strictly speaking, "exposed" to the risk of pregnancy, their exclusion would lead to a serious underestimation of the level of contraceptive prevalence. In the Dominican Republic, for instance, one third of all women in union and two thirds of all contraceptive users are sterilized.

<sup>6</sup> Contraceptive calendar history data, collected for Peru and Dominican Republic in DHS I and for every country in the second round of DHS, will make it possible to address more detailed research questions on the individual-level dynamics of contraceptive use, including method switching and method discontinuation (Kost, 1991).

<sup>7</sup> For the sake of brevity, the term "parity" is used interchangeably with the term "number of living children".

<sup>8</sup> No distinction is made between traditional and modern methods of contraception.

<sup>9</sup> The relevant test statistic for difference of coefficients is  $z = \beta_{DHS} - \beta_{WFS} / (s^2(\beta_{DHS}) + s^2(\beta_{WFS}))^{1/2}$ . The results of this test suggest that the differences between parameter estimates at the two time periods are statistically significant in all countries for only a few variables, such as urban residence and the intercept. Except in Colombia, where most of the structural relations have changed significantly, many of the observed changes in the coefficients are not significant by statistical criteria. However, we have opted to discuss them in equal terms, since they hint at the direction of societal change and hence could be meaningful in substantive terms, if not statistically.

<sup>10</sup> The relative odds are calculated by exponentiating the coefficient—i.e.,  $e^{\beta}$ .

<sup>11</sup> In the Dominican Republic, childless women have not shared in the overall increase in contraceptive use. Plausibly, the excessive emphasis on sterilization might have detrimental effects in the promotion of temporary contraceptive methods (Baez, 1993).

<sup>12</sup> Besides cohort effects linked to socialization, age is also associated with self-perception of fecundity.

<sup>13</sup> It was previously mentioned that the inclusion in the model of "desire for additional children", partly an endogenous variable, might bias the relationship between contraceptive use and other explanatory variables. A model excluding this variable was also estimated. The results revealed that, although the size of the coefficients of the variables remaining in the model increased, neither the sign nor the significance level changed.

<sup>14</sup> Because of small sample sizes, the estimates for the "undecided" category are not reliable.

<sup>15</sup> This assertion must be tempered by the fact that research in other settings has revealed that, although family planning clinics play a key role in the increase of contraceptive use, a large portion of the increase still remains unexplained after family planning programmes are taken into account (DaVanzo, 1988).

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