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Report to the Chairman, Subcommittee on Immigration and Refugee Affairs, Committee on the Judiciary, U.S. Senate

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IMMIGRATION

The Future Flow of Legal Immigration to the United States

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GAO

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Program Evaluation and
Methodology Division

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The Honorable Edward M. Kennedy
Chairman, Subcommittee on Immigration
and Refugee Affairs
Committee on the Judiciary
United States Senate

Dear Mr. Chairman:

In response to your September 25, 1987, letter, we are submitting this report on legal immigration to the United States. In this study, we forecast legal immigration to the year 1990. We also analyze the characteristics of persons who petitioned for the admission of relatives to the United States, in order to examine the likelihood of an explosive population growth from chain migration.

Copies of the report will be sent to the Senate Committee on the Judiciary and the House Subcommittee on Immigration, Refugees, and International Law of the House Committee on the Judiciary. Copies will also be sent to the attorney general, the secretary of the Department of State, the commissioner of the U.S. Immigration and Naturalization Service, and the director of the Bureau of the Census, as well as to other persons who request copies.

Sincerely,

Eleanor Chelimsky
Director

Executive Summary

Purpose

This report addresses some concerns that recent immigration has laid the basis for explosive growth in future legal immigration. That both legal and illegal immigration are matters of continuing interest was articulated in the Immigration Reform and Control Act of 1986, Public Law 99-603. This report seeks to (1) describe and analyze past patterns of legal immigration, (2) develop projections of the numbers and characteristics of legal immigrants in future years, (3) improve current knowledge about the immigration process as it concerns immediate relatives of U.S. citizens exempt from the annual numerical limits, and (4) assess the effect of the emigration of legal immigrants on net immigration.

Background

Since 1976, changes in immigration and refugee legislation, including the passage of the Refugee Act of 1980 (Public Law 96-212), have been linked to substantial relative growth in the amount of legal immigration. There were 570,000 legal immigrants in 1985, about 43 percent more than in 1976. There are three major categories of legal immigrants: (1) numerically limited immigrants, (2) exempt-immediate-relative immigrants, and (3) refugees.

Some observers contend that recent immigration will cause explosive growth in future legal immigration as immigrants are admitted, become U.S. citizens, and seek to bring in their relatives under the exempt-immediate-relative provisions of the law. This process has been termed "chain migration."

GAO examined recent data to ascertain the patterns of immigration and to develop projections of the level and characteristics of future legal immigration. To examine the chain migration issue, GAO developed and analyzed a new data base that links information on a sample of exempt-immediate-relative immigrants with information on the characteristics of their petitioners or sponsors. GAO also examined other immigrant relatives (that is, spouses, brothers, and sisters) who were admitted under the numerically limited second and fifth preference categories. GAO also reviewed studies on estimates of emigration from the United States to assess its effect on net immigration.

The primary objective of the Immigration Reform and Control Act of 1986 was to control illegal immigration into the United States, and it made few changes in the law regarding legal immigration. In reaching final agreement on the act, however, the congressional conferees strongly recommended that the committees on the judiciary of both houses continue to review the entire subject of legal immigration. The

Immigration Reform and Control Act of 1986 requires the president to transmit the first comprehensive "immigration-impact" report to the Congress by January 1989. This report must include past 3-year descriptions and future 5-year projections of the number and characteristics of legal immigrants.

Results in Brief

GAO projects that annual legal immigration during 1986 to 1990 will probably increase moderately from 546,000 to 606,000. All this increase is projected to be caused by increases in the number of exempt-immediate-relative immigrants. There will be slightly more exempt-immediate-relative immigrants by 1990 than numerically limited immigrants, who normally actually number approximately 265,000 annually. These findings are based on an analysis of data on past immigration trends and a forecast of future legal immigration. (See pages 36-39.)

GAO's analysis generally does not indicate that an explosive increase in future chain migration of exempt-immediate-relative immigrants is likely. Two facts provide the main support for this conclusion: (1) the percentage of sponsors who were former immigrants was low and (2) the average time between steps in the chain migration process was relatively long. However, there is some evidence of chain migration among immigrants from Asia. (See pages 50-60.)

Since GAO's projections of future legal immigration do not include persons who will become legal immigrants under the Immigration Reform and Control Act of 1986, they understate the total number of new legal immigrants. In the sense that they measure legal movement into the country, however, GAO's projections are not affected, because most persons covered by the Immigration Reform and Control Act of 1986 are already living in the United States. (See pages 16-18.)

Findings

Immigration Projections

GAO projects that 2,885,000 persons will enter the United States as legal immigrants in fiscal years 1986-90. Legal immigration will be highly by geographic area. Fifty-five percent will come from 10 countries: the Philippines, Korea, India, Iran, Vietnam, China, Taiwan, Mexico, the Dominican Republic, and Jamaica. (See pages 36-41 and 101-05.)

Chain Migration of Immigrants

GAO's analysis indicates that exempt-immediate-relative immigration does not generally result from sponsorship by former immigrants. About 64 percent of the petitioners for exempt-immediate-relative immigrants in GAO's study were native-born U.S. citizens. Among the remaining 36 percent of petitioners who once were immigrants, the average time between their arrival and the arrival of their exempt-immediate relatives was about 12 years. Only about 10 percent of former immigrant petitioners were admitted under the numerically restricted fifth preference category (brothers and sisters). (See pages 55-58.)

Immigration patterns varied significantly by country and region. Petitioners from Asian countries, especially China, exhibited some chain migration characteristics. Since immigration from these countries is expected to increase, this suggests some increase in chain migration, despite the absence of any such overall trend. (See pages 58-61.)

Emigration of Immigrants

The number of legal immigrants who become permanent resident aliens and then later emigrate is unknown, and there are no current estimates of the size of this group. GAO found no comprehensive approach to counting emigrants and no uniformity in the development of a measure of net immigration to the United States. (See pages 73-75.)

Better emigration data would be useful in several respects. First, the resulting improvement in the ability to measure emigration would provide a more realistic indicator of the long-term effect of immigration to the United States. Second, better data on emigration would improve the ability to forecast trends in legal immigration. Third, better emigration data would be useful in demonstrating the effect of immigration for the newly required, periodic, immigration-impact report. Fourth, a good measure of net immigration would be useful for other purposes, unrelated to the present report, in estimating the rate, size, and distribution of U.S. population growth. Finally, resources devoted to improving information on net immigration would also improve the ability to estimate the changes in the number of illegal immigrants because a methodology to obtain complete estimates of the emigration of legal immigrants would need to look at the entire population: legal immigrants, illegal immigrants, and U.S. citizens. (See pages 78-79.)

Recommendation

GAO recommends that the attorney general direct the commissioner of the Immigration and Nationalization Service to consult with the director

of the Bureau of the Census to develop and implement a uniform methodology for estimating net migration to the United States by adequately accounting for the emigration of non-U.S. citizens and permanent resident aliens. This measure of net immigration should reflect the policy objectives and requirements of the Immigration Reform and Control Act of 1986 and other immigration laws. Because alternatives were not studied, GAO does not take any position on which method or combination of methods should be used. (See page 79.)

Agency Comments

The Department of State, the Department of Justice, and the Bureau of the Census provided positive comments on the draft report, collectively indicating that they found the draft report useful, logical, and well done. (Their letters are printed in appendixes VI-VIII.) The Department of State said, however, that the report gives a misimpression concerning the magnitude of recent refugee admissions because the analysis of the past flow of refugees counted refugees at the time of adjustment to permanent resident status rather than at the time the refugees arrived in the United States. GAO believes that over the long period of analysis of past flows, either measure would have conveyed the same trends, because approximately 95 percent of the refugees who arrive in the United States subsequently adjust to permanent resident status. The Department of Justice thought that measuring emigration would be costly. However, GAO continues to believe that emigration data are needed to make valid estimates of net immigration and should be collected. Although no precise cost estimates are available, and GAO has not recommended a specific method, GAO's opinion is that the benefits of the proposed data collection would exceed the costs of collecting this information. The Bureau of the Census, which noted that the analysis of petitioners represented a milestone in immigration research, also said that the findings about the evidence of some chain migration from Asian countries should be given more prominence. GAO agrees and has highlighted these findings; however, its overall conclusion that massive chain migration is generally not occurring remains unchanged.

Contents

Figures

Abbreviations

ARIMA	Autoregressive integrated moving average
CPS	Current Population Survey
GAO	General Accounting Office
INS	Immigration and Naturalization Service
MA	Moving average
NIIS	Nonimmigrant Information System
SCA	Scientific Computing Associates
SMA	Seasonal moving average

Legal Immigration to the United States: Recent Perspectives and Policy Issues

Background

During the past decade, a great deal of policy attention has been paid to immigration legislation and reform proposals, culminating in passage of the Immigration Reform and Control Act of 1986 (Public Law 99-603). While the principal focus of these discussions—and the 1986 act—has been and continues to be upon illegal immigration, actual changes in immigration legislation prior to the 1986 act, while relatively minor, predominantly affected legal immigration. These minor changes, which took place between 1976 and 1980, include revisions in the numerical limitations, preference categories, and provisions for refugee admissions.

Moreover, in reaching final agreement on the Immigration Reform and Control Act of 1986, the congressional conferees strongly recommended that the committees of the judiciary of both houses continue to expeditiously review the entire subject of legal immigration. The 1986 act also mandates that the president prepare a triennial, comprehensive, "immigration-impact" report, the first one due in January 1989. This report must include past 3-year descriptions and future 5-year projections of the number and characteristics of legal immigrants and a description of the "impact" of admission and other entries of immigrants on the United States.

Since 1977, the annual number of immediate relatives of U.S. citizens granted immigrant status outside the numerical limitations (that is, under other provisions of immigration legislation) has more than doubled. Some observers of immigration issues are concerned that recent legal immigration has laid the basis for explosive growth in future legal immigration, as immigrants are admitted, become U.S. citizens, and seek to bring in their relatives. An opposing factor, however, is the recent short-term decrease in the annual number of refugees becoming immigrants (adjusting to permanent resident alien status) from 157,000 in fiscal year 1981 to 95,000 in fiscal year 1985. It is important, therefore, that future immigration policy discussions be grounded in the best available factual understanding of legal immigration and its likely future trends.

To this end, we have conducted a study of legal immigration. Our study anticipates and addresses information needs contained in the 1986 act in several ways.

- It develops a general description and analysis of past patterns of legal immigration.

- It uses the description and analysis to develop projections of the numbers and characteristics of legal immigrants for future years.
- It develops and analyzes a new data base on the characteristics of immigrants' sponsors for those whose status as immediate relatives of U.S. citizens makes them exempt from the annual numerical limits.
- Finally, it considers the effect of emigration on net legal immigration by synthesizing and evaluating the findings of recent emigration studies.

The Components of Legal Immigration

In studying the flow of legal immigrants to the United States, it is important to understand that there are basically three ways that aliens—persons who are not U.S. citizens—can become legal immigrants—that is, aliens admitted to the United States as lawful permanent residents. These processes are discussed briefly here. They are explained in more detail in appendix I.

Numerically Limited Immigrants

Under current law, an overall total of 270,000 immigrants may be admitted annually in six preference categories. During fiscal year 1985, about 264,000 persons were admitted by this route. Some relatives of immigrants may be admitted under the second (spouses) and fifth (brothers and sisters) preference categories. (These are listed in detail in table I.2.)

Exempt-Immediate-Relative Immigration

Certain immediate relatives of U.S. citizens (spouses, unmarried minor children, and parents of adult citizens) can be admitted without regard to the numerical limitations. The annual number of immigrants admitted as exempt-immediate relatives has been growing steadily, from 103,925 in fiscal year 1976 to 151,131 in fiscal year 1980 to 198,143 in fiscal year 1985.

Refugees

Refugees are subject to a separate process. The number who may be admitted is determined annually by the president after consulting with the Congress. After 1 year of continuous presence in the United States, refugees are eligible to adjust to lawful permanent resident status. The annual number of refugee immigrants has fluctuated considerably over

the past 10 years.[1] During fiscal year 1985, about 95,000 refugees became immigrants (adjusted to permanent resident alien status), making up 17 percent of all legal immigrants for that year.

Prior Work

Prior to undertaking this study, we found that limited work had been done in projecting future legal immigration flows. The Immigration and Naturalization Service (INS), the agency with principal responsibility for immigration data, does not make such projections.

The Bureau of the Census has used several alternative assumptions about annual levels of future legal immigrant flows in developing its population projections. These have been termed "low," "medium," and "high" series projections (Spencer and Long, 1983; U.S. Bureau of the Census, 1984). Although these levels are based on analysis of past patterns, the development of these assumptions does not involve separate projections for numerically limited, exempt-immediate-relative, and refugee immigrants. For each of the three alternatives, the overall levels of immigration are assumed to be constant for all future years. The projections do not incorporate an upward trend that corresponds to the growth pattern we identified for the exempt-immediate-relative component of legal immigration. The Bureau's projections disaggregate legal immigrants by sex and age but not by country of birth.

Finally, in its projections, the Bureau of the Census incorporates three alternative assumptions about emigration, or outmigration, flows in determining net immigration.[2] As with legal immigration flows, these emigration flows are assumed to be constant in annual totals and by sex and age throughout the projection period.

An alternative perspective on emigration (Kraly and Avery, 1986) sees the process as a function of age and sex-specific rates applied to some population at risk of emigrating—that is, the foreign-born population in the United States.

[1]In this study, we analyzed past refugee flows by counting refugees as immigrants not at the time they entered the United States (as refugee arrivals) but at the time they adjusted to permanent resident alien (immigrant) status. In projections of future flows, however, we used refugee arrivals as our measure. For a more detailed explanation of why we used these two different measures, see the discussion in chapter 3.

[2]The net effect of immigration and emigration on an area's population may be referred to as "net immigration" or "net emigration," depending on whether immigration or emigration is larger. Except for two brief periods in 1917-18 and 1932-36, immigration has always exceeded emigration in the United States. Net migration is the net effect of the number of immigrants and emigrants on an area's population, and it can refer to either net immigration or net emigration.

Because the population of former immigrants in the United States has been increasing, we anticipate that the annual volume of emigration will increase rather than remain constant.

We found, through literature reviews and interviews with researchers in this area, only one other formal projection of annual legal immigration besides that of the Bureau of the Census. This study (Bean, Opitz, and Stephen, 1984) developed three projections for 5-year intervals from 1985 to 2005 for legal immigrants in total and by sex and age, based on alternative assumptions about future legal immigration. Two of the alternatives incorporated an upward trend based on extrapolation from past behavior. But the projections did not disaggregate by the three different routes to legal immigration, did not link the projections to past behavior by an explicit methodology such as modeling, and did not make projections by country of birth.

Overall, we concluded that while some work has been done on legal immigration, additional work appeared to be needed to develop more complete and detailed projections of future legal immigration flows and to fill gaps in our knowledge about legal immigration of exempt-immediate relatives. Our work has focused on projecting each component of legal immigration separately, using data and methodologies appropriate to each component.

Key Assumptions

A major assumption underlying our study is that future trends in legal immigration can be projected by modeling or otherwise extrapolating from past patterns of behavior. This assumption is confirmed by our analysis of past immigration patterns in chapter 2. Basing future projections upon past patterns of behavior is, therefore, appropriate for numerically limited immigrants and exempt-immediate-relative immigrants, who constituted 85 percent of all legal immigrants in fiscal year 1985.

For numerically limited immigrants, we know that there is a statutory ceiling on the total number of legal immigrants and that the annual number of immigrants approximates that ceiling closely. Assuming the same numerical limitations continue, it is reasonable to use it as a basis for projections.[3]

[3]The Immigration and Nationality Act Amendments of 1965 (Public Law 89-236) established an annual ceiling of 290,000 numerically limited immigrants. The Refugee Act of 1980 reduced this ceiling to 270,000 annually by establishing a separate category for refugees. No recent legislative debates or proposals have suggested altering the 270,000 annual limit.

For exempt-immediate-relative immigrants, our analysis indicated a relatively stable upward trend that supports forecasting based on time-series modeling of past behavior.

For refugees, the assumption of continuity between the past and the future is questionable. Past refugee flows have been highly variable; the number of refugees admitted annually is determined by a variety of domestic and international factors. For this component of legal immigration, it is necessary to relax the assumption of continuity between past and future behavior. We examined Department of State projections of future refugee arrivals and actual refugee arrivals, but we determined that the annual number of refugee arrivals during recent fiscal years could be best predicted by using the number of refugee arrivals for the previous fiscal year.

A second key assumption of the study, linked to the first, is that of continuation of immigration law as it existed in early 1986. Major changes in legislation alter the assumption of continuity between past and future that underlies the predictive ability of time-series models. The impact of many legislative changes can be so complex that we cannot project their consequences.

Changes in 1986 Immigration Legislation

The Immigration Reform and Control Act of 1986 made significant changes in immigration legislation. It created three time-limited categories of legal immigrants, most of whom can be considered de facto permanent residents of the United States:

1. The first and perhaps most important—the so-called amnesty provision—permits aliens who have lived continuously in the United States in an unlawful status since before January 1, 1982, to apply for temporary resident status. Aliens must apply from May 5, 1987, to May 4, 1988, to be considered for adjustment to temporary resident status. After 18 months in temporary resident status, individuals can apply for adjustment to legal immigrant (permanent resident alien) status.

2. The second allows some aliens who have performed certain agricultural services during the last 3 years, ending May 1, 1986, to apply for temporary permanent resident status. Application must be made between June 1, 1987, and December 1, 1988. Individuals may adjust to legal resident status after 1 year in this temporary status, if they worked 90 "man-days" in such seasonal work in each of the last 3 years.

Individuals who worked 90 "man-days" in such seasonal work only during the 12-month period ending May 1, 1986, may adjust to lawful permanent resident status 2 years from the date of the adjustment to temporary resident status. Up to 350,000 such workers may obtain permanent resident status during the first year; an unlimited number of qualified applicants are eligible during the second year.

3. A third category provides for eligibility for permanent resident status for all Cuban and Haitian entrants who have continuously resided in the United States since before January 1, 1982. They must apply for adjustment within 2 years after November 6, 1986, the date of enactment of the 1986 act. These Cuban and Haitian entrants are very similar to the refugees discussed earlier; this provision is intended to allow them to adjust to legal immigrant status in a manner similar to that of the refugees.

4. The act also made a fourth change affecting legal immigration that will lead to a small additional flow of legal immigrants from outside the United States during 2 fiscal years, by adding 10,000 visas to the numerical limitations (5,000 for fiscal year 1987 and 5,000 for fiscal year 1988). According to the act, these visas shall be made available after November 6, 1986, "strictly in the chronological order in which immigrants qualify." In the issuance of these visas, preference will be granted to "those countries which enjoyed favorable quotas and/or whose nationals received significant numbers of visas" prior to enactment of the Immigration and Nationality Act Amendments of 1965.

We considered the direct effects on legal immigration of the first three legislative changes to be beyond the scope of our work. They represent a fundamental structural change in legislation that cannot be accommodated within the forecasting methodology that we developed for our study. Our methodology is based on time-series modeling and available data on legal immigration.

We believe that the Immigration Reform and Control Act of 1986 is unlikely to affect future legal immigration to the United States for at least 6 years, a period that is beyond the range of our projections. First, most aliens who qualify for amnesty under the act have already been in the United States since before 1982; they cannot be "projected" to enter the United States, because they are already here. The only effect on future legal immigration would be when these legalized aliens become naturalized citizens and bring in their exempt-immediate relatives. Because of a 1-year temporary residence and a 5-year waiting period in

order to petition for exempt-immediate relatives, the effect (if any) will not come for at least 6 years.

We incorporated into our projections the fourth legislative change, the temporary 2-year increase in the ceiling on numerically limited immigrants.

All these changes under the 1986 act will also ultimately have indirect effects on chain migration of the exempt-immediate-relative category of legal immigrants. Given the act's provisions and our analysis of the chain migration process in chapter 4, however, we believe that such effects will occur after fiscal year 1990.

Most of the persons affected by the 1986 act will not qualify for legal immigrant status until fiscal year 1989; any subsequent chain migration involves the time required for the steps of naturalization, petitioning, and the arrival of the next "generation" of immigrants. As we demonstrate below, the average time interval between different "generations" of immigrants attributable to chain migration is more than a decade. For Mexico, the country of birth likely to be most strongly affected by these changes, our analysis shows an interval of 15 years—clearly well outside our projection period.[4]

Objectives, Scope, and Methodology

We focused our study on four major objectives:

- to describe past legal immigration flows,
- to forecast future legal immigration flows,
- to improve understanding of the process of exempt-immediate-relative immigration, and
- to assess the effect of the emigration of legal immigrants on net immigration.

All these objectives are linked to legislation on legal immigration before 1986. But because the legislation did not change the major categories of legal immigration that lead to flows of new immigrants from outside the United States, and because the predominant short-term effect of the 1986 act is to legalize the status of persons who are de facto permanent

[4]The Congress passed separate legislation (Public Law 99-369) in 1986 intended to restrict fraudulent marriages between U.S. citizens and aliens. This legislation may affect the number of spouses who become legal immigrants in the exempt-immediate-relative category. It would be very difficult, and not within the scope of our study, to attempt to predict the effect of this law.

residents, we believe our results remain valid and will be useful to the continuing congressional need for information on legal immigration.

Our work to analyze and forecast legal immigration was substantially complete before the passage of the 1986 act. Therefore, we did not review the plans of INS and other federal agencies to conduct similar work for preparing the required triennial, comprehensive "immigration-impact" report.

In the sections below, we describe briefly our discussion of our objectives in chapters 2-5. Chapter 6 presents overall conclusions, observations, and recommendations to INS.

Objective 1

Chapter 2 provides a description of immigration flows over the past 14 years, fiscal year 1972 through fiscal year 1985. We developed this description to establish a complete picture of past immigration flows, including patterns of change and stability, and to lay an empirical foundation, including the estimation of time-series models, for projections of future flows.

The data source for this analysis was INS's Immigrant Public Use Tapes, available from fiscal year 1972 through fiscal year 1985. The data on these tapes consist of variables describing certain characteristics, including month of admission, of each immigrant admitted to permanent resident alien status during these fiscal years.

These data were supplied to us by INS as 15 separate files, each containing unit-record data on all immigrants admitted in 1 fiscal year. (There were 2 files for 1976 because the shift of the end of the federal fiscal year from June to September created a one-time transitional quarter.) We created a number of aggregated, merged files of both annual and monthly data for the 1972-85 period for our variables of interest (type of admission, country of birth, sex, and age). Because the data are generally accepted for statistical use throughout the federal government, we did not independently verify them.

In creating these merged files, we grouped codes on classes of admissions appropriately and consistently to take account of changes in legislation over the period. For example, prior to 1981 many refugees were admitted under a separate, numerically limited preference category. We grouped codes for refugees consistently to enhance the analysis in accounting for changes in annual legal refugee immigration.

Objective 2

Chapter 3 develops projections of numbers and characteristics of legal immigrants for future years. Using the monthly data on exempt-immediate relatives, we developed a time-series model to forecast future immigrant flows using the autoregressive integrated moving average (ARIMA) technique.

Objective 3

Chapter 4 addresses an objective of the study, complementary to the first two, of increasing the understanding of processes affecting exempt-immediate-relative immigration, the fastest-growing component of legal immigration. In addressing this broad topic, we concentrated on describing and analyzing the characteristics and previous immigration history (arrival, naturalization, and petitioning) of U.S. citizens sponsoring their eligible children, parents, and spouses.

To accomplish this, we developed and analyzed a new computerized data base linking information on a stratified random sample of recent exempt-immediate-relative immigrants (those for fiscal year 1985) with information on the characteristics of the citizens who sponsored these immigrants. (For details on the sampling and data collection procedures used, see appendix II.)

Information on these immigrants was mainly taken from the fiscal year 1985 immigrant public use tape. Information on the petitioners was obtained for us by INS from petition forms contained in INS's administrative files in 51 File Control Offices throughout the nation and from information recorded in INS's Central Index System. These data enabled us to distinguish for the first time between exempt-immediate-relative immigrants petitioned for by native-born citizens and those petitioned for by naturalized citizens—that is, persons who once were immigrants.

Chapter 4 provides our analysis of this data base. It describes the characteristics of petitioners for recent exempt-immediate-relative immigrants. It estimates the proportion of petitioners who are native born and those who are naturalized and how these proportions vary by major country of birth. In addition, it analyzes the immigration, naturalization, and petitioning history of naturalized petitioners. This enabled us to describe time lags in the exempt-immediate-relative immigration process.

Objective 4

Chapter 5 discusses emigration from the United States, adding balance to our projections of legal immigration. We have synthesized what is

known about how immigration is offset by emigration and made appropriate qualifications of our projections.

Annual Legal Immigration to the United States 1972-85

In this chapter, we describe immigration to the United States during the 14-year period 1972-85, both in the aggregate and by type of admission (exempt-immediate-relative, numerically limited, and refugee), country of birth, sex, and age.

The first goal is to present a complete picture of the flow of legal immigration over the 14-year period and to develop an understanding of patterns of change and stability in both overall numbers and characteristics (for example, country of birth). The second goal is to lay a foundation for the projections of future legal immigration. These projections are developed in chapter 3.

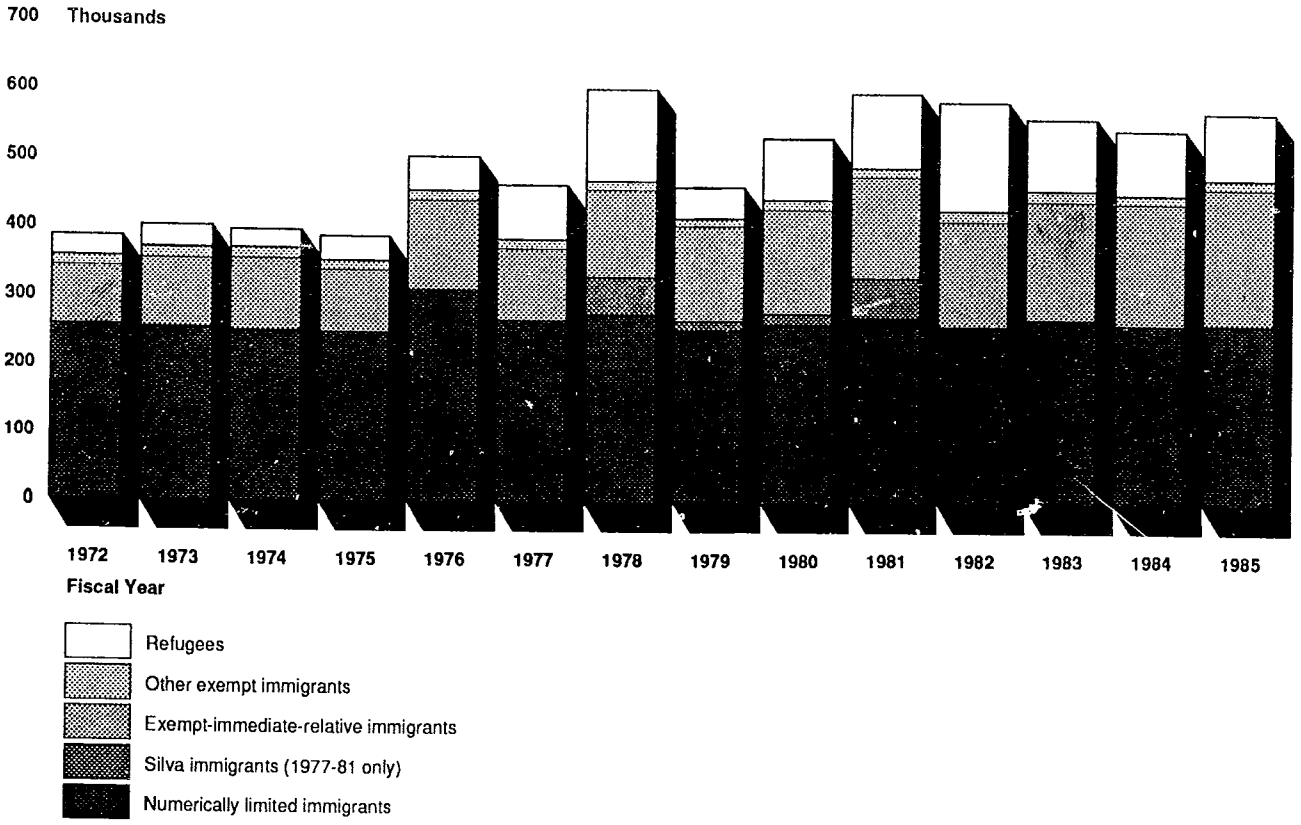
Type of Admission

Figure 2.1 presents an overview of the total flow of legal immigration from fiscal year 1972 through fiscal year 1985. While there was some year-to-year fluctuation through the period, the annual flow increased from around 400,000 in the early 1970's to nearly 600,000 in the past few years.

We have grouped all legal immigrants during this period into five types of admission, displayed from bottom to top in figure 2.1:

- Numerically limited immigrants were admitted under the six current numerically limited preference categories in effect since 1980 and their functional equivalents for earlier years.
- Silva immigrants were a special one-time category, instituted by court order, of immigrants from Western Hemisphere countries (predominantly Mexico). They were admitted as immigrants to compensate for the use in earlier years of about 145,000 preference system slots to accommodate Cuban refugees. The Silva allocation, while technically considered part of the numerical limits, was assigned in addition to the annual ceiling for preference system immigrants.
- Exempt-immediate-relative immigrants were admitted outside the numerical limitations because of their close relationship to U.S. citizens. They included spouses, minor children, adopted orphans, and parents.
- Other exempt immigrants is a miscellaneous category of immigrants who were also exempt from numerical limitations (such as ministers and former U.S. government employees abroad). The annual total was in the range of 10,000 to 15,000 during 1972-85.
- Refugees were persons outside their own counties of nationality and unable or unwilling to return because of persecution or a fear of persecution. Procedures for refugee admissions have been uniform since the Refugee Act of 1980. Before then, refugees became immigrants under

Figure 2.1: Annual Legal Immigration to the United States, by Type of Admission, in Fiscal Years 1972-85



Note: From 1972 to 1979, refugees were classified in several categories, and we have grouped them into one category for consistency. The Refugee Act of 1980 standardized the admission of refugees within one category.

Fiscal year 1976 includes July-September 1976 data. Since October 1, 1977, the data are for fiscal years ending September 30 of the respective year.

Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

several codes of admission, both numerically limited and exempt. We combined all refugee-related codes to make the refugee category consistent across the years.[1]

[1]We have also included asylees in our count of refugees. An asylee is an alien in the United States or at a port of entry unable or unwilling to return to his or her country of origin or to seek the protection of that country because of persecution or a well-founded fear of persecution.

In figure 2.1 and other relevant figures in this chapter, we have included data from the one-time 1976 transitional quarter within our representation of fiscal year 1976 data. For example, our total of 502,000 immigrants for fiscal year 1976 includes 100,600 immigrants for July-September 1976, the transitional quarter during which the United States switched from the July 1-June 30 fiscal year to the October 1-September 30 fiscal year.

Other detailed immigration data are available in annual issues of the Statistical Yearbook of the Immigration and Naturalization Service. The Statistical Analysis Branch of INS also has extremely detailed published and unpublished tables that are available to interested persons.

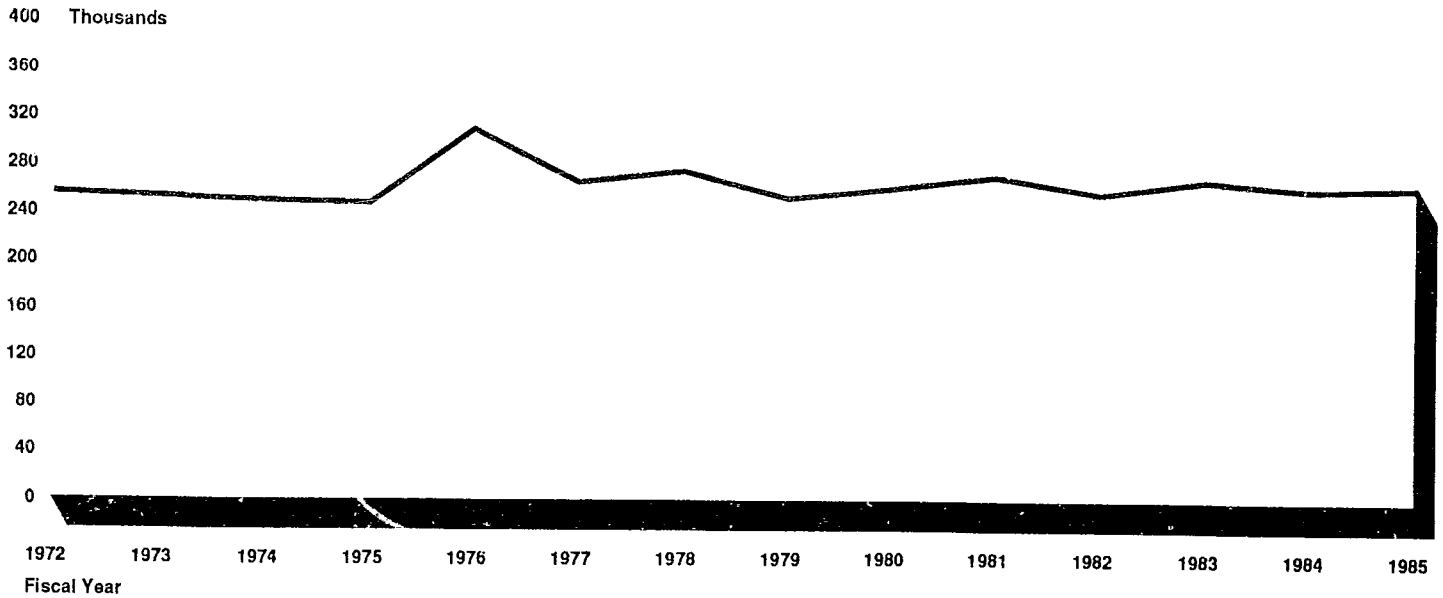
Figures 2.2, 2.3, and 2.4 separately display numbers of immigrants by fiscal year for the three major types of admission. (We excluded Silva immigrants and other exempt immigrants as transitory and minor categories, respectively.) For numerically limited immigrants (figure 2.2), the trend over the 1972-85 period was flat, thus demonstrating clearly that numerical-preference immigration approximates the annual worldwide ceiling of 270,000. (Prior to 1981, the ceiling was 290,000, but it included approximately 20,000 annually in refugee immigration.)

For exempt-immediate-relative immigrants, the trend over the period was clearly and consistently increasing (figure 2.3). From 1975 to 1985, the total more than doubled, increasing from 91,504 to 198,143. The fact of so much stability in the trend strongly implies that this type of immigration is generated by a process amenable to time-series modeling, a topic we explore in more detail in chapter 3 and appendix III.

The pattern of refugees adjusting to immigrant status over time (figure 2.4) was very different from the two other major types. After a low level in the early 1970's, it exhibited substantial fluctuation and volatility. The dominant causal factor has been refugee flows from Southeast Asia, first in the late 1970's following the U.S. pullout from South Vietnam in 1975 and then later in the early 1980's, because of more widespread instability and political persecution in Laos, Cambodia, and Vietnam. Since the passage of the 1980 Refugee Act, the number of refugee arrivals and refugee adjustments to immigrant (permanent resident alien) status has decreased and become more stable.[2] Overall, however,

[2]The Refugee Act of 1980 standardized the procedure for admitting refugees into the United States by redefining "refugee" and establishing a separate admission category. For one interpretation of the effect of this legislation, see Loescher and Scanlan (1986).

Figure 2.2: Annual Numerically Limited Immigration to the United States in Fiscal Years 1972-85



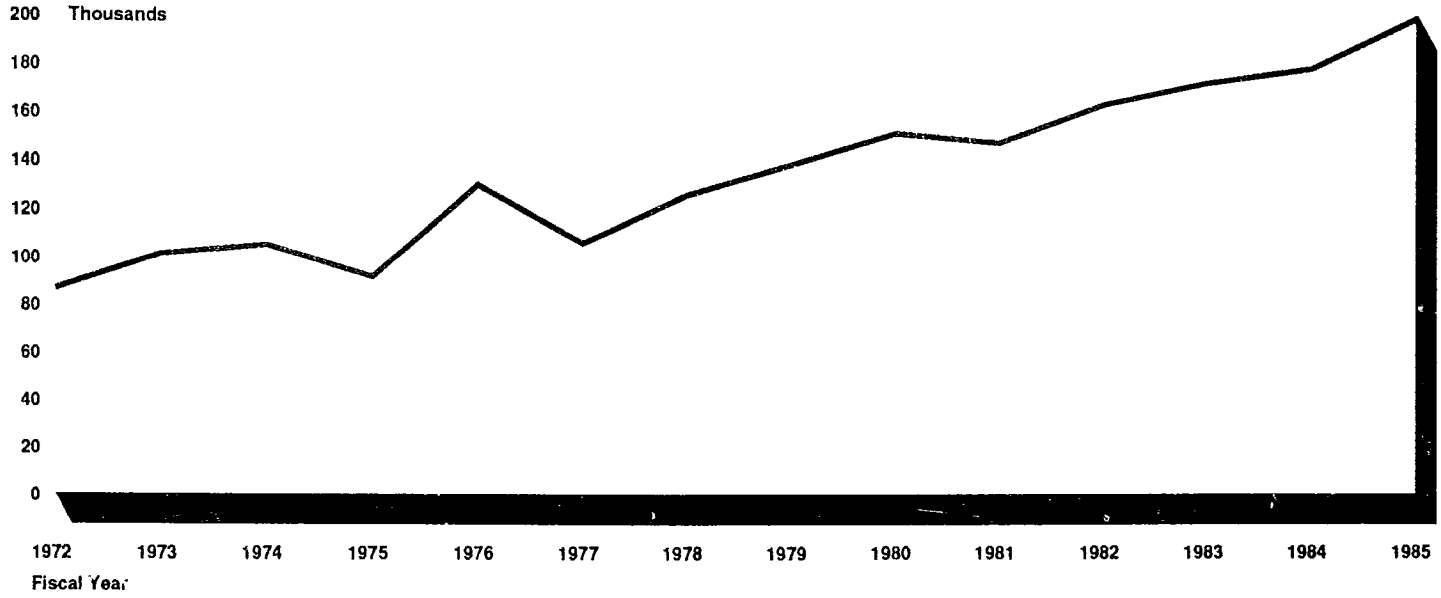
Note: These data do not include refugees. Fiscal year 1976 includes July-September 1976 data. Since October 1, 1977, the data are for fiscal years ending September 30 of the respective year.

Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

past refugee immigration has been highly variable with no predictable pattern.

Caution must be used in comparing the numbers of refugees with other categories of immigrants for a given year. The public-use tapes from INS that we analyzed counted persons at the time they adjusted to permanent resident alien status. In the case of refugees, this cannot occur until at least 1 year after a refugee arrives in the United States, but for other categories of immigrants, it would normally occur at the time an immigrant enters the United States. We could have attempted to use other data sources from INS or the Department of State to construct a new data base that counted refugees at the time of arrival, or we could have simply used counts of the total annual refugee arrivals and not the more comprehensive demographic and geographic detail from the data that are available on the INS tapes. We judged that the former was too great an effort for a relatively small payoff and the latter was an unnecessary sacrifice.

Figure 2.3: Annual Exempt-Immediate-Relative Immigration to the United States in Fiscal Years 1972-85

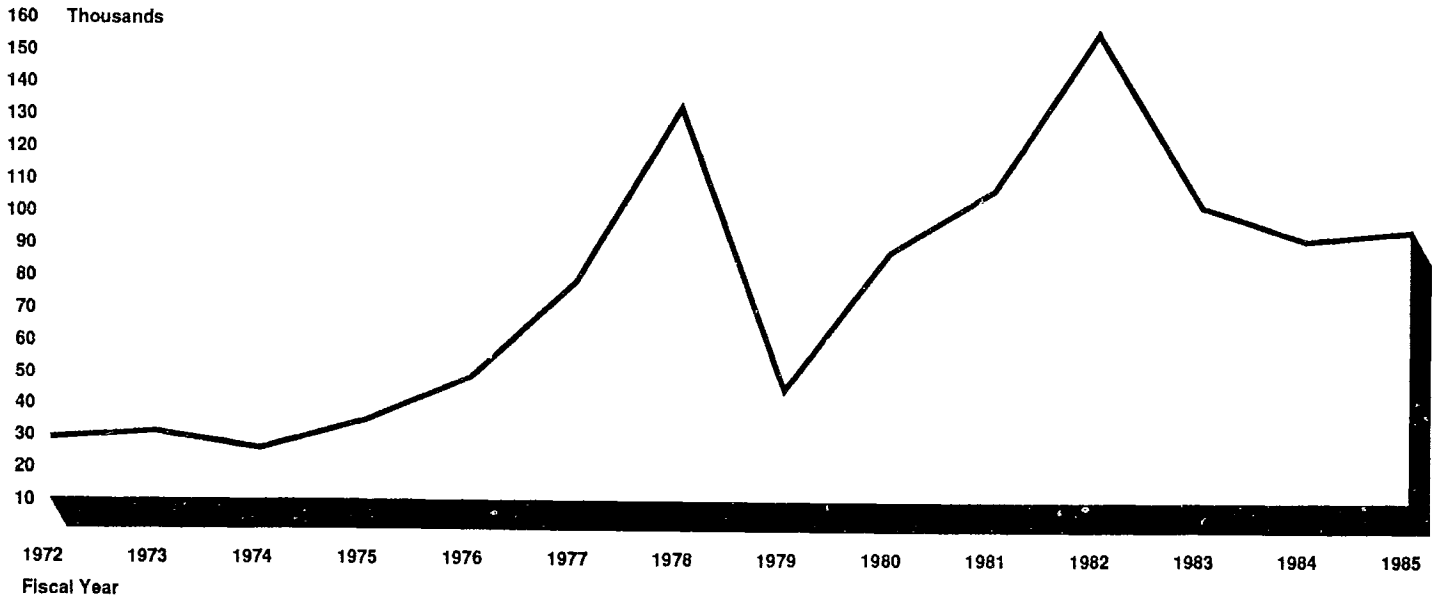


Note: These data do not include refugees. Fiscal year 1976 includes July-September 1976 data. Since October 1, 1977, the data are for fiscal years ending September 30 of the respective year.

Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

The effect of this decision, however, is a loss of some degree of comparability. For the past several years, refugee adjustments to permanent resident alien status have been at a somewhat higher level than refugee arrivals. In fiscal years 1983-85, arrivals were 60,662, 70,591, and 67,775. Refugee adjustments to permanent resident alien status for fiscal years 1983-85 were 102,685, 92,127, and 95,040. An INS official told us that about 95 percent of the persons who enter the United States as refugee arrivals adjust their status to that of permanent resident alien but at different times. Thus, over a period of time, the grand totals would be similar, although the number of adjustments would be expected to be somewhat smaller—primarily because some refugees choose to emigrate back to their homeland or to another country before adjusting to permanent resident alien status.

Figure 2.4: Annual Refugee Immigration to the United States in Fiscal Years 1972-85



Note: From 1972 to 1979, refugees were classified in several categories, and we have grouped them into one category for consistency. The Refugee Act of 1980 standardized the admission of refugees within one category.

Fiscal year 1976 includes July-September 1976 data. Since October 1, 1977, the data are for fiscal years ending September 30 of the respective year.

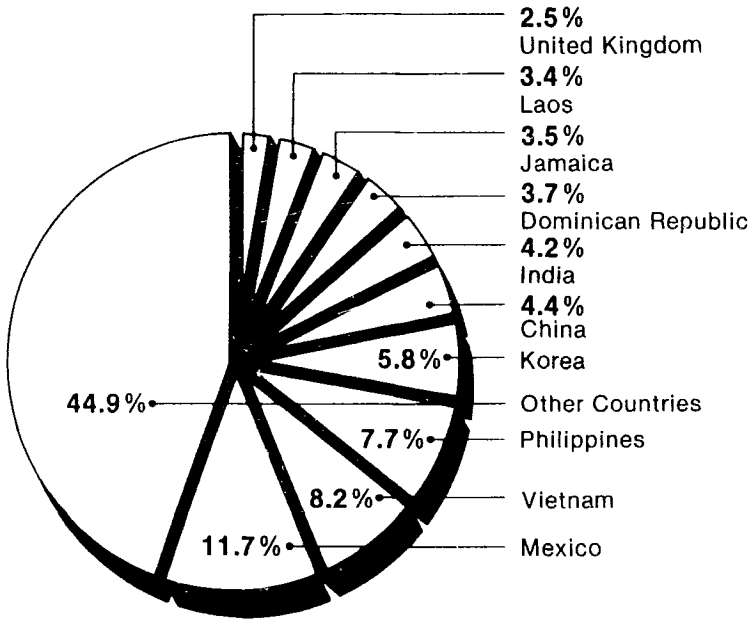
Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

Immigration by Country of Birth

Figures 2.5 through 2.8 present past patterns of legal immigration by major country of birth. As figure 2.5 indicates, recent legal immigration was highly concentrated in a few countries, despite the fact that under the numerical limitations, only 20,000 immigrants can be admitted annually from any one country. Nevertheless, the 10 largest source countries (Vietnam, Laos, the Philippines, Korea, China, India, Mexico, the Dominican Republic, Jamaica, and the United Kingdom) accounted for more than half (55 percent) of all legal immigration during fiscal years 1981-85, while the remaining 30 countries we studied accounted for 45 percent during this same period.[3]

[3]We obtained these rankings by taking the average annual legal immigration during fiscal years 1981-85 for every country. We selected the 40 countries that had the largest annual averages.

Figure 2.5: Percentage Legal U.S. Immigration by Country of Birth in Fiscal Years 1981-85

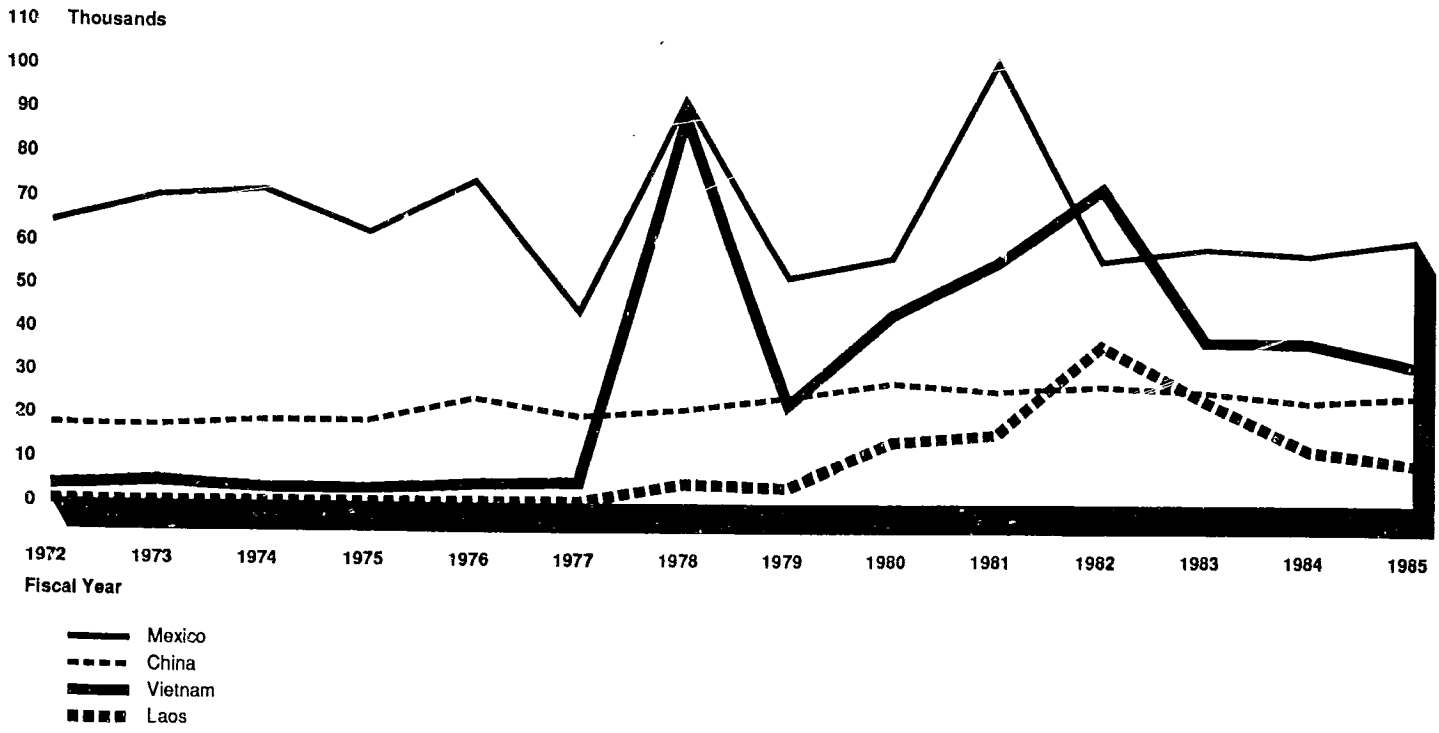


Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1981-85.

Figures 2.6 through 2.8 display patterns over the total 1972-85 period for the 10 major source countries. Mexico, not surprisingly, was the country of birth of most legal immigrants in 9 of those years. Interestingly, however, there were fewer immigrants from Mexico in 1985 than in 1972, and the peak years for legal Mexican immigration were 1978 and 1981. The explanation is that the 20,000 per country limit for numerically limited immigrants has effectively applied to Mexico only since 1982. Before 1977 there were no per country limits on the Western Hemisphere, and from 1977 through 1981 the Silva Program allowed Mexico to exceed the limit—particularly in 1978 and 1981.

The other major source countries with wide fluctuations during 1972-85 were Southeast Asia countries of refugee origin—Vietnam and Laos. Virtually no refugees from either of these countries adjusted to immigrant status until 1978. After major numbers of immigrants from both countries arrived from 1978 through 1982, the numbers have declined each year for 1983-85.

Figure 2.6: Annual Legal Immigration to the United States, From Mexico, China, Vietnam, and Laos, in Fiscal Years 1972-85

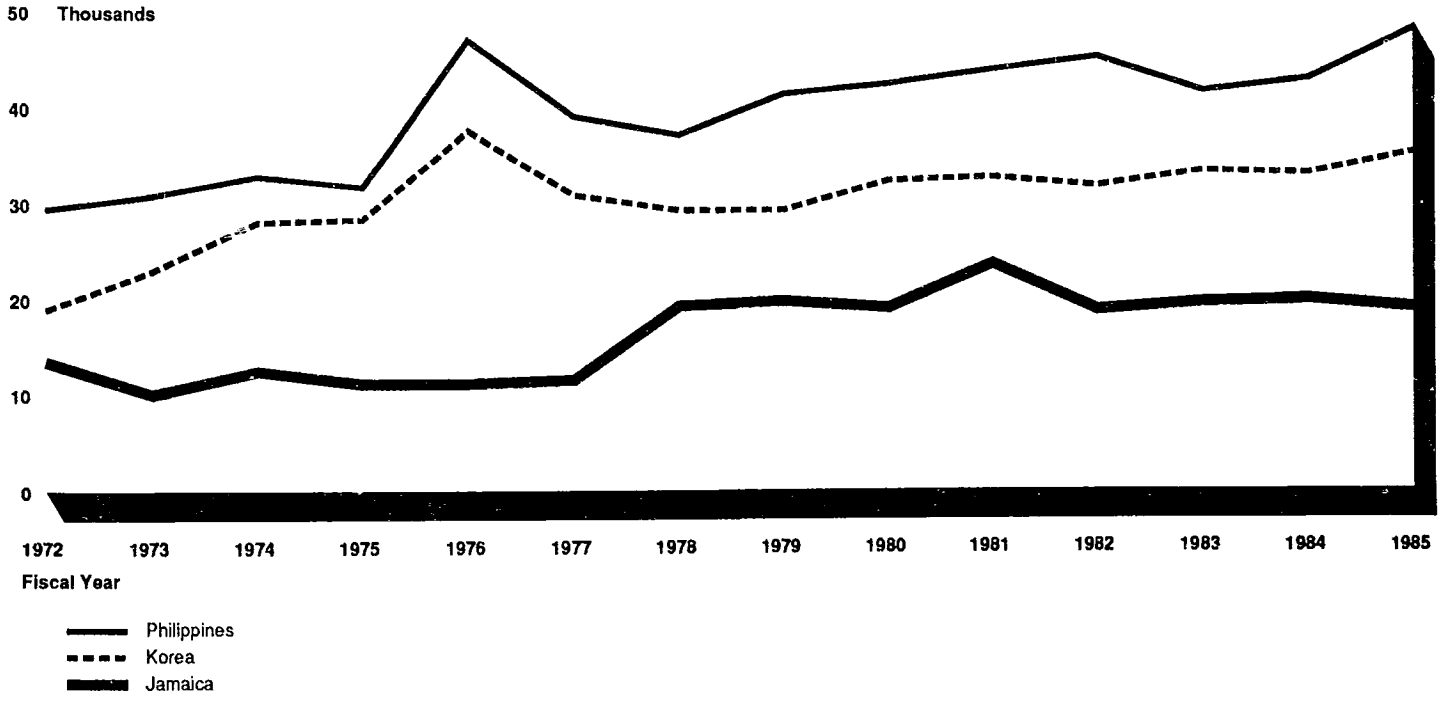


Note: Fiscal year 1976 includes July-September 1976 data. Since October 1, 1977, the data are for fiscal years ending September 30 of the respective year.

Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

For the other major countries of birth, immigration has slowly but consistently increased. The only exceptions were the United Kingdom and Jamaica, where legal immigration increased until 1980 and 1981, respectively, and declined slowly thereafter.

Figure 2.7: Annual Legal Immigration to the United States, From the Philippines, Korea, and Jamaica, in Fiscal Years 1972-85



Note: Fiscal year 1976 includes July-September 1976 data. Since October 1, 1977, the data are for fiscal years ending September 30 of the respective year.

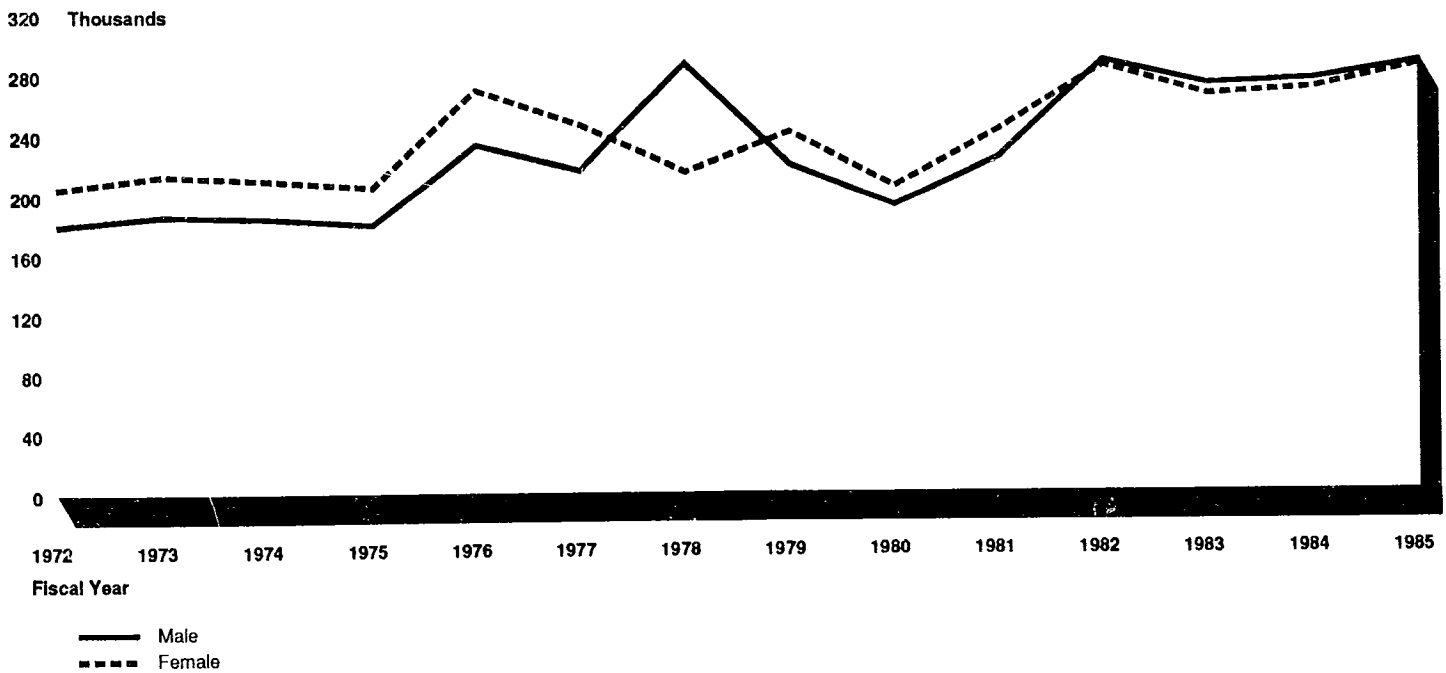
Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, fiscal years 1972-85.

Figure 2.8: Annual Legal Immigration to the United States, From India, the Dominican Republic, and the United Kingdom, Fiscal Years 1972-85

Note: Fiscal year 1976 includes July-September 1976 data. Since October 1, 1977, the data are for fiscal years ending September 30 of the respective year.

Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

Figure 2.9: Annual Legal Immigration to the United States, by Sex of Immigrant, in Fiscal Years 1972-85



Note: Some data for fiscal years 1980-83 were not available from the U.S. Immigration and Naturalization Service, and this figure does not reflect these unknown values.

Fiscal year 1976 includes July-September 1976 data. Since October 1, 1977, the data are for fiscal years ending September 30 of the respective year.

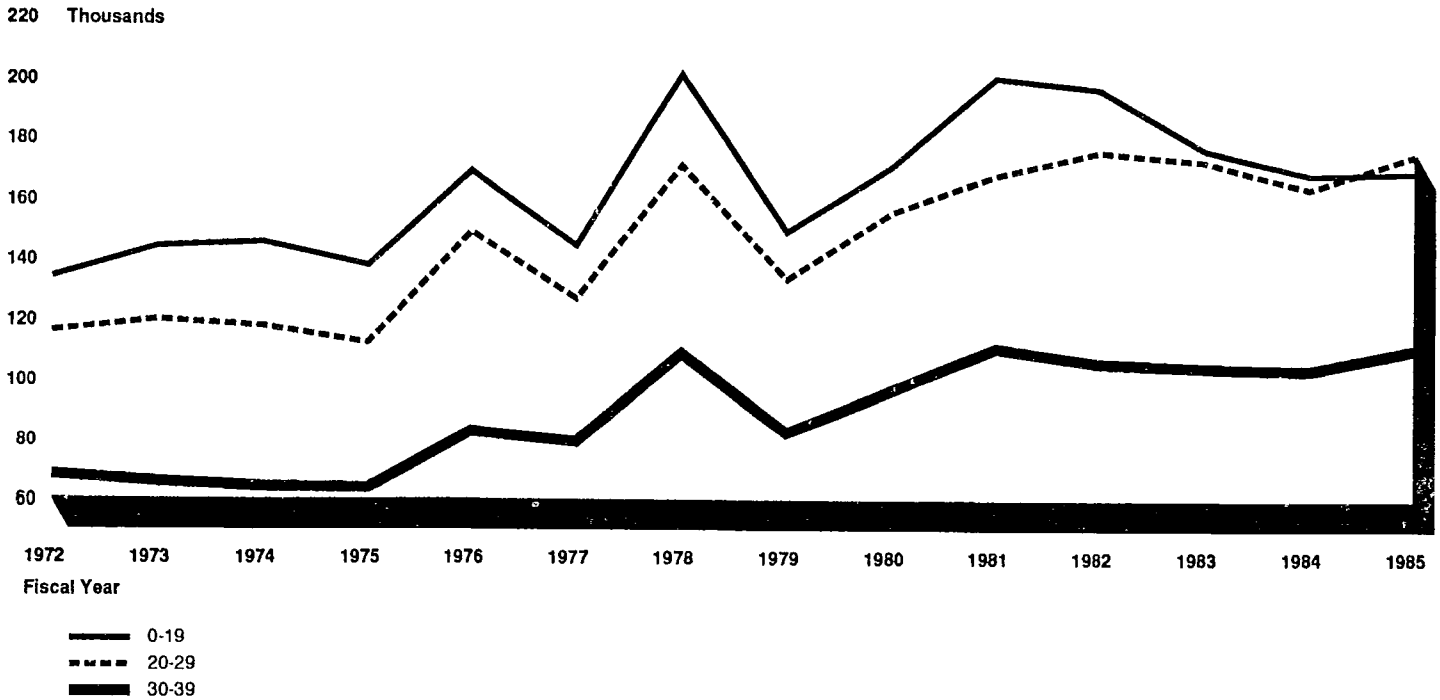
Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

Immigration by Sex and Age

Figure 2.9 depicts legal immigration for fiscal years 1972-85 by sex of immigrant. Figures 2.10 and 2.11 illustrate annual legal immigration for fiscal years 1972-85 by age group. Figure 2.10 shows ages 0-19, 20-29, and 30-39. Figure 2.11 shows ages 40-49, 50-64, and 65 and older. It should be noted that the number of immigrants 40 or older is considerably less than the number of immigrants 0-39.

From 1972 through 1981, the number of female immigrants exceeded the number of male immigrants. This represented a continuation of a long-term trend in U.S. legal immigration and was the topic of a major demographic study (Houston, Kramer, and Barrett, 1985). Beginning in

Figure 2.10: Annual Legal Immigration to the United States, by Immigrants Aged 0-19, 20-29, and 30-39, in Fiscal Years 1972-85



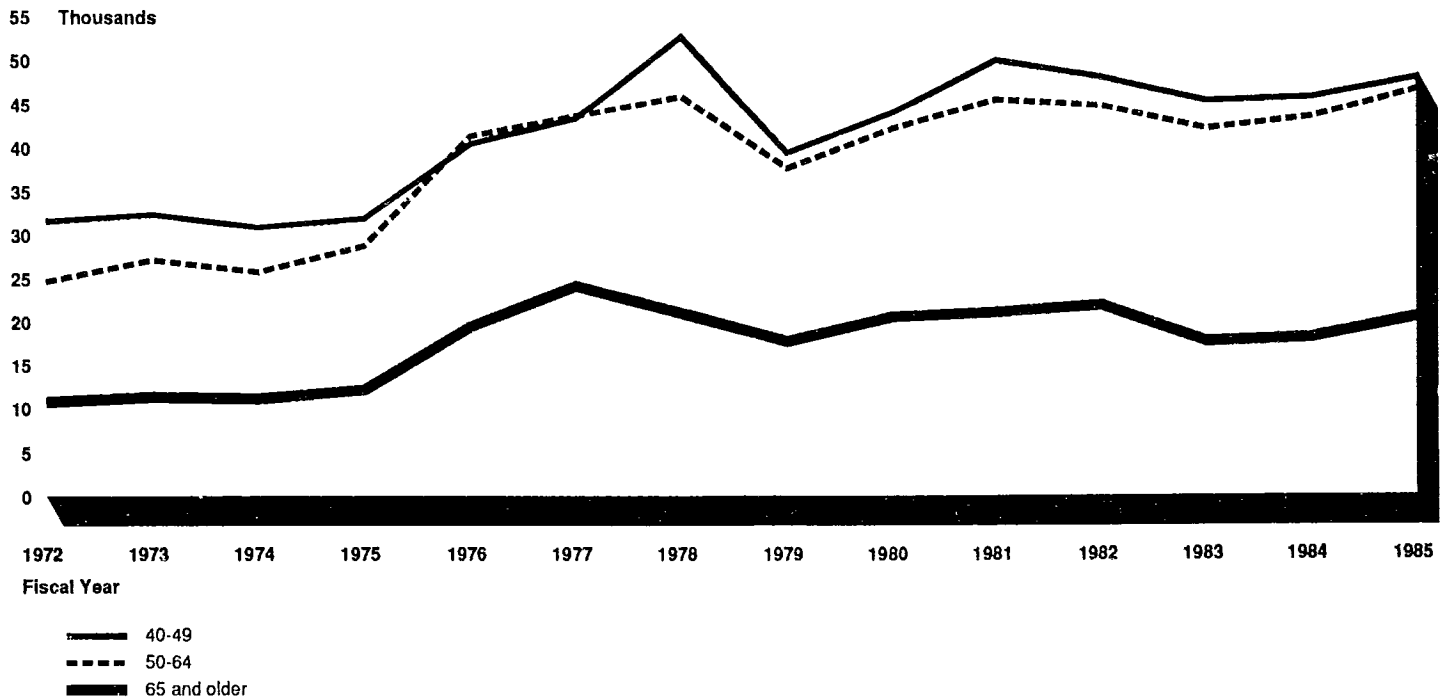
Note: Fiscal year 1976 includes July-September 1976 data. Since October 1, 1977, the data are for fiscal years ending September 30 of the respective year.

Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

1982, however, the male-female ratio changed, and there is now a slight male majority, apparently because of two factors: (1) an increase in the proportion of male refugees in the "second wave" of those leaving Southeast Asia and (2) a major increase in male spouses (one of the components of exempt-immediate-relative immigration). During the 1970's, 37 percent of spouses were male compared to about 51 percent male in 1982-84.

The pattern of age distribution over time, as presented in figures 2.10 and 2.11, has followed the overall pattern of legal immigration generally. The only shift worth noting is a decrease during the last 3 years in the number and proportion of immigrants in the youngest age group (0-19) and an increase in number and proportion in the next two age groups associated with the working-age population (20-39).

Figure 2.11: Annual Legal Immigration to the United States, by Immigrants Aged 40-49, 50-64, and 65 and Older, in Fiscal Years 1972-85



Note: Fiscal year 1976 includes July-September 1976 data. Since October 1, 1977, the data are for fiscal years ending September 30 of the respective year.

Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

Summary

In this chapter, we have described patterns of legal immigration from 1972 to 1985. The analysis was based on aggregating and merging variables on the INS public-use data tapes covering the 14-year period from June 1972 through September 1985. During that period, annual legal immigration increased from 384,000 in 1972 to 570,000 in 1985. The single highest year for legal immigration was 596,000 in 1981, a total swelled both by the one-time infusion of Silva immigrants (who were primarily from Mexico) and a high level of refugee immigrants from Southeast Asia.

We found three distinct patterns over time by the major classes of admission (figures 2.2, 2.3, and 2.4). Numerically limited immigrants (net of refugees and Silva immigrants) have essentially been the same in total numbers in each of the 14 years. They are effectively constrained and explained by the annual limits specified in immigration legislation.

Exempt-immediate-relative immigrants have clearly shown a slow but steady increase from year to year. The immigration of refugees, the third major type, has been highly variable, driven by internal and external political events such as upheavals in Southeast Asia, which are inherently difficult to predict in advance. For this type of immigrant, past patterns of flows offer fewer clues to the projection of future flows.

In looking at past legal immigration by country of birth, we observed that the biggest source country, Mexico, has actually provided fewer immigrants in recent years than previously, as its numerically limited immigration has been constrained by the per country limits. Immigration from Vietnam and Laos has been decreasing in the past few years as refugee flows have eased. Most other major source countries increased their numbers of legal immigrants gradually and steadily during 1972-85.

The sex ratio of immigrants changed in the early 1980's, shifting from a slight majority of females to a slight majority of males. Finally, the age composition has basically remained similar over the years, with a slight shift in the past few years from the 0-19 age group to the 20-39 group.

Projected Annual Legal Immigration to the United States 1986-90

In this chapter, we project legal immigration to the United States for each of the 5 fiscal years 1986 through 1990. A 5-year period was chosen because (1) we judged it to be a reasonable period to assume a continuation of past patterns and (2) because 5 years is the time specified for projections in the triennial comprehensive "immigration-impact" report required by the Immigration Reform and Control Act of 1986.

Population projections are conditional on their assumptions. If the underlying assumptions hold true in the future, then our projections will be reasonably accurate. We have used as our guide the statutory language in the 1986 act that projections be "based on reasonable estimates substantiated by the best available evidence." In addition, we have carefully documented our methods and procedures so that their credibility can be readily assessed.

We have made projections both in the aggregate and by

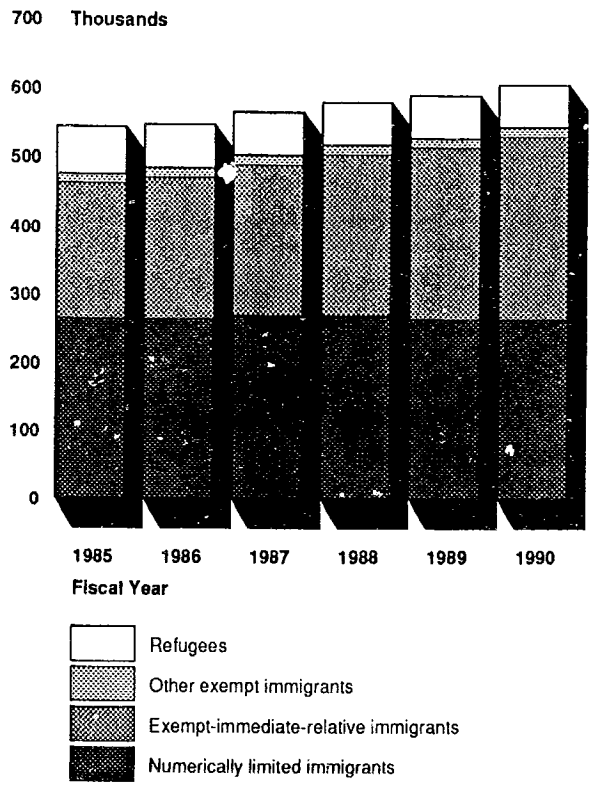
- type of admission (exempt-immediate relative, other exempt, numerically limited, refugee),
- major country of birth,
- sex, and
- age.

Figure 3.1 presents an overview of the projected flow of legal immigration from fiscal year 1986 though fiscal year 1990, in total and by major types of admission. During the 1986-90 period, we project that total annual legal immigration will increase from 546,190 in fiscal year 1986 to 605,600 in fiscal year 1990. Inherent in these estimates are random fluctuations which may be represented by a range of values represented by confidence intervals. In table III.5, we have shown upper and lower confidence intervals for our fiscal year 1986 projections.

In developing the projections for refugees, we decided to project the number of refugee arrivals rather than the number of refugee adjustments to permanent resident alien status. Recall that in chapter 2 we used the latter measure because better data were available at the adjustment stage.[1] We had little reason to prefer one measure over another in chapter 2, but here the fluctuations in the number of refugees who chose to adjust to permanent resident alien status in one year rather than another could affect our projections. Since refugees must wait at

[1]For a comparison of the numbers of refugee arrivals with those who adjusted to permanent resident alien status in selected fiscal years, see chapter 2.

Figure 3.1: Projected Annual Legal Immigration to the United States, by Type of Admission, in Fiscal Years 1986-90



We have projected annual legal immigration for fiscal years 1986-90, based upon the methodology developed in this study.

Source: The fiscal year 1985 data were taken from the 1985 Statistical Yearbook of the Immigration and Naturalization Service. Washington, D.C.: U.S. Immigration and Naturalization Service, 1986, p. 11.

least 1 year after arrival to adjust to permanent resident alien status, it cannot be assumed that there is a consistent lag over a period of time in which the average refugee waits the same period (for example, 1.2 years) before adjusting. Further, a strong case can be made conceptually that for purposes of projections, refugees should be counted as part of immigration flows at the time they actually enter the country rather than when refugees who are already in the United States adjust to permanent resident alien status.

We decided to use refugee arrivals for fiscal year 1986 as the estimate of refugee arrivals for each year in the 5-year projection period. The

62,251 refugee arrivals were the only subcomponent of total immigration flow that was officially available for fiscal year 1986 at the time we made our projections. We found that using the Department of State's projections of refugee admissions was not as accurate as using last year's actual refugee arrivals. Therefore, we did not make further use of the department's projections.

In developing the projections for numerically limited immigrants, we assumed that the annual legal limitations of 270,000 for the six preference categories will continue indefinitely (except for the additional 5,000 visas provided for in fiscal years 1987 and 1988 by the Immigration Reform and Control Act of 1986). We found that there have been minor annual shortfalls in filling the quotas; the average annual number of numerically limited immigrants for fiscal years 1983-85 was 265,146. We rounded this and used 265,000 for each year in our projection period except fiscal years 1987 and 1988, where we used 270,000 due to the IRCA supplement.

For the minor category of other exempt immigrants, there has also been little annual fluctuation. Therefore, we based our projections on the average for the last three years: 13,500 annually.

For exempt-immediate-relative immigrants, we used a time-series model for forecasting. (See appendix III for a technical description of the model, the data used to estimate it, the details of the forecasts, confidence intervals, and a discussion of forecast accuracy). These models base prediction on the past behavior of a variable and that variable alone (for example, an overall upward trend or cyclical behavior in a time-series). Time-series models are generally chosen for forecasting in circumstances in which (1) little information is known about the determinants of the variable of primary concern and (2) sufficient data are available to construct a time-series of reasonable length.

Both of these factors were present in the case of exempt-immediate-relative immigration:

- We were unable to identify any well-developed cause-and-effect theory to explain the process whereby U.S. citizens petition for legal immigrant status for their exempt-immediate relatives. Even if such a theory were developed, data are not available on, for example, such explanatory variables as the "pool" of naturalized and native-born citizens and their rates of petitioning for immigrants. Data on these kinds of variables are

required to permit specification and estimation of a structural model of the process.

- Data were available to construct a time-series of reasonable length—that is, for 171 monthly periods from July 1971 to September 1985.

From the forecasts from our time-series model, we project that exempt-relative immigration increased in fiscal year 1986 to 205,439 from its fiscal year 1985 level of 198,143. We project there will be about 265,000 exempt-immediate-relative immigrants by fiscal year 1990, the same as the approximate current number of numerically limited immigrants.

The recent availability of certain fiscal year 1986 data increases our confidence in our projections. Since the number of refugee admissions for fiscal year 1986 was available at the time we performed our immigration projections, we did not project them to fiscal year 1986. Data from the other categories were unavailable at the time we performed our projections. A comparison of the actual fiscal year 1986 data (which are now available) with our projections shows close agreement. The exempt-immediate-relative component of our projection underestimated the actual number of 216,821 persons in this category by 11,382 persons, or about 5.2 percent. The other exempt and numerically limited component projections each differed by less than 1 percent of their actual fiscal year 1986 values.

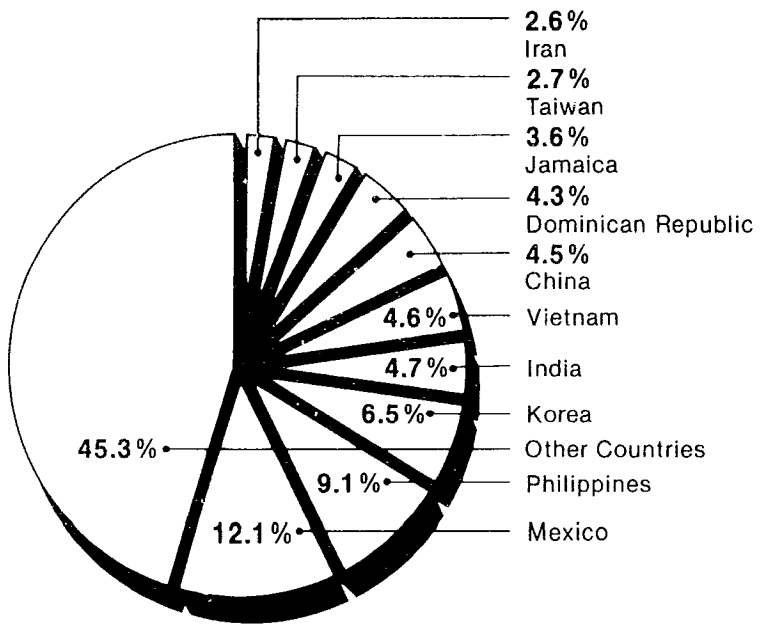
In summary, we project that for three categories of legal immigration, the number of immigrants over each of the next 5 years will remain constant at current levels, except for the temporary increase in numerically limited immigrants in fiscal years 1987 and 1988. All the increase in legal immigration during this period is forecast to come from the exempt-immediate-relative component.

Projected Immigration by Country of Birth

We forecast immigration from the 10 major source countries of birth separately for each of the four types of admission discussed above. We then aggregated the numbers from these component forecasts to develop the projected total for each country, as presented in figures 3.2 through 3.5.

For numerically limited immigrants and other exempt immigrants, we developed our projections by using the average, by country, for the last

Figure 3.2: Percentage Projected Legal U.S. Immigration by Country of Birth in Fiscal Years 1986-90



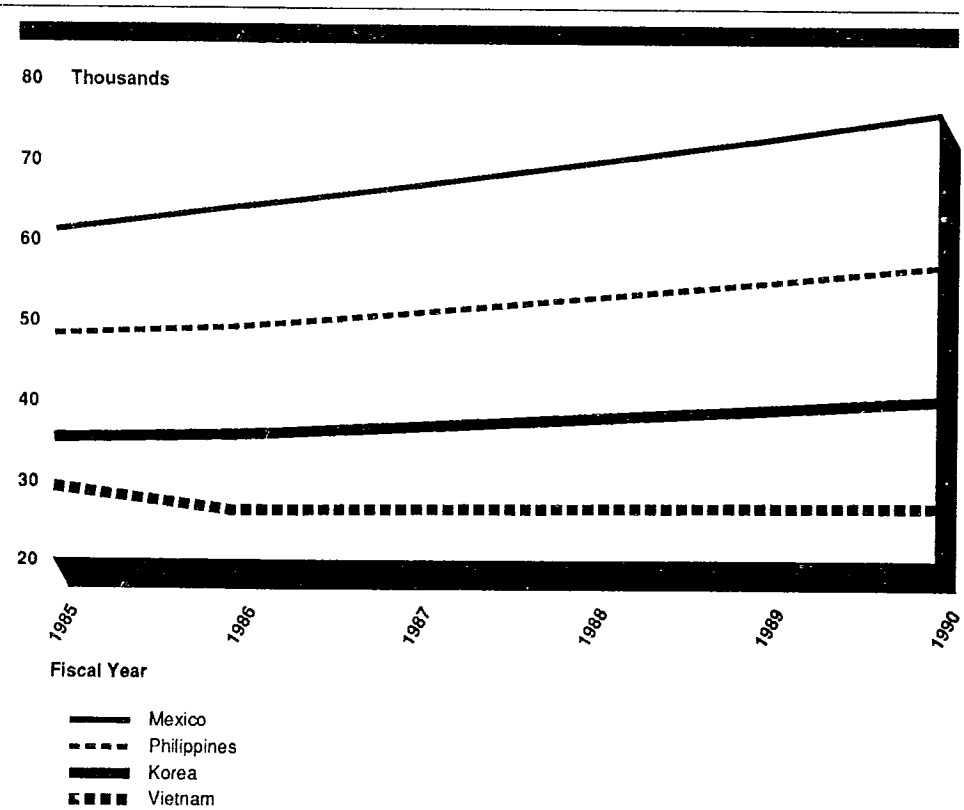
Note: We have projected annual legal immigration for fiscal years 1986-90, based upon the methodology developed in this study.

3 fiscal years (1983 through 1985) of legal immigration.[2] (See tables V.1 and V.2.) For six source countries (Korea, China, the Philippines, India, Mexico, and the Dominican Republic), these projections closely approximate the annual limit of 20,000 for numerically limited immigrants from any one country.

For exempt-immediate relatives, we made the country projections by using one of two proportions of the overall total of exempt-immediate-relative immigration for each year as forecast by the time-series model. If there was no consistent upward or downward trend in the past proportion for a country, we used the average proportion for the past 3 fiscal years. If there was a consistent upward or downward trend, we used the proportion for fiscal year 1985 only. For Mexico, the country with the largest immigration during fiscal years 1983-85, we used 36,400, the average during that period.

[2]For the countries where the trend for numerically limited immigrants was either clearly downward for each of the 3 years (United Kingdom) or upward (Iran), we based the forecast on the fiscal year 1985 figure only rather than the 3-year average.

Figure 3.3: Projected Annual Legal Immigration to the United States, From Mexico, the Philippines, Korea, and Vietnam, in Fiscal Years 1986-90



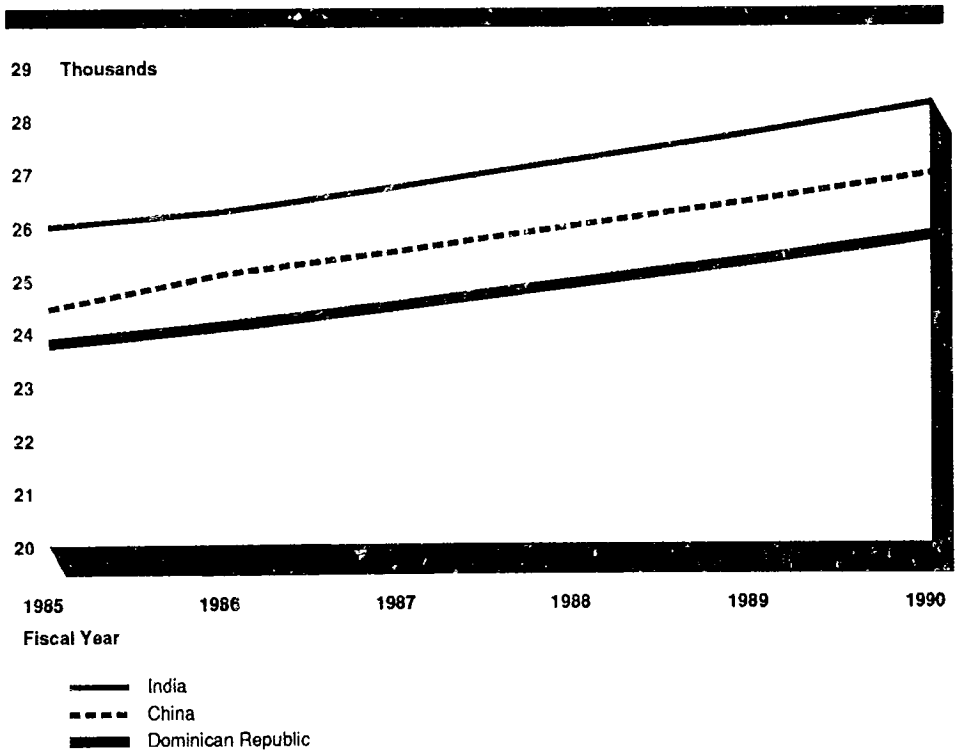
Note: We have projected annual legal immigration for fiscal years 1986-90, based upon the methodology developed in this study.

Source: The fiscal year 1985 data were taken from the 1985 Statistical Yearbook of the Immigration and Naturalization Service. Washington, D.C.: U.S. Immigration and Naturalization Service, 1986, p. 11.

We forecast refugee arrivals for individual countries as we did for total refugees—by basing them upon fiscal year 1986 levels.

As figure 3.2 indicates, legal immigration by country of birth is projected to remain highly concentrated in few source countries. As in the past 5 years, only 10 countries are projected to account for 55 percent of legal immigration over this period. Eight of the 10 countries are the same in both periods; Iran and Taiwan are projected to replace Laos and the United Kingdom as the ninth and tenth. Indeed, the degree of concentration of immigration in these 10 countries is anticipated to remain 55 percent during 1986-90. Figures 3.3 through 3.5 show the projections of total legal immigration by year for each of the top 10 countries.

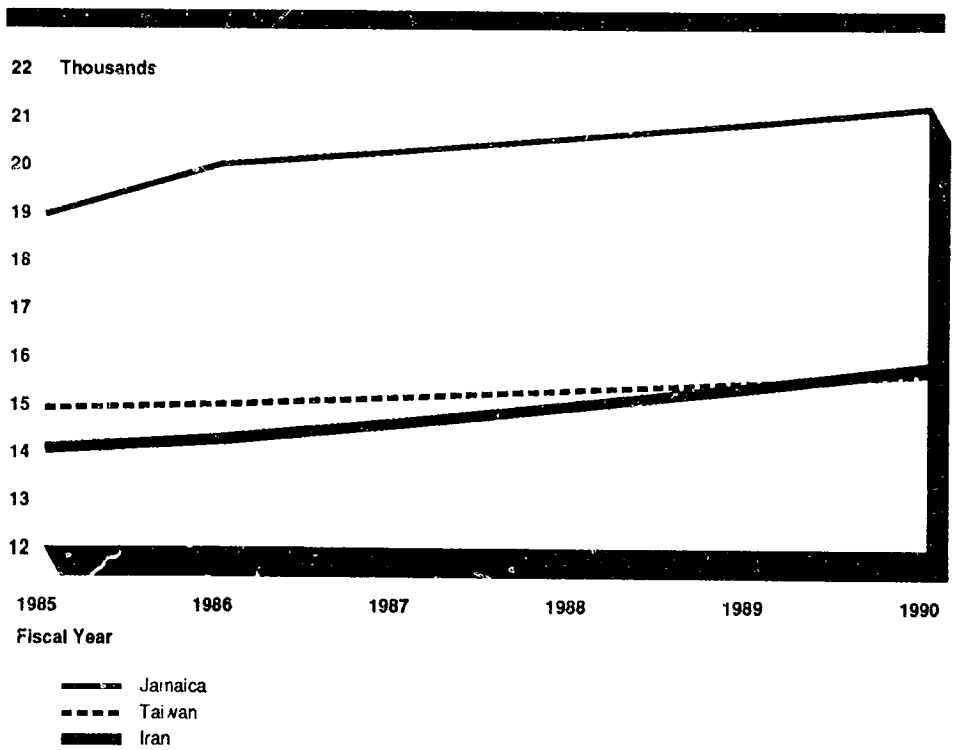
Figure 3.4: Projected Annual Legal Immigration to the United States, From India, China, and the Dominican Republic, in Fiscal Years 1986-90



Note: We have projected annual legal immigration for fiscal years 1986-90, based upon the methodology developed in this study.

Source: The fiscal year 1985 data were taken from the 1985 Statistical Yearbook of the Immigration and Naturalization Service. Washington, D.C.: U.S. Immigration and Naturalization Service, 1986, p. 11.

Figure 3.5: Projected Annual Legal Immigration to the United States, From Jamaica, Taiwan, and Iran, in Fiscal Years 1986-90



Note: We have projected annual legal immigration for fiscal years 1986-90, based upon the methodology developed in this study.

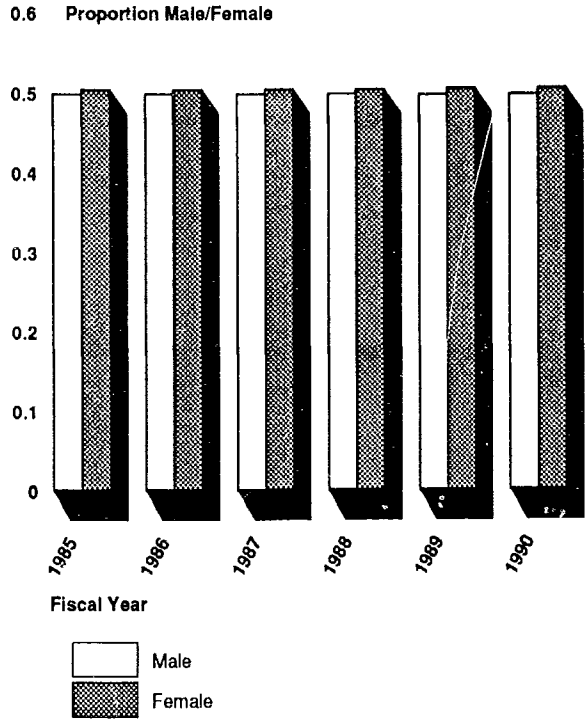
Source: The fiscal year 1985 data were taken from the 1985 Statistical Yearbook of the Immigration and Naturalization Service. Washington, D.C.: U.S. Immigration and Naturalization Service, 1986, p. 11.

Projected Immigration by Sex and Age

Figures 3.6 through 3.8 present forecasts by sex and by six age groups of immigrants, displayed as proportions of total legal immigration by year.

These forecasts were also developed separately for each of the four types of admission by multiplying the projected yearly totals for each type of admission by the average sex and age proportions for either the most recent or the last 3 fiscal years (the same procedures described above for forecasting country of birth for exempt-immediate relatives). Again, we added the separate subcomponent forecasts to produce the total forecast.

Figure 3.6: Projected Annual Legal Immigration to the United States, by Proportion of Male and Female Immigrants, in Fiscal Years 1986-90



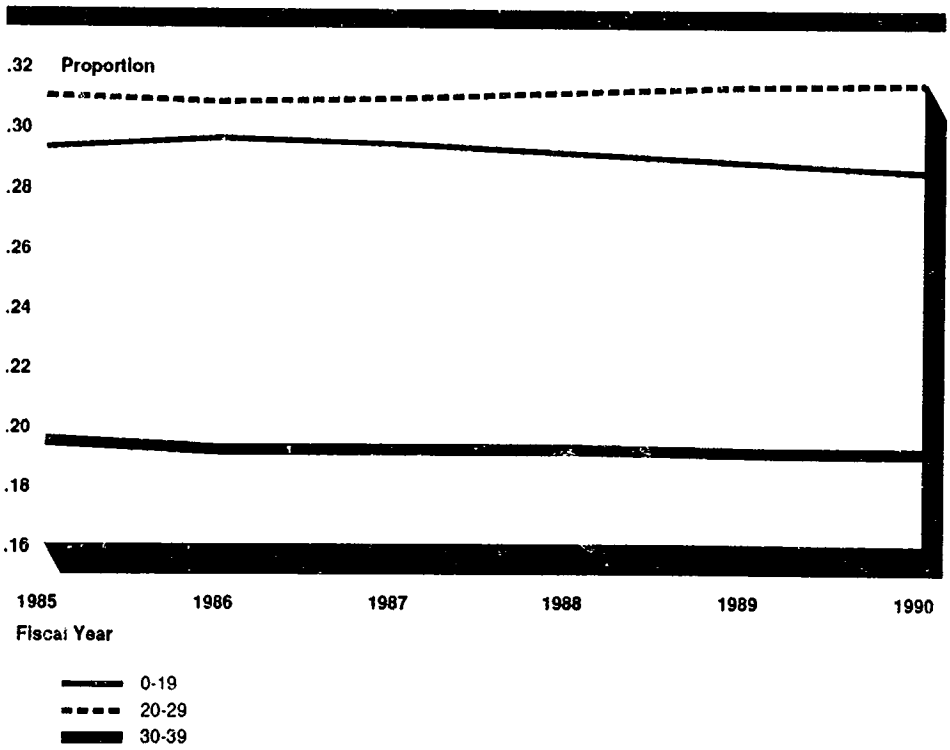
Note: We have projected annual legal immigration for fiscal years 1986-90, based upon the methodology developed in this study.

Source: The fiscal year 1985 data were taken from the 1985 Statistical Yearbook of the Immigration and Naturalization Service. Washington, D.C.: U.S. Immigration and Naturalization Service, 1986, p. 11.

As figure 3.6 indicates, the male-female ratio among legal immigrants is expected to remain approximately equal over the next 5 years. Our forecast of a slight increase in the proportion female is mainly because of the projected increase in the number and proportion of exempt-immediate relatives. For this component of legal immigration, the proportion of females has historically been slightly higher than the proportion of males—51.9 percent for fiscal years 1983-85.

Figures 3.7 and 3.8 present the projected proportions of legal immigrants by the same six age groups used in chapter 2. The main shift evident during the period is a very slight projected decrease in the proportion age 0-19. These changes are also occurring because of the increase in the exempt-immediate-relative component of immigration.

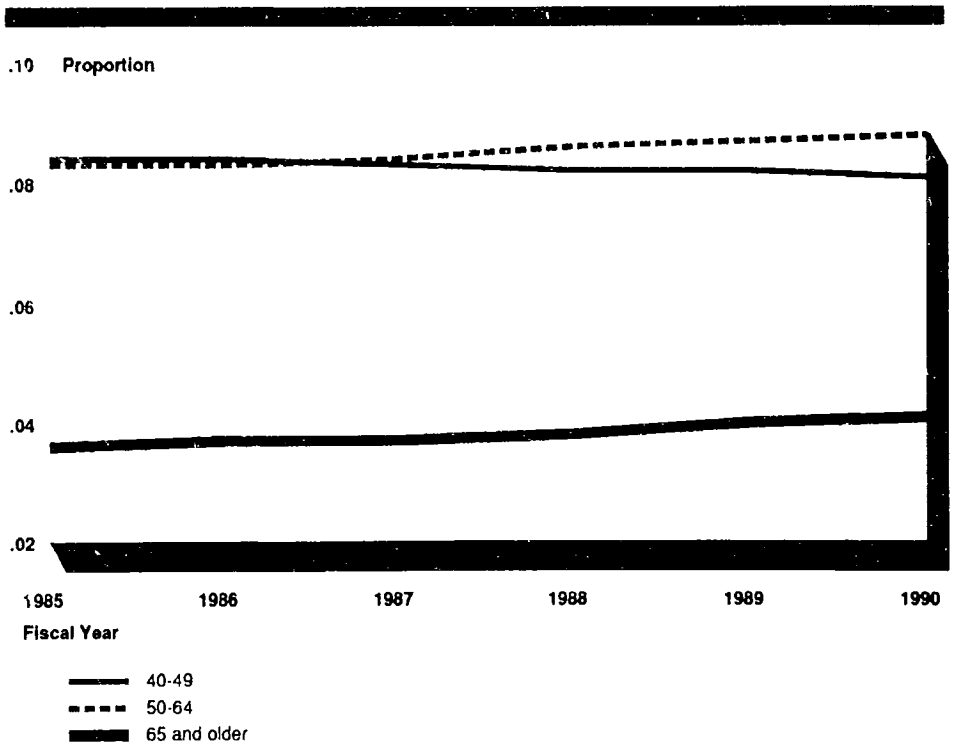
Figure 3.7: Projected Annual Legal Immigration to the United States, by Proportion of Immigrants Aged 0-19, 20-29, and 30-39, in Fiscal Years 1986-90



Note: We have projected annual legal immigration for fiscal years 1986-90, based upon the methodology developed in this study.

Source: The fiscal year 1985 data were taken from the 1985 Statistical Yearbook of the Immigration and Naturalization Service. Washington, D.C., 1986, p. 11.

Figure 3.8: Projected Annual Legal Immigration to the United States, by Proportion of Immigrants Aged 40-49, 50-64, and 65 and Older, in Fiscal Years 1986-90



Note: We have projected annual legal immigration for fiscal years 1986-90, based upon the methodology developed in this study.

Source: The fiscal year 1985 data were taken from the 1985 Statistical Yearbook of the Immigration and Naturalization Service. Washington, D.C.: U.S. Immigration and Naturalization Service, 1986, p. 11.

Exempt-Immediate-Relative Immigration to the United States

As we have shown, exempt-immediate-relative immigration to the United States has been increasing. We project that it will become the largest component of legal immigration, numbering slightly more than the current 270,000 annual limit on numerically limited immigration. While we forecast that exempt-immediate-relative immigration will continue to increase, we predict that the growth will be steady rather than dramatic. Our earlier analyses and projections of exempt-immediate-relative immigration relied on time-series modeling of past empirical regularities in the process and assumed continuity in the future. They did not examine the behavior underlying the process.

Some experts in immigration have explicitly or implicitly assumed that most citizens who sponsor exempt-immediate relatives were former immigrants (Jasso and Rosenzweig, 1986); some have assumed that the time intervals in the process were short. This link between former immigrants and current immigrants has been termed "chain migration." Particular policy concern has been focused on the potential for additional chain migration through sponsorship by fifth-preference immigrants (brothers and sisters). In this chapter, we present an analysis of a new data base linking a sample of recent exempt-immediate-relative immigrants and their U.S.-citizen sponsors that sheds light on the behavior that underlies the process. (Details on how we constructed our sample are reported in appendix II.) Our analysis was developed to answer two primary questions:

1. What is the ratio of naturalized to native-born citizens among petitioners?

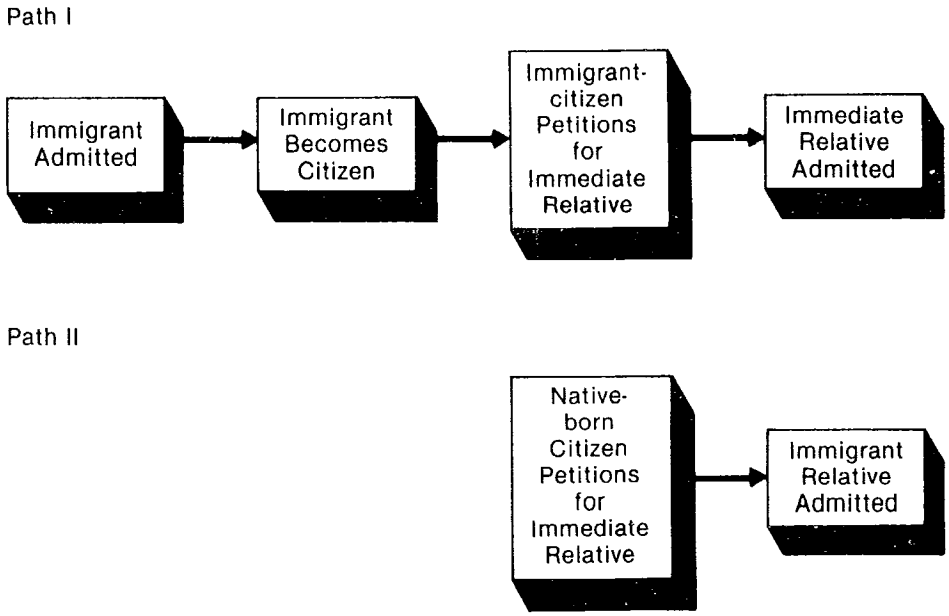
2. What are the time intervals between steps in chain migration?

Figure 4.1 displays the two characteristic paths to legal exempt-immediate-relative immigration. In other words, question 1 can also be phrased, How is exempt immigration distributed between path 1 and path 2? The steps in chain migration are illustrated as the events in path 1.

We also sought to determine how the answers to these questions vary across major countries of birth of recent immigrants. Finally, we conducted further analyses to identify descriptive and behavioral patterns of exempt-immediate-relative immigrants and their petitioners.

Our analysis showed that past immigration does not portend an explosive increase in future chain migration, because the percentage of former immigrant petitioners was low and the average time between steps

Figure 4.1: Paths to Legal Immigration for Immediate Relatives of U.S. Citizens and Naturalized U.S. Citizens



in the chain migration process was long. The pattern of past findings about chain migration could change, however, which means that any use of these as statements about the future must be made with caution.

The Characteristics of Exempt-Immediate-Relative Immigrants and Their Petitioners

Most petitioners of exempt-immediate-relative immigrants were native-born citizens rather than naturalized citizens.[1] In the year we examined—fiscal year 1985—the overall percentage of native-born petitioners for immigrants was approximately 64 percent. Table 4.1 shows the distribution of native-born as opposed to naturalized petitioners by immigrant country of birth. Among the 10 largest source countries, China, India, and the Philippines had the lowest percentages of U.S. native petitioners. Canada, West Germany, and the United Kingdom had the highest percentages of native-born petitioners.

[1]Comparisons in this chapter have been tested statistically and found significant at the 0.05 level. Since our data were based on a sample rather than the entire universe, the likelihood of a result stemming from chance alone is less than 5 percent. In making comparisons, only differences judged to be important were tested for significance.

Table 4.1: The Percentage of Naturalized and Native-Born Petitioners for Exempt-Immediate-Relative Immigrants in 1985

Petitioners' country of birth and status	Naturalized petitioner[a]	Native-born petitioner[b]
Overwhelmingly native-born		
Canada	6.3%	93.7%
Germany	8.4	91.6
United Kingdom	12.2	87.8
Predominantly native-born		
Colombia	32.6	67.4
Dominican Republic	33.7	66.3
Korea	42.3	57.7
Mexico	28.3	71.7
All other countries	29.4	70.6
Predominantly naturalized		
India	72.9	27.1
China	88.0	12.0
Philippines	62.1	37.9
Total[c]	**36.1%**	**63.9%**

[a]Sample = 799.

[b]Sample = 1,500; missing cases = 146.

[c]Weighted average.

We divided the 10 major source countries and the residual category of all other countries into three groups, based on whether sponsors of immigrants were overwhelmingly native-born, predominantly native-born, or predominantly naturalized. We have retained these groupings throughout our analysis.

The Western countries of Canada, Germany, and the United Kingdom comprised one group. These countries had the highest percentage of native petitioners—all more than 87 percent. A second group consisted of Colombia, the Dominican Republic, Mexico, and Korea. Each had native petitioner percentages between 50 percent and 72 percent. The remaining three countries were Asian countries, and all had native-petitioner percentages less than 50 percent: Philippines, 38 percent; India, 27 percent; and China, 12 percent.

Naturalized petitioners were older, predominantly female, and more likely to petition for their parents. Native-born petitioners were younger, predominantly male, and most frequently petitioned for spouses.

Table 4.2: The Age and Sex of Naturalized and Native-Born Petitioners and the Relatives They Petitioned for in 1985

	Naturalized petitioners[a]				Native-born petitioners[b]			
		Petitioners				Petitioners		
Petitioners' country of birth and status	Average age in years	% male	% female	Petitioned relative	Average age in years	% male	% female	Petitioned relative
Overwhelmingly native-born								
Canada	38.2	25	75	Spouse	32.7	63	37	Spouse
Germany	39.5	44	56	Spouse	27.6	85	15	Spouse
United Kingdom	40.6	30	70	Parent	30.8	62	38	Spouse
Predominantly native-born								
Colombia	37.0	48	52	Spouse	31.5	65	35	Spouse
Dominican Republic	36.9	51	49	Spouse	34.6	51	49	Spouse
Korea	33.8	38	62	Parent	34.2	97	03	Child
Mexico	32.2	46	54	Spouse	30.2	39	61	Spouse
All other countries	37.2	42	58	Parent	30.2	43	57	Spouse
Predominantly naturalized								
China	35.1	48	52	Parent	40.1	61	39	Spouse
India	35.7	58	42	Parent	29.6	46	54	Spouse
Philippines	36.8	55	45	Parent	35.9	76	24	Spouse
Total[c]	**36.0**	**44**	**56**	**Parent**	**31.7**	**54**	**46**	**Spouse**

[a]Sample = 799.

[b]Sample = 1,500.

[c]Numbers in this row are weighted averages.

The average age, male-female ratio, and type of relative most frequently petitioned for by naturalized and native-born petitioners are compared in table 4.2. The table illustrates clear differences in the characteristics and behavior of naturalized and native-born petitioners. The average age of naturalized petitioners was 36.0, compared to 31.7 for native-born petitioners. A slight majority of naturalized petitioners were female (56 percent), and a slight majority of native-born petitioners were male (54 percent). Naturalized petitioners were most likely to petition for a parent, while native-born petitioners were most likely to petition for a spouse.

Table 4.3 illustrates regional patterns in petitioning behavior, especially among naturalized petitioners. While naturalized petitioners most often sponsored a parent, the trend was especially strong in India, China, and Korea.

Table 4.3: The Relationship of Exempt-Immediate-Relative Immigrants to Naturalized and Native-Born Petitioners in 1985

Petitioners' country of birth and status	Naturalized Petitioners[a]			Native-born Petitioners[b]		
	Parent	Spouse	Child	Parent	Spouse	Child
Overwhelmingly native-born						
Canada	41.7%	58.3	0.0	2.2%	85.5%	12.3%
Germany	31.2	50.0	18.8%	0.6	89.7	9.7
United Kingdom	50.0	29.2	20.8	0.6	84.4	15.0
Predominantly native-born						
Colombia	37.1	43.5	19.4	0.0	78.9	21.1
Dominican Republic	32.3	55.4	12.3	0.8	76.6	22.7
Korea	72.5	17.4	10.1	0.0	38.3	61.7
Mexico	25.0	57.7	17.3	1.5	80.3	18.2
All other countries	50.0	38.1	11.9	1.0	86.1	12.9
Predominantly naturalized						
China	84.5	14.3	1.2	4.3	95.7	0.0
India	93.8	5.4	0.8	2.1	62.5	35.4
Philippines	50.8	30.5	18.6	5.6	65.3	29.2
Total[c]	**48.0%**	**38.7%**	**13.3%**	**1.7%**	**77.8%**	**20.4%**

[a]Sample = 799.

[b]Sample = 1,500; missing cases = 146.

[c]Numbers in this row are weighted averages.

Parents and children were much more likely to obtain immigrant status as new arrivals to the United States, compared with persons who adjusted from nonimmigrant status. Spouses were almost as likely to have adjusted from nonimmigrant status as being new arrivals, and the majority of the spouses from Canada, the Philippines, and the United Kingdom adjusted from nonimmigrant status.

Exempt-immediate relatives can achieve legal immigrant status as new arrivals to the United States or by adjusting from a nonimmigrant status (that is, already residing in the United States). Table 4.4 illustrates that the ratio of new arrivals to the adjustment category varies by (1) immigrant relationship to the petitioner and (2) the immigrant country of birth. For example, while most spouses were new arrivals at the time of immigration, over 50 percent of the spouses from Canada, the United Kingdom, and the Philippines were residents of the United States when permanent resident status was attained.

Table 4.4: The Relationship of Adjusted and Newly Arrived Exempt-Immediate-Relative Immigrants[a] to Their Petitioners in 1985[b]

	Parent		Spouse		Children	
Petitioners' country of birth and status	**Adjusted**	**Arrival**	**Adjusted**	**Arrival**	**Adjusted**	**Arrival**
Overwhelmingly native-born						
Canada	33.3%	66.7%	57.6%	42.4%	46.2%	53.8%
Germany	50.0	50.0	29.5	70.5	42.9	57.1
United Kingdom	61.5	38.5	58.7	41.3	37.5	62.5
Predominantly native-born						
Colombia	34.8	65.2	43.2	56.8	13.3	86.7
Dominican Republic	18.2	81.8	30.2	69.8	12.8	87.2
Korea	30.0	70.0	16.4	83.6	1.1	98.9
Mexico	38.9	61.1	15.6	84.4	22.9	77.1
All other countries	46.7	53.3	66.7	33.3	33.3	66.7
Predominantly naturalized						
China	22.8	77.2	44.9	55.1	0.0	100.0
India	20.3	79.7	42.9	57.1	0.0	100.0
Philippines	13.8	86.2	51.1	48.9	8.5	91.5
Total[c]	**37.1%**	**62.9%**	**46.5%**	**53.5%**	**23.2%**	**76.8%**

[a]"Adjusted" refers to adjustments from a nonimmigrant status (that is, the person was already in the United States); "newly arrived" refers to persons who were admitted to the United States as immigrants.

[b]Sample = 2,299.

[c]Numbers in this row are weighted averages.

Time Intervals Between Petitioning and Arrival

The average time for an exempt-immediate relative to obtain immigrant status, once petitioned, was less than 1 year. The average time between filing a petition on behalf of an exempt-immediate relative and his or her arrival in the United States was 9.7 months. The average time varied among countries and by the adjustment status of the immigrant. Table 4.5 indicates that the average time was longer for relatives who were new arrivals versus relatives who adjusted from a nonimmigrant status. The average time was longest for new arrivals from China, the Dominican Republic, Mexico, India, and the Philippines. Table 4.6 indicates that the time between petitioning and arrival for relatives of naturalized citizens (13.1 months) was longer than for relatives of native-born citizens (8.0 months).

Table 4.5: Average Time in Months Between Petitioning and Arrival of Exempt-Immediate Relatives, by Adjustment Status, in 1985

Petitioners' country of birth and status	Adjusted[a] Average no. of months	New Arrival[b] Average no. of months
Overwhelmingly native-born		
Canada	6.2	3.5
Germany	6.7	5.0
United Kingdom	5.4	5.6
Predominantly native-born		
Colombia	6.1	12.2
Dominican Republic	6.1	14.0
Korea	7.9	8.3
Mexico	9.2	16.6
All other countries	4.0	9.1
Predominantly naturalized		
China	5.0	13.7
India	5.0	16.2
Philippines	9.0	17.2
Total[c]	**6.2**	**11.8**

[a]"Adjusted" refers to adjustments from a nonimmigrant status (that is, the person was already in the United States). Sample = 799 cases; missing cases = 56.

[b]"New arrival" refers to persons who were admitted to the United States as immigrants. Sample = 1,500 cases; missing cases = 158.

[c]Weighted average.

Table 4.6: Average Time in Months Between Petitioning and Arrival of Exempt-Immediate Relatives by Country of Birth and by Naturalized or Native-Born Petitioner: 1985

Petitioners' country of birth and status	Naturalized petitioner[a] Average no. of months	Native-born petitioner[b] Average no. of months
Overwhelmingly native-born		
Canada	6.2	4.9
Germany	8.8	5.3
United Kingdom	7.2	5.3
Predominantly native-born		
Colombia	9.8	10.2
Dominican Republic	10.6	12.8
Korea	10.6	6.5
Mexico	19.6	13.4
All other countries	10.9	4.1
Predominantly naturalized		
China	11.3	10.8
India	11.5	18.7
Philippines	17.6	9.7
Total[c]	**13.1**	**8.0**

[a]Sample = 799 cases; missing cases = 16.

[b]Sample = 1,500 cases; missing cases = 200.

[c]Weighted average.

Table 4.7: The Percentage of Naturalized Petitioners in Fiscal Year 1985 by Their Class of Admission[a]

	Numerically limited							
Petitioners' country of birth and status	1st	2nd	3rd	4th	fifth	6th	Western Hemisphere native[b]	Other[c]
Overwhelmingly native-born								
Canada	0	0	0	0	12.5	0	25.0	12.5
Germany	0	0	0	0	0	8.3	0	33.3
United Kingdom	6.2	12.5	6.2	0	0	18.8	0	18.8
Predominantly native-born								
Colombia	0	7.5	0	0	1.9	0	35.8	5.7
Dominican Republic	0	14.5	0	0	0	0	33.9	8.1
Korea	0	16.4	13.1	1.6	21.3	1.6	0	9.8
Mexico	0	2.3	0	2.3	0	0	39.5	4.7
All other countries	1.5	16.4	1.5	4.5	14.9	3.0	20.9	10.4
Predominantly naturalized								
China	1.7	29.9	1.7	6.0	13.7	6.0	0.9	15.4
India	0	31.3	14.1	0	18.2	1.0	0	24.2
Philippines	1.1	30.4	14.1	2.2	6.5	3.3	0	0
Subtotals[d]	**1.0**	**15.2**	**4.1**	**2.8**	**9.8**	**2.8**	**18.5**	**9.3**
Total[d]				**63.5**				

[a]Sample = 799 cases: missing cases = 55; missing codes = 144; remaining cases = 630.

[b]Refers to statutory limits on immigration to the United States in effect from 1968 to October 1978. Mandated by the Immigration and Nationality Act Amendments of 1965, immigration from the Western Hemisphere was held to 120,000 without a per-country limit until January 1, 1977. The Western Hemisphere was then subject to a 20,000 per-country limit.

[c]Refers to (1) refugees who were admitted under the 7th preference category (which was abolished under the Refugee Act of 1980), and (2) other qualified applicants who may currently be admitted in a nonpreference category using visa numbers that were not used in higher preference categories.

[d]Numbers in this row are weighted averages.

The Characteristics of Naturalized Petitioners

Nearly two thirds—64 percent of the naturalized petitioners—entered through a numerically restricted category. (The six numerically limited categories we have listed are explained in appendix I.) Less than 10 percent of naturalized petitioners were admitted through the fifth preference category (siblings of adult U.S. citizens and their spouses and children). Fewer of the naturalized petitioners were admitted through the fifth preference category than the second preference category (spouses and unmarried children of immigrants). The percentage of petitioners who previously immigrated through the fifth preference category varied substantially by immigrant country of birth. The highest rates were for Canada, Korea, China and India, but in no case were more

Exempt from numerical limitation					
Exempt-immediate relatives					
Parent	Spouse	Child	Other relative	Refugees	Total
0	50.0	0	0	0	100.0
0	33.3	0	25.0	0	99.9
0	31.2	0	6.3	0	99.9
0	20.8	0	18.9	9.4	100.0
0	17.7	4.8	21.0	0	100.0
0	26.2	4.9	4.9	0	100.0
0	20.9	4.7	25.6	0	100.0
0	16.4	0	4.5	6.0	100.0
0.9	19.7	0.9	0.9	2.6	100.3
1.0	8.1	0	2.0	0	99.9
3.3	17.4	2.2	19.6	0	100.1
0.5	**20.0**	**1.7**	**11.7**	**2.7**	**100.1**
		33.9		**2.7**	**100.1**

than 21 percent of the naturalized petitioners originally admitted as brothers or sisters of U.S. citizens. Table 4.7 shows how the naturalized petitioners themselves entered the United States.

About one third—34 percent of the naturalized petitioners—were former exempt-immediate-relative immigrants. These classes of admission would be used by immigrant families participating in chain migration. This low percentage does not support the notion that a potentially large chain migration pipeline exists that could significantly increase future exempt-immediate-relative immigration. The majority of former exempt relatives entered as spouses.

Time Intervals Between Different Cohorts

The average time between the arrival of a naturalized petitioner and the subsequent arrival of his or her exempt-immediate relative was more than a decade.[2] Table 4.8 summarizes the data on the total time for the chain migration cycle for naturalized petitioners. The events included in the total time cycle—as previously displayed in path 1 of figure 4.1—include arrival of a petitioner as a legal immigrant, naturalization, petitioning for his or her relative, and arrival of the relative. Time-interval data by country indicated significant variations between groups of countries. The average for all countries was 12.4 years. The average times for Asian countries were somewhat less than the average for all countries, lending some support for chain migration from these countries.

Table 4.8: The Average Time Between Arrival of Naturalized Petitioners in the United States and the Attainment of Immigrant Status by Their Exempt-Immediate Relatives in 1985[a]

Petitioners' country of birth and status	Average no. of years	95% confidence interval
Overwhelmingly native-born		
Canada	11.8	7.5 - 16.2
Germany	19.0	13.2 - 24.9
United Kingdom	16.4	12.2 - 20.6
Predominantly native-born		
Colombia	14.2	12.4 - 16.0
Dominican Republic	13.9	11.0 - 16.8
Korea	9.4	8.6 - 10.3
Mexico	14.8	12.4 - 17.2
All other countries	11.8	10.5 - 13.2
Predominantly naturalized		
China	8.7	8.1 - 9.31
India	10.0	9.3 - 10.7
Philippines	10.6	9.4 - 11.8
Total[b]	**12.4**	**11.6 - 14.1**

[a]Sample = 799 cases; missing cases = 44.

[b]Weighted average.

The average time between the arrival of naturalized petitioners and their naturalization was significantly longer than the statutory required minimum of 5 years. The average time between immigrant arrival and naturalization among naturalized petitioners in our sample was 8.2 years, as shown in table 4.9. The minimum residency requirement for most permanent resident aliens prior to naturalization is 5 years. The

[2]A cohort is "a group of individuals who experienced the same demographic event during a specified time period and who may be identified as a group at successive later dates on the basis of this common demographic experience" (Shryock and Siegel, 1980, p. 712).

average of 8.2 years was significantly greater than the minimum. For some countries, such as Mexico and the United Kingdom, it was more than twice the minimum. The time lag in obtaining citizenship that we observed does not support the notion that immigrants obtain citizenship as soon as possible with the intent of facilitating the entry of family members as exempt-immediate relatives.

Table 4.9: Average Time Interval for Naturalized Petitioners Between Arrival in the United States and Naturalization in 1985[a]

Petitioners' country of birth and status	Average no. of years	95% confidence interval
Overwhelmingly native-born		
Canada	8.6	5.9 - 11.4
Germany	7.9	4.4 - 11.4
United Kingdom	11.0	7.5 - 14.6
Predominantly native-born		
Colombia	9.0	7.5 - 10.3
Dominican Republic	9.9	7.6 - 12.3
Korea	6.1	5.5 - 6.8
Mexico	12.0	10.0 - 14.1
All other countries	7.5	6.6 - 8.3
Predominantly naturalized		
China	6.0	5.6 - 6.4
India	6.4	6.0 - 6.8
Philippines	6.0	5.4 - 6.5
Total[b]	**8.2**	**7.7 - 8.8**

[a]Sample = 799 cases; missing cases = 57.

[b]Weighted average.

Table 4.9 also illustrates, however, that there was significant variation in the time lag to naturalization among countries, from average times for Asian countries of about 6 years—near the minimum of 5 years—to averages from 7.5 to 12 years for all other countries. The small number of naturalized petitioner cases in our sample for some countries (Canada, Germany, and the United Kingdom) means that estimated average time intervals for these countries have wide confidence intervals around them.

The average naturalized petitioner does not petition until several years following naturalization. The average time between naturalization and petitioning for an exempt-immediate relative was 3.6 years. No waiting period is required between naturalization and petitioning for an immediate relative. Therefore, the data do not generally support the theory

that naturalized petitioners become citizens and then immediately petition for the entry of additional family members.

Table 4.10 illustrates that there were considerable intercountry differences in the average time interval (from 1.6 to 9.7 years) between naturalization and petitioning. The shortest average time was for Mexico at 1.6 years; however, this time period is offset by the relatively long average time (12.0 years) between the arrival of immigrants from Mexico and their subsequent naturalization as U.S. citizens (see table 4.9). The other short average times between naturalization and petitioning were for China at 1.8 years, Korea at 2.4 years, and India at 2.5 years.

Table 4.10: Time Interval for Naturalized Petitioners Between Naturalization and Petitioning for Exempt-Immediate Relatives: 1985

Petitioners' country of birth and status	Naturalization to petitioning[a] Average no. of years	95% confidence interval
Overwhelmingly native-born		
Canada	7.5	1.8 - 13.2
Germany	9.7	2.9 - 16.6
United Kingdom	5.9	2.5 - 9.4
Predominantly native-born		
Colombia	4.9	3.3 - 6.6
Dominican Republic	3.3	2.1 - 4.4
Korea	2.4	1.7 - 3.2
Mexico	1.6	−0.1[b] - 3.3
All other countries	4.2	2.6 - 5.7
Predominantly naturalized		
China	1.8	1.4 - 2.3
India	2.5	1.9 - 3.1
Philippines	3.5	2.1 - 4.9
Total[c]	**3.6**	**2.8 - 4.4**

[a]Sample = 799 cases; missing cases = 28.

[b]Naturalized citizens may petition prior to a scheduled naturalization date.

[c]Weighted average.

The average time between the arrival of an immigrant and the arrival of an exempt-immediate relative was shortest for Asian countries (table 4.8). These countries also had the largest proportions of exempt-immediate relatives of naturalized citizens (table 4.1). Furthermore, these countries had the shortest average times to naturalization (table 4.9). The Asian countries also had very short average times between the naturalization of the petitioner and filing the petition for admission (table 4.10).

Taken together, these pieces of data do suggest that substantial chain migration may be occurring from Asia.

Conclusions

Several general conclusions can be reached concerning the process of exempt-immediate-relative immigration. First, the majority of petitioners for exempt-immediate relatives were native-born citizens. Native-born citizens petitioned most often on behalf of a spouse. Petitioners for relatives from Asia were an exception to this overall pattern, however, because the majority of these petitioners were naturalized citizens who brought their parents into the United States.

Second, the time between the arrival of a future petitioner and the subsequent arrival of his or her immediate relative was more than a decade. There was considerable variation by country, and the shortest time intervals occurred for Asian countries.

Third and last, the naturalized petitioners represent a cross-section of possible immigrant classes of admission. The majority of petitioners who were former immigrants qualified for permanent resident status through one of the numerically restricted preference system categories. Admissions through the six preference system categories varied by country of birth, and none accounted for more than 15 percent of naturalized petitioners. Petitioners admitted through the fifth preference category represented less than 10 percent of all petitioners.

These general findings on the current process of exempt-immediate-relative immigration do not portend a large increase in future legal immigration in the next 10 years from chain migration. Two facts support this conclusion: (1) the percentage of naturalized petitioners was low and (2) the average time between linked family migration was long.

However, the potential for a change in the size and ethnic distribution of exempt-immediate-relative immigration over a longer period may be present from possible chain migration occurring in specific countries or regions. The Asian countries we studied, especially China, exhibited some of the characteristics anticipated to occur during extensive chain migration (for example, a high percentage of naturalized petitioners and relatively short times before the arrival of exempt-immediate relatives). Because persons from Asia are a large and growing fraction of current immigration, their behavior may influence the process of exempt immigration more in the future than it has in the past. Since immigration

from these countries is expected to increase, this suggests some increase in chain migration, despite the absence of any such overall trend to date.

Chapter 5

Emigration From the United States

In previous chapters, we have reviewed past and future estimates of the flow of legal immigrants, but the effect of immigration on the United States is offset by the decisions of some legal immigrants to emigrate back to their homelands or elsewhere. Emigration is simply the process of leaving one country or region to settle in another, but measuring it accurately can be a very complex undertaking.

In order to measure net legal immigration, it is necessary to measure total legal immigration and total legal emigration. When we develop an estimate of emigration by former legal immigrants, two emigrant groups are of particular interest to us: (1) naturalized U.S. citizens and (2) permanent resident aliens (persons who legally immigrated to the United States but who are not naturalized U.S. citizens). Other categories of emigrants from the United States are of less interest to us here: (1) native-born U.S. citizens, (2) persons who legally entered the United States but subsequently entered an illegal status, such as tourists, (3) persons who illegally entered the United States, and (4) persons of unknown status.[1]

This chapter synthesizes the findings of recent studies that have developed estimates of emigration from the United States and assesses their applicability to our work. There are no current official data on emigration; therefore, estimates must be calculated indirectly.[2] Estimates of emigration by the foreign-born (legal immigrants) and by U.S. citizens may supply indirect measurements of net immigration, and several such estimates will be reviewed in this chapter.

An information synthesis was performed on the emigration literature. This technique was chosen because (1) no direct data on emigration are available and (2) the only available information is in a number of studies that use a variety of data sources, target populations, time periods,

[1] A variety of recent studies have used several methods to estimate the size of the undocumented alien population; however, we did not review this work, because our focus was upon the components of total legal immigration and total legal emigration by legal immigrants. Emigration by persons who have illegally entered the United States and persons whose status is unknown present additional theoretical and methodological complications in estimating emigration. A complete measure of emigration should not be restricted to the emigration of permanent resident aliens prior to their becoming naturalized citizens. In other words, it is important to measure the emigration of native-born and naturalized citizens as well as of legally resident aliens.

[2] The Bureau of the Census attempts to measure the sum of emigration by native-born U.S. citizens, naturalized U.S. citizens, and permanent resident aliens, and it has assumed this flow to be approximately 160,000 annually; 133,000 are assumed to be foreign-born, and 27,000 are assumed to be native-born. The Bureau also attempts to measure net undocumented immigration; however, it does not attempt to separate the components of undocumented immigration and emigration of undocumented immigrants.

and estimation techniques.[3] These studies required critical review to determine their applicability to our work.

In this chapter (1) the emigration questions that guided our synthesis are stated, (2) study methodologies are described, (3) findings of selected studies using these methodologies are discussed, (4) synthesis results are presented, and (5) conclusions are summarized.

Chapters 2 and 3 discussed legal immigration totals for the recent past and made projections from fiscal year 1986 to fiscal year 1990. Our questions on emigration are directly comparable to the questions on immigration addressed in these chapters:

1. What were the levels and characteristics of emigration flows of legal immigrants from the United States in recent years, both in the aggregate and by type of admission, country of birth, sex, and age?

2. What are the projected levels and characteristics of emigration flows of legal immigrants from the United States in future years, both in the aggregate and by type of admission, country of birth, sex, and age?

Primary Methodologies Used in Emigration Studies

Several techniques have been used to estimate emigration flows and emigration rates. The outcome of these techniques varies with the data base, the target population, the time period addressed, and the assumptions used by different researchers in calculating emigration flows and rates.

We identified three emigration estimation techniques in the literature: (1) registration residual, (2) intercensal cohort-component method and (3) records cross-reference.[4] None of the techniques were able to adequately answer our emigration questions, given the limitations in study scopes and data sources. The procedures and limitations (for our purposes) of each technique are briefly described below. The studies were selected because they were either the only example in the literature or

[3]An information synthesis begins with a literature review but goes very much further, analyzing the quality of each piece of information (in terms of the evidence supporting it) with an end-product of refined information about the state of knowledge in a particular area at a particular time. This technique is described in U.S. General Accounting Office, The Evaluation Synthesis, Institute for Program Evaluation Methods Paper 1 (Washington, D.C.: April 1983).

[4]The intercensal cohort-component method has a variety of potential applications using census and survey data, vital statistics data, life tables, and other sources of information about quantifiable events that can be linked to a cohort.

the most recent to apply a technique in addressing our emigration questions. The techniques are discussed in the order in which we judged them to be relevant to our study.

Registration Residual

This technique most closely addressed our question on past flows of emigrants. It generated annual emigration rates for legal immigrants by country of birth. The data used in this method came primarily from the INS Alien Address Report Program, an annual registration program for aliens that was discontinued in 1981. Emigration flows for 1-year intervals for 1962 to 1975 were estimated by Warren (1979) and for 1965 to 1979 by Warren and Passel (1987).

Warren and Passel represented the annual change in the resident alien population in these studies by the equation $P_2 = P_1 + I - E - D - N$, where P_1 = alien population at the beginning of the year, P_2 = alien population at the end of the year, I = immigrants admitted for permanent residence during the year, E = aliens emigrating during the year, D = deaths to the alien population during the year, and N = aliens naturalized during the year.

This equation was then transformed algebraically to produce the following equation to estimate emigration: $E = P_1 - P_2 + I - D - N$. Thus, Warren and Passel termed emigration equal to the number of alien registrations in 1 year minus alien registrations in the next year plus alien immigration minus alien deaths minus naturalizations. Because emigration is calculated as a difference or residual, the validity of results usually depends upon a consistent and accurate level of registration compliance from year to year.

Under some circumstances, however, this technique can provide useful results even in the face of varying registration completeness. Warren and Passel (1987) corrected the registration data for underregistration, and their results are not dependent on consistent levels from year to year.

Intercensal Cohort-Component Method

The emigration of the foreign-born population during a 10-year period (a major proportion of whom are legal immigrants who have not become citizens) can be estimated by using decennial census data. Emigration is calculated as the number of foreign-born who do not "survive" from one

census count to the next. This technique was applied by Warren and Peck (1980), who used 1960 and 1970 U.S. census data.

The difference between the population estimate derived from "surviving" the population and the actual census count was deemed to represent emigration between the two censuses. They expressed this procedure by using the following equation: $P_2 = P_1 - D + I - E$, where P_1 = the foreign-born population at the date of the earlier census, P_2 = the foreign-born population at the date of the later census, D = deaths occurring among the foreign-born during the intercensal period, I = immigrants during the intercensal period, and E = emigrants during the intercensal period.

To solve for emigration, Warren and Peck used the following equation: $E = P_{1960} - D + I - P_{1970}$. Their estimate of emigration was, therefore, the foreign-born population in the second census minus the foreign-born population in the first census minus foreign-born mortality between the censuses plus immigration between the censuses. Possible limitations of this approach include

- the lack of timely data availability and processing because results from the later census are not generally available for 2 to 3 years after it is taken,
- the difficulty in differentiating between legal immigrants, illegal aliens, and the foreign-born population, and
- the coverage of each census, which must be the same to ensure the validity of the residual calculation; however, the Warren and Peck methodology can be modified to account for changes in census coverage if such data are available.

Another application of the intercensal cohort-component method was used by Jasso and Rosenzweig (1982), who estimated emigration indirectly by looking at the status of a cohort of legal immigrants at two points in time. Initial data were collected when the cohort entered the country, and a second set of data was collected several years later. Emigration was calculated as the difference or residual between the initial cohort total and the later cohort total, after making adjustments for other quantifiable intervening events (for example, deaths and naturalizations). Jasso and Rosenzweig expressed emigration as the total number of immigrants entering in 1971 minus the number of 1971 immigrants who were naturalized by the end of fiscal year 1978 minus the estimated mortality among the 1971 cohort until 1979.

Jasso and Rosenzweig also developed several equations to calculate the upper limit of emigration. The first equation specified that P = I − D − E, where P = the cohort members who were alive and residing in the United States in January 1979, I = the number of persons who became permanent resident aliens of the United States during fiscal year 1971, D = the number of members of the 1971 fiscal year cohort who died prior to January 1979, and E = the fiscal year 1971 cohort members who were alive and no longer residing in the United States by January 1979.

The second equation expressed the cohort in terms of its members' naturalization and address-reporting behavior: P = C + R + N, where C = the number of fiscal year 1971 cohort members who became naturalized citizens of the United States by the end of fiscal year 1978, R = the number of fiscal year 1971 cohort members who reported their addresses to INS in January 1979, and N = the number of fiscal year 1971 cohort members who were alive and residing in the United States in January 1979 but who did not report their addresses to INS.

Solving the first equation algebraically for the number of emigrants yielded a third equation: E = I − D − P.

Finally, substituting the second equation into the third equation yielded the equation E = I − D − C − R − N, which Jasso and Rosenzweig used to represent the upper bound of emigration.

Possible limitations to this approach are that

- the difference calculation is sensitive to the accuracy and completeness of the data that are collected and compared and
- the results may not be valid for other immigrant cohorts.

Records Cross-Reference

Emigration rates among the elderly can be determined from Social Security tabulations of beneficiaries residing abroad. Kraly (1982) employed this technique by using data that beneficiaries residing overseas supplied on their employment and residential history in the United States. By comparing the number of former immigrant beneficiaries overseas with the existing cohort of resident immigrants, she calculated an emigration ratio. Possible limitations of this technique are that

- we can estimate only the Social Security beneficiary population and
- the emigration ratio is sensitive to the accuracy of data on the size of the resident immigrant cohorts.

Table 5.1: Summary of Emigration Study Findings[a]

Study Feature	Jasso and Rosenzweig 1982	Kraly 1982
Question		
What were recent level and characteristics of emigration flows of legal U.S. immigrants in the aggregate		
Type of admission		
Country of birth	Rates vary by country of birth: upper limits 15-70%; lower limits 2-15%	
Sex		
Age		Social Security beneficiaries abroad rose 93% from 140,151 in 1963 to 276,547 in 1973
Method	Intercensal cohort component	Records cross-reference

Findings of Selected Studies

Table 5.1 lists the emigration studies we reviewed that developed findings relevant to our question on past emigration flows. As the table shows, none of the studies projected future emigration flows.

Warren and Passel (1987), using the registration residual technique, calculated that the average emigration rate for legal immigrants from 40 source countries between 1965 and 1979 was approximately 30 emigrants per 100 immigrants. Warren (1979), using the same methodology but an earlier data base, estimated a very similar rate of 31 per 100. The rate varied by country of birth. Warren reported in his earlier work that Asian countries had an average rate of 14 emigrants per 100 immigrants; Canada and several European countries had positive net emigration.

Warren and Peck (1980), using the intercensal cohort-component method, found that approximately 1.14 million foreign-born persons left the United States between 1960 and 1970. They found that foreign-born emigrants were more likely to be female and younger than the population as a whole. Approximately 17 percent of the immigrants who entered between 1960 and 1970 had emigrated by the 1970 census.

Warren 1979	Warren and Peck 1980	Warren and Passel 1987	Our conclusions
Legal immigrant emigration was about 31% of 1962-75 immigration	17% of legal immigrants who arrived in the 1960's emigrated by 1970	Legal immigrant emigration was 30% of 1965-79 immigration	Emigration was a significant proportion of immigration. 15-30% of legal immigrants emigrate
Wide variations: Asia low at 14% but increasing; Canada and Europe negative; North American increasing		Wide variations: Asia low; Canada and Europe often negative; North America increasing	Asians, Canadians, and Europeans had low rates. Mexicans, Caribbeans, and Central and South Americans had high rates
	60% female, high proportions of whom were 25-44 or 65+		Slight majority were women
	25% foreign-born younger than 30 emigrated; 30% younger than 15 emigrated		Recent immigrants were the most likely to emigrate
Registration residual	Intercensal cohort-component	Registration residual	

[a]The question on emigration projections was not addressed, and neither were the data in the empty cells

Jasso and Rosenzweig (1982), using the intercensal cohort-component method, estimated the upper and lower limits of emigration by country of origin for the 1971 cohort of legal immigrants after 8 years. They estimated relatively high upper limits of emigration for South and Central American immigrants (70 percent) and low upper limits for Asian immigrants (for example, the Chinese, 15 percent). Their estimates of lower limits of emigration rates ranged from 51 percent for Canadian immigrants to 2 percent for Korean immigrants.

Kraly (1982), using the records cross-reference technique, found that emigration rates among legal immigrant Social Security beneficiaries varied by country of birth. The average emigration rate for all foreign-born beneficiaries increased from 1960 through 1974.

Results

Our information synthesis produced two types of results. The first concerned our ability to use emigration estimation methodologies to calculate reliable and valid estimates of emigration that could be used to make specific quantitative adjustments to our analysis of past legal immigration flows and projections of future flows. The second type summarized the information that was available to address our emigration questions, regardless of whether it could be used to make quantitative adjustments.

Emigration Study Characteristics

The emigration study findings were not comparable and could not be quantitatively synthesized, because of fundamental differences in methodologies and study parameters. The studies we reviewed defined emigrant populations in different ways and during different time periods.

Our inability to produce comparable estimates from the emigration studies resulted from differences in the data sources. Until 1957, the Immigration and Naturalization Service kept official totals of emigration by legal immigrants. One of the reasons INS discontinued this practice was that the data were perceived to be inaccurate and unreliable. No official data on emigration from the United States has been collected since then.

Each of the emigration studies, therefore, had to use indirect data sources to estimate emigration flows and rates. These data sources included (1) the U.S. census, (2) foreign censuses, (3) Social Security records, and (4) INS alien registration records. These primary sources were supplemented with secondary data sources such as the annual INS records of immigration and naturalization and data on mortality.

Emigration Study Results

Our summary of study findings in table 5.1 indicates that Warren and Passel (1987) and Warren (1979) most closely addressed our question concerning the aggregate level of recent emigration. These studies estimated that during the 1960's and 1970's, the emigration rate among legal immigrants was approximately 30 percent of legal immigration.

Substantial positive emigration in the 1960's was estimated for two additional populations. Warren and Peck (1980) estimated that approximately 17 percent of the immigrants who arrived during the 1960's emigrated by 1970. Since the average interval (5 years) during which the population in the Warren and Peck study had been in the country (1960-70) was shorter than for the Warren and Warren and Passel studies (1962-75 and 1965-79, respectively), this lower estimate for an emigration rate may not be inconsistent with their results. Warren and Peck's most significant finding was that approximately 1.14 million foreign-born persons emigrated from the United States between 1960 and 1970.

Warren (1979) provided the most appropriate data on emigration by country of birth. His results indicated high emigration rates for the Americas and Europe and low rates for Asia. These findings were supported by Jasso and Rosenzweig (1982), who found relatively high emigration rates for Central and South American immigrants and low rates for Asian immigrants.

The age and sex distribution of emigrants was addressed in the literature but not extensively. Warren and Peck (1980) found that 58 percent of the estimated 1.14 million foreign-born persons who emigrated from the United States between 1960 and 1970 were female. They found that nearly 25 percent of all foreign-born emigrants during the decade were women 25 to 44 in 1970 and that emigration was highest among recent immigrants. They also found that 25 percent of foreign-born residents under 30 who arrived during the 1960's had emigrated by 1970. Kraly (1982) found that the proportion of the legal resident alien Social Security beneficiaries who emigrated between 1960 and 1974 increased. The literature did not address questions concerning emigration by class or type of immigrant admission into the United States.

None of the research that we reviewed attempted to predict or project future emigration from the U.S.

Other Available Information

INS collected annual emigration data between 1908 and 1957. The Immigration Act of 1907 (Public Law 59-96) required that INS obtain information on the return flow of immigrants from the United States. INS conducted exit interviews with immigrants to determine their intentions upon leaving. In 1957, this program was discontinued, because there were relatively few emigrants at that time and the quality of the statistics was questionable. However, the data available from this source support the magnitude of aggregate emigration rates found in more recent estimates. Of 15,718,846 alien immigrants admitted to the United States between 1908 and 1957, a total of 4,812,495 emigrated during that same period—approximately 31 percent. These data are assumed to undercount the number of emigrants.

INS's Nonimmigrant Information System (NIIS) has recorded arrival and departure information for certain non-U.S. citizens since 1983, but it was not designed to measure emigration. It records the arrival and departure of about 9 million legal nonimmigrants annually.[5] Recent data show that approximately 90 percent of these legal nonimmigrants were either temporary visitors for pleasure (about 72 percent) or temporary

[5]NIIS does not record the arrival and departure of illegal nonimmigrants—persons who arrive to and depart from the United States without inspection.

visitors for business (about 18 percent). The remaining classes of admissions under NIIS accounted for only about 10 percent of legal nonimmigrants to the United States.[6]

NIIS was designed to provide an easily verifiable record of legal admission for each nonimmigrant and is one of INS's largest systems. NIIS has an active data file of more than 20 million persons and an additional file of approximately 10 million persons.

NIIS does not contain information about newly arriving immigrants, resident aliens who return after short visits from abroad, or most of the millions of citizens of Canada and Mexico who enter the United States for brief periods. Students are processed separately in a file designed to produce detailed statistics on the foreign-born student population in the United States.

When entering the United States, non-U.S. citizens are required to fill out INS Form I-94. The arrival portion is removed and sent to a central data processing facility. The matching departure section of the form, which is then stapled to the passport, is the nonimmigrant's proof of legal admission into the United States. This section of Form I-94 is collected during departure and sent to the data processing facility, where it is matched to the arrival section of the form.

These data are used to calculate rates of apparent overstay by country and have several sources of error. INS found that the collection of departure forms was not uniform and that there were keypunching errors and lost or illegible forms. Also, changes of status were not recorded. For example, some persons arrived as nonimmigrants and subsequently adjusted to permanent resident status, while others were given extensions on their original admissions.

The feasibility of modifying NIIS to measure emigration is presently unknown. Because it is currently operational and has the ability to process and retrieve large numbers of cases, it could potentially be used in

[6]Foreign government officials, including their spouses and children; transit aliens; treaty traders and investors, including their spouses and children; spouses and children of students (students are not processed in NIIS); international representatives, including their spouses and children; temporary workers and trainees and their spouses and children; representatives of foreign information media and their spouses and children; exchange visitors and their spouses and children; "fiancee(ees)" of U.S. citizens and their children; intercompany transferees and their spouses and children; NATO officials, including their spouses and children; parolees; refugees; and "others" not classified above (Warren, 1986, p. 9).

creating a system to uniformly measure the emigration of non-U.S. citizens and permanent resident aliens.

The Bureau of the Census produces annual and monthly postcensal estimates of the U.S. population. One of the components of the equation used to make these estimates is emigration. In January 1985, the estimation of annual emigration was changed to reflect the most recent information in the literature. The emigration flow is now assumed to be 160,000 annually; 133,000 are assumed to be foreign-born and 27,000 are assumed to be native-born. These estimates were incorporated into the annual and postcensal estimates of the U.S. population, based on the work of Warren and Passel (1987), who presented their original findings in 1983.

Conclusions

The emigration of legal immigrants is an important factor in calculating net immigration to the United States, and existing studies provide considerable knowledge about the process. We were not, however, able to quantitatively synthesize the results of these studies to determine what portion of the legal immigrant flows estimated in chapters 2 and 3 have been or will be offset by emigration. Our questions on emigration could not be answered in sufficiently detailed form to permit us to adjust our immigration data and forecasts to account for emigration. As we have shown, the primary constraint in producing reliable and valid estimates of legal emigration is the lack of current and appropriate data.

The Bureau of the Census is developing a pilot test of the feasibility of collecting some of these data by means of a multiplicity sample. With a multiplicity sample, demographic information is provided by a selected household not only about its own household members but also about other persons who are linked to that household in clearly defined ways. A multiplicity sample refers to a sampling technique that relies on allowing survey respondents to report on multiple persons linked to the survey respondent by a specified counting rule and is intended to account for multiple reporting. This approach involved asking questions about the respondents' immediate relatives who had previously lived in the United States but now lived abroad. All such emigrants, whether native or foreign-born, were included in the survey. Data collected on the emigrants included country of birth, U.S. citizenship and date of emigration but not legal status. This pilot test (which the Bureau regards as experimental) was employed as part of a supplement to the Current Population Survey (CPS) conducted in July 1987 and is scheduled to be continued in 1988 and 1989. The limitations of the survey

design are recognized by the Bureau and include (1) no means of identifying emigrants who have no family members or relatives remaining in the United States, (2) a lack of information on the legal status of emigrants, and (3) the reliance on secondhand information.

The results of the CPS supplement on emigration may be valuable as a basis for revealing the dimensions of the process of emigration and the characteristics of certain groups of immigrants. These data may provide a source of current information on both the amount of immigration and emigration and the processes underlying these activities.

While tentative, the following conclusions about emigration should be kept in mind in interpreting past data or future forecasts of immigration flows

1. Emigration is occurring, and a significant percentage of current legal immigrants will emigrate. Historically, approximately 30 percent of the legal immigrants to the United States have eventually emigrated.

2. Emigration behavior varies by country of birth. As changes occur in the source countries of immigration, corresponding changes in emigration behavior—and, therefore, net immigration—may result.

3. Emigration behavior also varies with sex and age. About 663,000 of the estimated 1.14 million foreign-born persons who emigrated from the United States between 1960 and 1970 were females. Nearly 25 percent of all foreign-born emigrants during 1960-70 were women 25 to 44 in 1970. Also, emigration was found to be highest among recent immigrants.

4. No comprehensive emigration data are currently available. Forecasts of future net flows of legal immigrants and both national and local populations estimates and projections are sensitive to emigration rates. The multiplicity sample that was taken on a pilot basis by the Bureau in July 1987 is a data collection program on emigration that should be encouraged and continued, if this is found feasible, but it has acknowledged limitations that preclude it from providing a complete estimate of all categories of emigrants. It will not fully close the gap in the lack of current, valid information on the emigration of legal immigrants.

5. A comprehensive approach to counting emigrants is lacking, and there is no uniformity in the development of a measure of net immigration to the United States. The current activity by the Bureau of the Census and

INS, viewed in context with past efforts to measure U.S. emigration, strongly suggest a continuing interest and a need for comprehensive data on U.S. emigration. Because we did not examine alternative systems, we do not take any position on which method or combination of methods could be used to do so.

Conclusions, Recommendation, Agency Comments, and Our Response

Recent annual legal immigration into the United States has increased substantially, rising from 384,685 in fiscal year 1972 to 570,009 in fiscal year 1985, a 48-percent increase. The cumulative total of legal immigrants during this period was 6,987,242, an average of 499,089 annually. We project that this upward trend will continue during fiscal year 1986 to fiscal year 1990, although at a somewhat lower overall rate than during past years. Overall, we characterize future growth as moderate.

Legal immigration consists of three major types of admission: numerically limited immigrants, exempt-immediate-relative immigrants, and refugees. The largest current component of legal immigration is numerically limited immigration; however, the fastest growing component is exempt-immediate-relative immigration. The latter is projected to be the largest component of legal immigration by fiscal year 1991.

We analyzed data from the INS's Immigrant Public Use Tapes to develop a time-series profile of legal immigration from 1972 to 1985. Using monthly data on exempt-immediate-relative immigrants, we developed a model to forecast future legal immigration for this category of legal immigrants. We used extrapolations of recent experience to project numerically limited immigration as well as immigration by source country, sex, and age.

We also developed and analyzed a new data base linking information on a stratified random sample of exempt-immediate-relative immigrants for fiscal year 1985 with information on the characteristics of their sponsors. We found that the majority of these immigrants (64 percent) were sponsored by native-born U.S. citizens rather than by former immigrants. Moreover, we found that sponsors who were naturalized citizens petitioned for immigrants according to a variety of types or codes of admission. Our analysis of the behavior and characteristics of this category of immigrants and their petitioners failed to confirm the likelihood of an explosive increase in future legal immigration from chain migration, with the possible exception of immigration from Asia. Nor did our analysis identify any single preference category (for example, fifth preference) to be heavily represented as a source of exempt-immediate-relative petitioners. Finally, we conducted an information synthesis on emigration from the United States. We learned that emigration flows were a quantitatively important offset to legal immigration flows. The most recent estimates (approximately 1960 to 1980) reported that approximately 30 percent of legal immigrants eventually emigrate and that this rate varies by country of birth, sex, and age. However, we were

unable to calculate the effect of future immigration on the number and characteristics of the U.S. population because of the lack of recent data or valid recent estimates of emigration.

Conclusions

We concluded that the size and composition of future immigration flows (not including the one-time impacts of the amnesty and seasonal farmworker provisions of the Immigration Reform and Control Act by 1986, which were beyond the scope of our projections) could be projected by using time-series modeling and other analyses of time-series data. Each permanent category of legal immigration by type of admission—numerically limited, refugee, exempt-immediate-relative, and other exempt—was projected separately.

We project that from fiscal year 1986 to fiscal year 1990, these categories of legal immigration (counting refugees as immigrants at the time they first enter the country rather than when they adjust to permanent resident status) will increase from 546,190 to 605,600 annually. Cumulatively, this would be a total flow of 2,885,138 during the 5 fiscal years. All the increase in these annual flows is projected to come from the exempt-immediate-relative category. Numerically limited immigration will remain constant (except for the temporary addition of 5,000 visas annually in fiscal year 1987 and fiscal year 1988), assuming the continuation of current legislation. We also found that the best available predictor of the level of refugee arrivals was last year's level, so our projection for refugees during the next 5 years is also constant.

Immigration by source country is projected to remain highly concentrated; just 10 countries are estimated to supply about 55 percent of the future immigrants over the next 5 years. Five of these countries are in Asia (China, Korea, the Philippines, Vietnam, and Taiwan) and 3 are in the Caribbean area (the Dominican Republic, Mexico, and Jamaica). The sex ratio of future immigrants is projected to remain about 50 percent male and 50 percent female. The age distribution is projected to remain approximately the same, with a somewhat lower fraction from age 0 to 19 and a higher fraction from age 20 through 29.

In general, our analysis of fiscal year 1985 data for exempt-immediate relatives and their sponsors or petitioners failed to confirm the existence or future likelihood of massive chain migration, as former immigrants become naturalized and sponsor their close relatives for immigration. Most petitioners for exempt-immediate relatives are

native-born U.S. citizens and are not part of any chain migration process. For naturalized petitioners, the average time between their arrival and the arrival of an exempt relative is more than 12 years. An exception to these general findings is the fairly short time period between the arrival of immigrants from some Asian countries and the arrival of their exempt-immediate relatives. Since we projected that these Asian countries will supply an increasing percentage of immigrants in future years, this suggests at least some increase in immigration from chain migration.

Our estimate that legal immigration will rise to 606,000 annually by fiscal year 1990 may be considered an incomplete measure of the effect of immigrants on the United States in that it does not account for the emigration of immigrants. Put another way, our projections are not measures of net immigration. A substantial amount of the estimated current emigration from the United States is accounted for by former immigrants; the Bureau of the Census assumes that 133,000 of the 166,000 emigrants, or 80 percent, are foreign born. We reviewed studies that suggest that there are about 30 legal emigrants for every 100 legal immigrants, and some of these estimates were linked to data from the Alien Address Report Program. This program was discontinued in 1981, and the data are no longer current. Moreover, no adequate current emigration data are available to provide an estimate of net immigration to the United States.

Better emigration data would be useful in several respects. First, as noted above, they would provide a basis for estimating emigration, which is a more realistic indicator of the long-term effect of immigration on the United States. Second, emigration data affect our ability to forecast the flows of legal immigration, because the numerical limitations apply only to persons who are legally admitted to the United States as immigrants and before they may emigrate. If adequate emigration data were available, it would be possible to make a better long-term assessment of the potential for significant chain migration among Asian immigrants. If Asians are substantially less likely to emigrate, the potential for significant chain migration may be much greater than if Asians have an average or a below-average likelihood of emigrating.

Third, the 1986 act requires that the president transmit to the Congress a comprehensive immigration-impact report by January 1, 1989, and an additional report every third year thereafter. Better emigration data should be useful in demonstrating the effect of immigration.

Fourth, a good measure of net immigration would be useful for other purposes unrelated to the present report to estimate the rate, size, and distribution of U.S. population growth. This information could be used, for example, in improving intercensal population estimates of the United States. Finally, resources devoted to improved information on net immigration and emigration of legal immigrants could also have a side effect of improving our ability to estimate the changes in the number of illegal immigrants. This is true because a methodology to obtain complete estimates of the emigration of legal immigrants would need to look at the entire population: legal immigrants, illegal immigrants, and U.S. citizens. The best methods currently available for measuring illegal immigration require estimates or firm data on emigration of legal foreign-born residents. There has been substantial interest in recent years in estimates of the illegal immigrant population in the United States.

We found there is no comprehensive approach to counting emigrants and, therefore, there is no uniformity in the development of a measure of net immigration to the United States. In the interest of gathering emigration data in a consistent manner, we are recommending the following.

Recommendation to the Attorney General

We recommend that the attorney general direct the commissioner of INS to consult with the director of the Bureau of the Census to develop and implement a uniform methodology for estimating net immigration to the United States by adequately accounting for the emigration of non-U.S. citizens and permanent resident aliens. This measure of net immigration should reflect the policy objectives and requirements of the Immigration Reform and Control Act of 1986 and other immigration laws. Because alternatives were not studied, we do not take any position on which method or combination of methods should be used.

Agency Comments and Our Response

The Department of State, the Bureau of the Census, and the Department of Justice collectively indicate that they found the draft report useful, logical, and well done. (Their letters are printed in appendixes VI-VIII.)

The Bureau of the Census said that our study of the petitioners of exempt-immediate-relative immigrants was a milestone in immigration research and agreed with our conclusion that chain migration does not appear to be a widespread phenomenon. The Bureau said that the results seem to suggest that chain migration from Asia may be fairly common. We agree that the findings regarding Asia seem contrary to our general overall results and have noted this in the report. We also agree

with the Bureau's observation that the patterns of migration we report could always change. At the same time, the data that we analyzed and report upon represent immigration that took place over a number of years. Our data show that the average time between the arrival of an immigrant to the United States and the arrival of an exempt-immediate relative is about 12 years. In short, although our data report patterns at a single point in time, the patterns represented at that time reflect decisions made about immigrating and petitioning over a fairly long period.

The Bureau also made some specific observations about how to improve the available data on immigrants and emigrants. We agree that there are weaknesses in the available data, but we do not take a position on whether improvements to data on emigration should be accomplished through an alien-registration system or some other method. Instead, we recommend that the attorney general direct the commissioner of INS to consult with the director of the Bureau of the Census to develop a uniform measurement of net immigration to the United States.

The Department of State questioned our decision to measure past flows of refugees by counting them at the time they adjusted to permanent resident alien status. The department is concerned that the results could give the misimpression of higher refugee admissions in each of these years than actually occurred. We have noted in chapter 2 that the number of refugee adjustments to permanent resident alien status each year in the period fiscal year 1983-85 exceeds the number of refugee arrivals in each of these years. That is possible because of the required waiting period. We did not mean to imply that the department is admitting an unauthorized number of refugees and do not believe that our report in any way infers that this may be the case. We explain in the report the reasons for counting refugees at the time of adjustment to permanent resident alien status, which essentially are that we had better and more accessible data at that point in the process. Since an estimated 95 percent of refugees eventually adjust to permanent resident status, it made little difference which measure was used for our analysis.

The department made other observations on points that we have either removed from the report or changed to meet its concerns.

The Department of Justice thought that measuring emigration would be costly. However, we believe emigration data are needed to make valid estimates of net immigration. The department did not provide cost

figures. We did not make precise estimates and we have not recommended a specific method. Our opinion is that the benefits of the proposed data collection would exceed the costs of collecting this information. We originally asked the department to examine the appropriateness of modifying NIIS to measure emigration; however, we did not study alternatives and, therefore, take no position on any method or combination of methods that may be used to estimate the number of emigrants.

Components of Legal Immigration

In developing a study of future immigration flows, it is important to understand that there are basically three permanent and continuing ways, or routes, whereby aliens can attain immigrant status. To help make sense of legal immigration and projections of its future size, we describe these three routes here. Table I.1 presents an overview of the number of immigrants admitted through each of the routes during the past 10 years, based on INS data. Table I.1 also lists a small residual category of "other" immigrants who do not fit into any of the three routes.

Table I.1: The Total Number of Immigrants Admitted to the United States in Fiscal Years 1976-85

Category	1976[a]	1977	1978	1979	1980	1981	1982	1983	1984	1985
Numerically limited[b]	247,505	265,973	275,384	252,986	261,344	271,698	257,449	269,164	262,016	264,208
Refugee adjustments[c]	38,836	78,485	132,781	45,128	88,057	107,573	156,601	102,685	92,127	95,040
Immediate relatives	103,925	105,957	125,819	138,178	151,131	147,148	162,968	172,006	177,783	198,143
Silva immigrants[d]			55,411	13,413	15,913	58,382	2,300	49		
Other[e]	11,299	11,900	12,047	10,643	14,194	11,799	14,813	15,859	11,977	12,618
Total	**401,665**	**462,315**	**601,442**	**460,348**	**530,639**	**596,600**	**594,131**	**559,763**	**543,903**	**570,009**

[a]Fiscal year 1976 was 15 months long because of the transition to different timing for federal fiscal years. For purposes of comparison to other fiscal years, the data in this table have been adjusted to a 12-month year.

[b]Excludes refugees.

[c]Prior to 1981, refugees were allocated 20,000 visas under a seventh preference category for the numerically limited. The Refugee Act of 1980 removed refugees from the preference system and correspondingly reduced the worldwide ceiling from 290,000 to 270,000. From 1976 to 1981, the numbers for refugees include both numerically limited adjustments and those exempt from numerical restrictions.

[d]The Silva adjustments in 1978-83 were exceptional, being instituted by court order to provide for about 145,000 under the numerically limited categories originally used for Cuban refugee adjustments.

[e]Special immigrants, including ministers and U.S. citizens who lost citizenship, and various other unspecified immigrants.

Numerically Limited

Current immigration legislation provides that up to 270,000 immigrants may be admitted annually under a preference system. The Immigration Reform and Control Act of 1986 provides 5,000 additional visas (for fiscal year 1987 and fiscal year 1988 only)

"to those countries which enjoyed favorable quotas and/or whose nationals received significant numbers of visas prior to the Immigration and Nationality Act Amendments of 1965. These visas shall be made available strictly in the chronological order in which immigrants qualify, after November 6, 1986."

Under the numerical limitations, there are six preference categories for immigration, four on the basis of relationship either to current U.S. citizens or to immigrants and two on the basis of occupation. These preference categories are defined in table I.2. Each category is allocated a specified percentage of the authorized immigrants.

Table I.2: Immigrant Visa Allocation System for Numerically Limited Immigrants (270,000) for Fiscal Year 1983[a]

Preference	Category[b]	Visas[c] %	Visas[c] No.
1st	Unmarried adult children of U.S. citizens and their children	20%	54,000
2nd	Spouses and unmarried sons and daughters of immigrants	26%	70,200[d]
3rd	Members of professions or persons of exceptional ability in the arts and sciences and their spouses and children	10%	27,000
4th	Married children of U.S. citizens and their spouses and children	10%	27,000[d]
5th	Brothers and sisters of adult U.S. citizens and their spouses and children	24%	64,800[d]
6th	Workers in skilled or unskilled occupations in which laborers are in short supply in the United States, and their spouses and children	10%	27,000
Nonpreference[e]	Other qualified applicants	Any numbers not used above[d]	

[a]These allocations have not been changed since fiscal year 1983

[b]A minor is younger than 21 years of age, an adult is 21 or older

[c]Refugees are not included in the visa allocation system

[d]Numbers not used in higher preferences may be used in these categories

[e]Nonpreference numbers have been unavailable since 1978 because of high demand under the preference categories

Source: 1983 Statistical Yearbook of the Immigration and Naturalization Service (Washington, D.C.: U.S. Government Printing Office, 1985), p. viii

Overall, relatives (categories 1, 2, 4, and 5 in table I.2) are allocated 80 percent of the total, and the occupational categories (3 and 6) receive the remainder. The types of relatives admitted under the preference categories are mutually distinct from the types of relatives of citizens who can be admitted without numerical limitation. No foreign country can receive more than 20,000 of the 270,000 visas in a given year.

The legislative ceiling on the numbers admitted through this route has remained essentially unchanged during the past 10 years. Some refugees were included under the numerical limitations prior to 1981, when the Refugee Act of 1980 established for the first time a uniform process of

immigration for all refugees. When these refugees were removed from numerical limitations, the ceiling was reduced from 290,000 to 270,000. As table I.1 indicates, the trend of actual numbers of numerically limited immigrants admitted has been fairly constant. During fiscal year 1985, about 264,000 persons were admitted under the numerically limited preference categories, representing 46 percent of total immigration for that year.

Refugees

Refugees are subject to a separate process of legal immigration. A refugee is defined in the Immigration and Nationality Act as a person who is outside his or her own country and unable or unwilling to return to that country because of persecution or a fear of persecution. The number of refugees who may be admitted is determined annually by the president after a process of consultation with the Congress. Refugees are eligible to adjust to lawful permanent resident status after 1 year of continuous presence in the United States, and many refugees do not adjust their status until they have been in the United States for several years. These immigrants are exempt from numerical limitations.

As table I.1 shows, the number of refugees who adjusted to immigrant status has fluctuated considerably during the last 10 years. These numbers of adjustments would have been difficult to project in advance. Since 1982, however, both the number of refugee arrivals and the number of refugees who adjust to permanent resident status has been declining. This may be because current and foreseeable numbers of refugees are less a function of increasing demands for refugee status from persons leaving countries such as Vietnam and Cambodia and, perhaps, more a function of processing times for the backlogs of those who have already applied for refugee status. During fiscal year 1985, about 95,000 refugees—17 percent of all immigrants that year—adjusted to permanent resident status.

Exempt From Numerical Limitations

The third major route to legal immigration is available to certain immediate relatives of U.S. citizens—specifically, spouses, unmarried minor children younger than 21, and parents of adult U.S. citizens. These persons can be admitted without regard to the numerical limitations. The number of immigrants admitted as exempt-immediate relatives has been growing steadily, from 96,561 in fiscal year 1975 to 198,143 in fiscal year 1985. Exempt-immediate relatives now constitute 35 percent of all immigrants, increasing from 26 percent in fiscal year 1976.

Sampling and Stratification of Exempt-Immediate-Relative Data

The data universe was defined by the population of exempt-immediate-relative immigrants who entered the United States in fiscal year 1985. The universe was stratified by the 10 largest source countries of exempt-immediate-relative immigrants for that year and a stratum representing all other countries.[1] Two hundred cases were randomly chosen from each of the country strata, and 300 cases were randomly chosen from the residual stratum.

The methodology of the exempt-immediate-relative analysis consisted of a series of iterative steps that were necessary because of the uncertainty of the availability, accuracy, and completeness of the data. We performed the following tasks:

- determined what data existed and where they were stored,
- designed and executed a pilot data-collection-and-analysis exercise to test the availability of data, and
- executed a full-scale exercise modified by the results of the pilot study.

INS does not maintain a file on U.S. citizens who petition for immigrant visas for their immediate relatives. Data were available only from the individual petition forms filed on behalf of exempt-immediate relatives and maintained in the files of exempt-immediate-relative immigrants. These files are maintained and located in approximately 50 INS File Control Offices. It was necessary, therefore, for us to access the INS records and create our own file of exempt-immediate-relative immigrants and their petitioners.

A number of INS data sources were accessed to develop a data base on petitioners. To obtain petitioner data, it was necessary to first begin with the immigrant relative. Forms I-130 (Petition for Alien Relative) and I-600 (Petition to Classify Orphan as an Immediate Relative) are filed on behalf of immediate relatives. INS can identify immigrants who enter the United States as exempt-immediate relatives by their codes of admission. Data on each immigrant is recorded in INS's central computer file or Central Index System (CIS).

The following tasks were accomplished to develop the petitioner data base:

[1]Canada, China, Colombia, the Dominican Republic, Germany, India, Korea, Mexico, the Philippines, and the United Kingdom.

1. The universe of 198,143 cases of exempt-immediate-relative immigrants who arrived in the United States in fiscal year 1985 was obtained.

2. A stratified random sample of 2,299 exempt-immediate-relative cases was drawn from the 51 INS File Control Offices (FCOs) located in the United States.

3. A systematic subsample of 230 cases located in the five largest file control offices around the country was drawn from the random sample, and we conducted a pilot study with this subsample. (The results of the study of this 230-case subsample are not included in this report.)

4. Copies of the I-130 and I-600 petition forms filed on behalf of the 230 exempt-immediate-relative immigrants were requested from the five field control offices.

5. The names and identification numbers of U.S. citizen petitioners were obtained from the petition forms.

6. Data on the naturalized petitioners were obtained from the INS central index system computer file.

7. A single data base was developed, which matched exempt-immediate-relative immigrant records with those of their petitioners.

8. Only a few modifications in the execution of the full-scale data collection procedure were required after the pilot study.

The primary change was to request petitioner data from the file control offices when data were missing from the central index system.

Tables II.1 and II.2 compare the sample characteristics with the population. Table II.1 lists the relative sizes of the sample strata and respective populations. Table II.2 compares the distribution of immigrant codes of admission for exempt-immediate relatives found in the sample and the population.

Table II.1: The Population of 1985 Exempt-Immediate-Relative Immigrants and the Sample We Drew From it

Country	Population		Sample	
	No.	% of population	No.	% of sample
Mexico	37,983	19.2	200	8.7
Philippines	25,784	13.0	200	8.7
Korea	14,642	7.4	200	8.7
India	6,663	3.4	199	8.7
United Kingdom	6,271	3.2	200	8.7
China	6,193	3.1	200	8.7
Dominican Republic	5,600	2.8	200	8.7
Canada	5,491	2.8	200	8.7
Colombia	5,315	2.7	200	8.7
Germany	5,287	2.7	200	8.7
All other countries	78,914	39.8	300	13.0
Total	**198,143**	**100.0**	**2,299**	**100.0**

Table II.2: The Distribution of Exempt-Immediate-Relative Immigrants in Our Population and Sample

Relative and status	Population		Sample	
	No.	% of population	No.	% of sample
New arrival				
Child from Southeast Asia and Korea	13	0	0	0
Spouse	66,215	33.4	764	33.2
Other child	21,285	10.7	204	8.9
Orphan				
Adopted abroad	1,092	0.6	8	0.3
To be adopted	8,114	4.1	123	5.4
Parent	27,657	14.0	394	17.1
Adjusted				
Child from Southeast Asia and Korea	2	0	0	0
Spouse	57,878	29.2	597	26.0
Other child	4,478	2.3	68	3.0
Orphan				
Adopted abroad	74	0	1	0
To be adopted	6	0	1	0
Parent	11,329	5.7	139	6.0
Total	**198,143**	**100.0**	**2,299**	**100.0**

Table II.3 summarizes the missing case data and variable data in our sample. Adjustments for missing data were not made in our analysis because there were very few missing data.

Table II.3: Summary of Missing Data in Our Exempt-Immediate-Relative Data Base

Country	Sample size	Available cases
Canada	200	192
China	200	191
Colombia	200	192
Dominican Republic	200	193
Germany	200	191
India	199	177
Korea	200	163
Mexico	200	184
Philippines	200	190
United Kingdom	200	197
All other countries	300	285
Total	**2,299**	**2,155**
% of available cases		

All cases					Cases with naturalized petitioners			
Sex	Country of birth	Date of birth	Date of petition	Native-born or naturalized	Available cases	Code of admission	Date of naturalization	Date of arrival
2	0	1	1	1	12	3	0	4
10	0	0	1	0	168	6	1	6
1	1	0	0	2	62	5	4	3
1	0	2	1	0	65	3	3	3
0	1	0	4	0	16	4	1	1
16	0	1	1	0	129	2	1	0
3	0	1	2	0	69	3	1	3
0	0	1	0	0	52	7	5	5
2	0	0	1	0	118	8	2	7
2	1	3	3	0	24	4	1	4
6	0	0	3	0	84	7	5	6
43	**3**	**9**	**17**	**3**	**799**	**52**	**24**	**42**
2.00	0.14	0.42	0.79	0.14	100.0	6.51	3.00	5.26

Time-Series Modeling and Forecasting of Exempt-Immediate-Relative Immigration

Exempt-immediate-relative immigration is a process amenable to time-series modeling. These models base prediction on the past behavior of a variable and on that variable alone—for example, an overall upward trend or cyclical behavior in a time series.

Time-series models are generally chosen in circumstances in which (1) little information is known about the determinants of the variable of primary concern and (2) a sufficiently large amount of data are available to construct a time series of reasonable length (a rule of thumb is that at least 50 observations are needed). Both of these factors were present for exempt-immediate-relative immigration:

- There is no well-developed theory of cause and effect to explain the process. Even if there were, no data are currently available on other explanatory variables to permit specification and estimation of, for example, a structural model of the process.
- Sufficient data are available to construct a time series of reasonable length—that is, for 171 monthly periods from July 1971 to September 1985.

Data Development

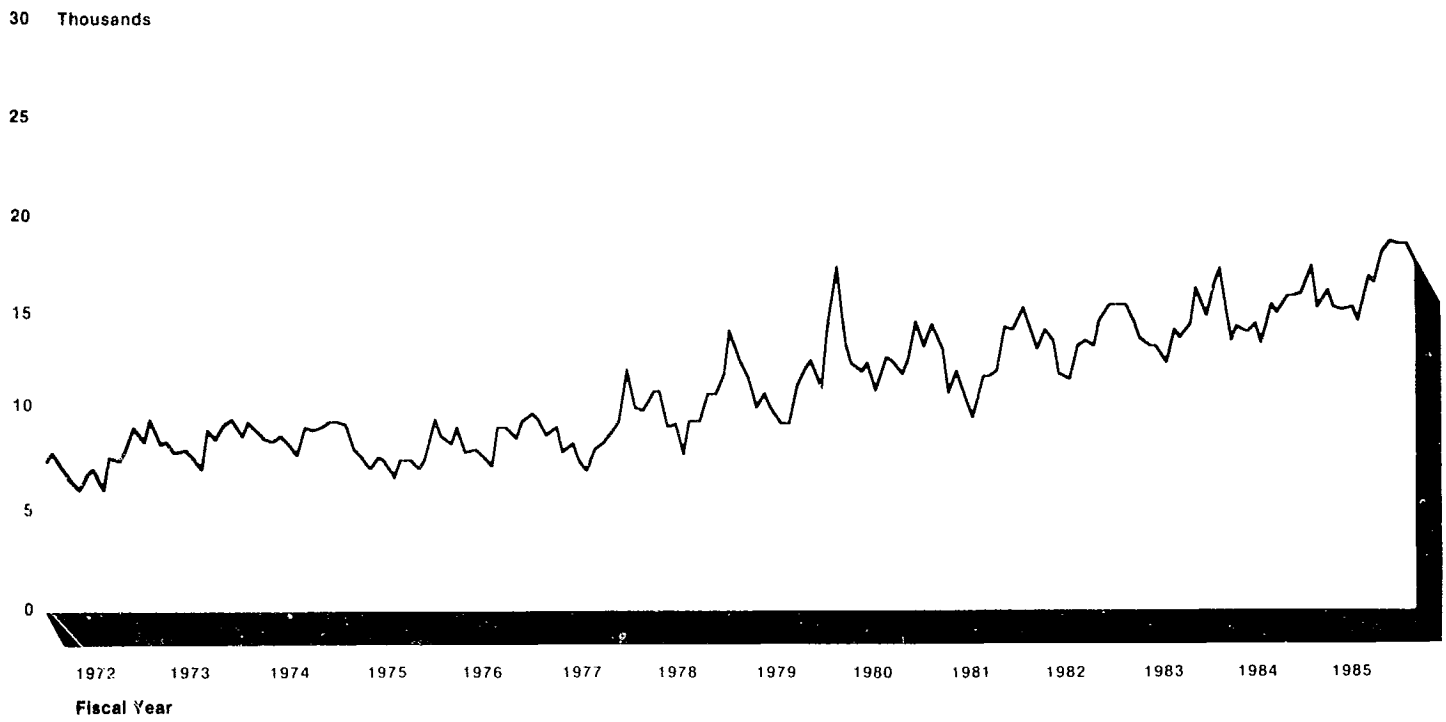
To facilitate this modeling, we developed monthly analysis files on exempt-immediate-relative immigration from the unit-record INS public use tapes from fiscal year 1972 through fiscal year 1985. These data are shown in table III.1. When we graphed and inspected the entire monthly time series for 1972-85, we found both seasonality within years and an upward trend across years. (See figure III.1.)

Table III.1: Monthly Immigration of Exempt-Immediate Relatives to the United States During Fiscal Years 1972-85[a]

	Number of Exempt-Immediate Relatives													
Month of fiscal year	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**	**1985**
October	6,550	8,359	8,526	7,727	8,968	9,086	10,874	11,557	13,162	12,180	12,943	14,420	13,411	15,919
November	6,070	7,879	8,377	7,039	7,870	7,911	10,790	9,967	12,161	10,630	13,877	13,637	14,126	15,059
December	6,618	8,001	8,735	7,577	7,951	8,147	9,103	10,752	11,941	11,884	13,339	13,053	13,806	14,875
January	6,994	7,709	8,205	7,295	7,625	7,369	9,157	9,962	12,224	10,532	11,793	13,039	14,246	15,159
February	5,969	7,002	7,749	6,487	7,225	6,915	7,665	9,194	10,815	9,599	11,390	12,222	13,178	14,349
March	7,536	8,797	9,071	7,297	9,021	8,021	9,368	9,242	12,631	11,581	13,002	13,874	15,275	16,566
April	7,290	8,471	8,856	7,317	9,115	8,262	9,344	11,280	12,301	11,471	13,393	13,624	14,730	16,281
May	8,008	9,205	8,996	6,952	8,541	8,922	10,646	12,088	11,793	11,862	13,106	14,318	15,627	17,714
June	8,965	9,554	9,377	7,398	9,377	9,362	10,763	12,428	12,445	14,014	14,473	16,119	15,544	18,342
July	8,320	8,741	9,290	9,540	9,741	12,027	11,733	11,012	14,372	13,972	15,164	14,617	15,757	18,316
August	9,487	9,403	9,148	8,634	9,509	10,048	13,925	13,652	13,002	15,135	15,264	16,249	17,001	18,219
September	8,187	8,808	7,977	8,152	8,637	9,887	12,451	17,044	14,284	14,288	15,224	16,834	15,082	17,344

[a]The October-September fiscal year currently used by the federal government was established in 1976. Before 1976, a July-June fiscal year was used. This transition necessitated a one-time 15-month fiscal year in 1976 which included July, August and September 1975 calendar year data, and should be noted in interpreting the above figures. We have grouped all data according to the October-September fiscal year for purposes of this table only, for consistency of presentation. Fiscal year 1972 data that corresponds to the July, August and September 1971 calendar year (7,360 7,912 and 7,060, respectively) were used in the time-series projections and our other analyses, tables and figures, but are not shown above.

Figure III.1: Monthly Exempt-Immediate-Relative Immigration to the United States in Fiscal Years 1972-85



Source: U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

Time-Series and ARIMA Modeling

Time-series modeling presumes that a data series has been generated by a stochastic or random process with a structure that can be characterized and described. The description is given not in terms of a cause-and-effect relationship but in terms of how that randomness is embodied in the process. The ARIMA modeling techniques have been found useful in modeling processes in which values of the time series being forecast are statistically dependent on each other (that is, substantial autocorrelation is present). Considered as an approach to the forecasting of time series, ARIMA can handle a wide variety of time-series data, has strong theoretical foundations, and has proved successful in empirical comparisons. We used these techniques previously for short-term forecasts of costs and caseloads in the AFDC program (GAO, 1985).

In developing an ARIMA model, it is important to determine whether the process that generated the series can be assumed to be invariant with respect to time, a characteristic called stationarity. Many time series, probably including exempt-immediate-relative immigration (as evidenced in figure III.1), are not generated by stationary processes. Fortunately, however, certain classes of nonstationary processes can easily be transformed into stationary processes. In particular, many nonstationary time series have the desirable property that if they are transformed by calculating the differences between adjustment terms in the original series, the resulting series will be stationary.

In addition, the process may have seasonality, a naturally occurring period or cycle. For monthly data, the cycle is 12 and should be a multiple of 12 (12, 24, 36, and so on). The seasonal characteristic of a process can also be made stationary by calculating the differences at the seasonal lag.

The analysis and forecasting of time series using ARIMA is empirically driven and iterative. It proceeds in four stages: identification, estimation, diagnostic checking, and forecasting. Details of the ARIMA approach are explained in Bowerman and O'Connell (1979), McCleary and Hay (1980), and Pindyck and Rubinfeld (1981). For our analysis and forecasting, we used software from the SCA Statistical System.[1] This software incorporates an "exact" parameter estimation algorithm that is particularly appropriate to seasonal data.

[1]The SCA Statistical System, developed by Scientific Computing Associates of Oak Park, Illinois, is an integrated software system with powerful interactive and compatible batch processing modes. We chose this software because of its time-series analysis capabilities. SCA describes this system as using "an extended autocorrelation function in addition to an autocorrelation function and partial autocorrelation function for ARIMA model identification." SCA also provides "both conditional and exact maximum likelihood algorithms for ARIMA parameter estimation." The latter method is particularly important in using ARIMA models.

Identification and Estimation

We experimented with various forms of ARIMA models in the identification and estimation stages. In the identification stage, we found substantial autocorrelation, or time dependence, in the series. This time dependence was substantially reduced by differencing the data, both "regularly" with a lag of 1 and "seasonally" with a lag of 12.

The ARIMA model we selected for estimation on the basis of work in the identification stage was of the form $(0,1,1)(0,1,1)_{12}$. The middle "1" in each of the two brackets is called a "differencing" parameter. It signifies that we have taken account of the year-to-year trend and the within-year seasonality in the series by differencing it both regularly and seasonally (in effect, converting it into a stationary series). The right "1" in each of the brackets signifies the number of regular (left bracket) and seasonal (right bracket) moving average parameters to be estimated. Moving-average parameters are used when observations in a time series are assumed to be generated by a weighted average of random disturbances going back a number of periods.

Because the variance in the series appeared to be increasing over time (see figure III-1), we transformed the series to log form and estimated the parameters of that series as well as the nonlog series, both with and without a constant term. The constant term was not statistically significant and its inclusion had a negligible effect on the parameter estimates; consequently, we deleted it from both versions of the model. See table III.2.

Table III.2: Parameter Estimates for Models of the Log and Nonlog Series and Their Statistical Significance

Index	Type	Estimate	Standard error	t statistic
Nonlog model				
1	Moving average	0.64	0.06	10.31
2	Seasonal moving average	0.82	0.05	17.39
Log model				
1	Moving average	0.57	0.07	8.63
2	Seasonal moving average	0.99	0.04	24.34

The coefficients represent weights describing the effects of past observations on a subsequent observation. The moving average (MA) parameter corresponds to the right "1" in the left bracket above and estimates the effect of the immediately preceding observation. The seasonal moving average (SMA) parameter corresponds to the right "1" in the right bracket and accounts for the influence of the observation 12 months earlier. For both versions of the model, both parameters are much larger than their standard errors and are clearly different from zero.

Diagnosis

The major diagnostic tests of whether an ARIMA model is statistically adequate are whether the residuals (differences between actual values and values estimated by the model) are

- independent (free of autocorrelation) at the first and second lag and also at the seasonal lags and
- generally distributed as white noise, with autocorrelation values expected to be zero.

As the plots of autocorrelation of model residuals in figure III.2 and figure III.3 show, both models passed the first test. There was no statistically significant autocorrelation either at the first two or at the seasonal lags (that is, 12 and 24)—or, for that matter, at any lag.

With respect to the second test, we computed the Q statistic for the first 25 lags of the residuals, as is typically done to test the null hypothesis that the residuals are white noise. The conventional significance level for this test is that the calculated value of Q is less than the point on the chi-square distribution of .05. In this case, this value was 35.2 (for 23 degrees of freedom). Both models passed this test, as shown in table III.3 and table III.4. The Q value was 32.5 for the residuals of the nonlog model and 27.6 for the residuals of the log model. While on the basis of the Q statistic we do not reject the null hypothesis that the residuals are white noise, we acknowledge that the residual plots have a very faint spiral pattern. Therefore, we tested the model by "overmodeling" with an additional moving-average parameter at a second lag, and we found that this additional parameter was not statistically significant.

Overall, we concluded that while both models were statistically adequate, the log model had a better fit and was justified by the increasing series variance over time. On this basis, we decided to use it in our forecasts.

Figure III.2: Plot of Autocorrelation Function of Nonlog Model Residuals

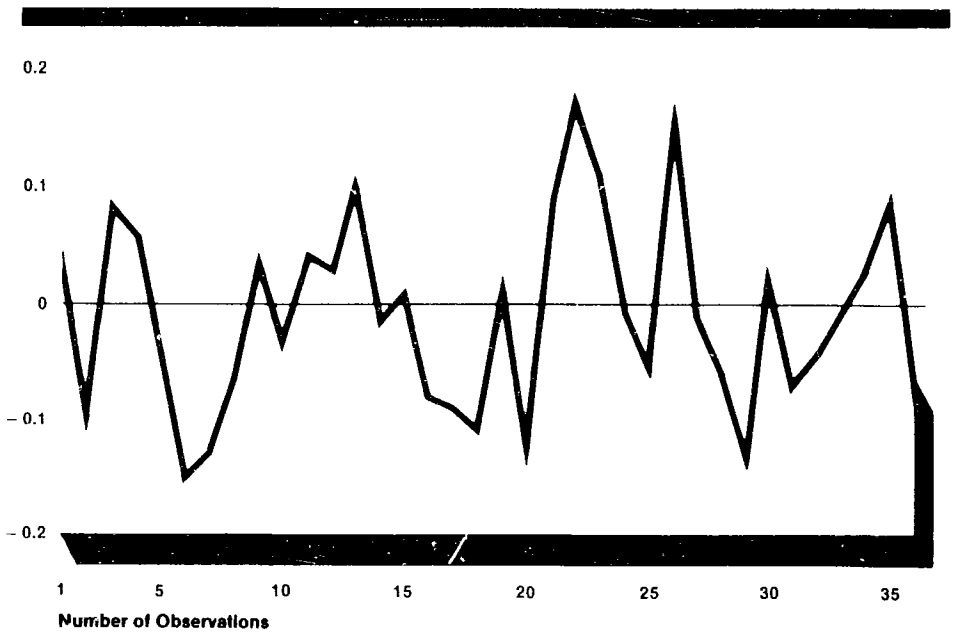


Figure III.3: Plot of Autocorrelation Function of Log Model Residuals

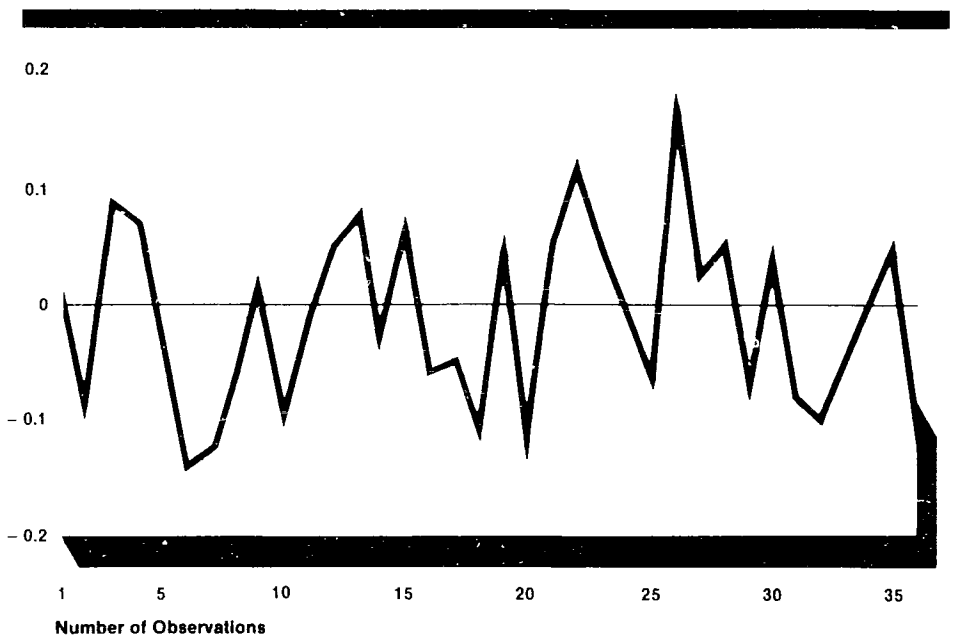


Table III.3: Autocorrelation Function of Nonlog Model Residuals

Number	Autocorrelation function	Standard error	Q-Statistic
1	.04	.08	.2
2	−.10	.08	1.8
3	.08	.08	2.9
4	.06	.08	3.5
5	−.05	.08	3.8
6	−.15	.08	7.7
7	−.13	.08	10.6
8	−.07	.08	11.4
9	.03	.08	11.5
10	−.04	.08	11.8
11	.04	.09	12.1
12	.03	.09	12.3
13	.11	.09	14.3
14	−.02	.09	14.4
15	.01	.09	14.4
16	−.08	.09	15.5
17	−.09	.09	16.8
18	−.11	.09	18.9
19	.02	.09	18.9
20	−.13	.09	22.1
21	.09	.09	23.7
22	.18	.09	29.4
23	.11	.09	31.8
24	−.01	.09	31.8
25	−.06	.09	32.5
26	.16	.09	37.7
27	−.01	.09	37.7
28	−.06	.09	38.3
29	−.13	.10	41.5
30	.02	.10	41.6
31	−.07	.10	42.6
32	−.04	.10	43.0
33	.00	.10	43.0
34	.03	.10	43.1
35	.10	.10	45.1
36	−.08	.10	46.3

Table III.4: Autocorrelation Function of Log Model Residuals

Number	Autocorrelation function	Standard error	Q-Statistic
1	.02	.08	.0
2	−.10	.08	1.6
3	.09	.08	2.9
4	.07	.08	3.8
5	−.05	.08	4.2
6	−.14	.08	7.6
7	−.13	.08	10.4
8	−.06	.08	11.0
9	.03	.08	11.2
10	−.10	.08	13.0
11	.01	.09	13.0
12	.05	.09	13.0
13	.08	.09	14.5
14	−.04	.09	14.8
15	.07	.09	15.6
16	−.06	.09	16.4
17	−.05	.09	16.9
18	−.11	.09	19.2
19	.05	.09	19.6
20	−.13	.09	22.9
21	.05	.09	23.4
22	.12	.09	26.2
23	.05	.09	26.7
24	−.00	.09	26.7
25	−.07	.09	27.6
26	.17	.09	33.1
27	.02	.09	33.2
28	.05	.09	33.7
29	−.08	.09	35.1
30	.04	.09	35.3
31	−.08	.09	36.6
32	−.10	.09	38.6
33	−.05	.10	39.0
34	−.00	.10	39.1
35	.05	.10	39.7
36	−.11	.10	46.3

Forecast Values

Next, we used the estimated ARIMA model in log form to compute forecasts for exempt-immediate-relative immigration by sequentially estimating future values as a function of past values. For example, our forecast values by calendar month and year for fiscal year 1986 through fiscal year 1990 are shown in table III.5, along with their confidence intervals. Figure III.4 presents a plot of the entire actual (1972-85) and forecast (1986-90) series.

Table III.5: Projected Monthly Exempt-Immediate-Relative Immigration to the United States in Fiscal Years 1986-1990[a]

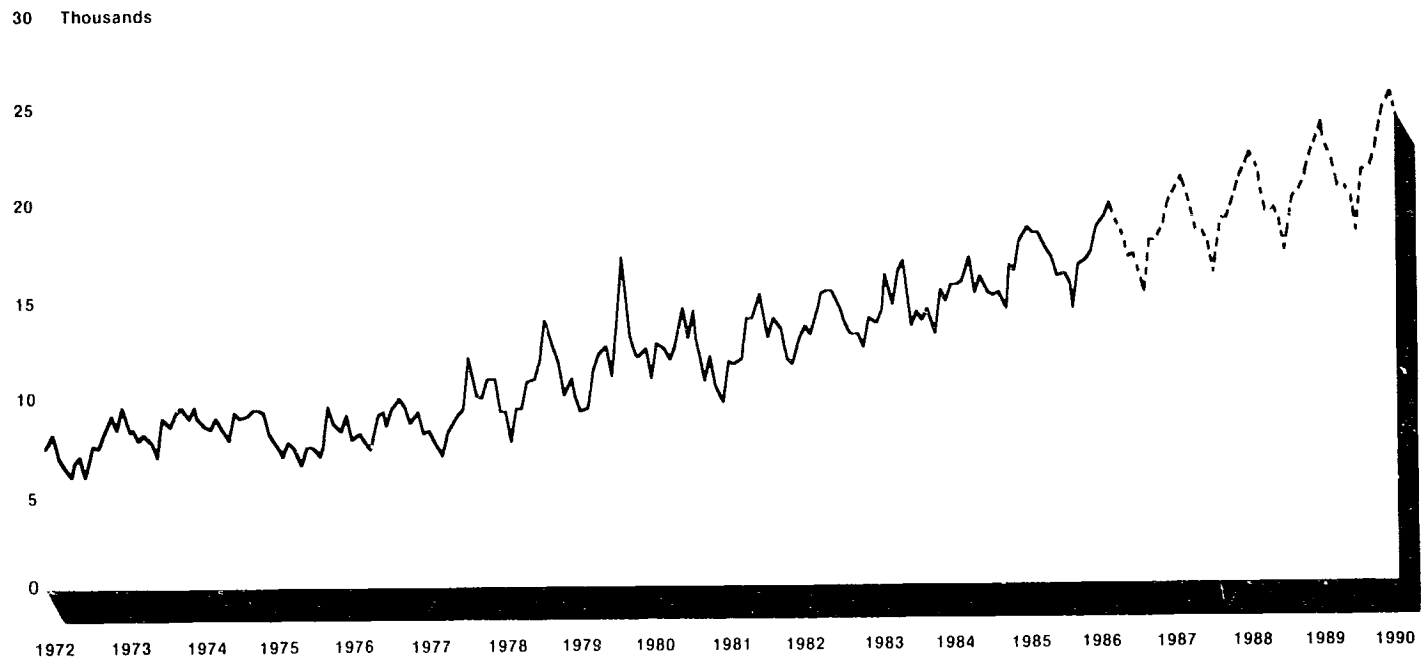
Month of Fiscal year	No. of exempt-immediate relatives in fiscal year 1986	Confidence interval		Number of exempt-immediate relatives in fiscal years 1987-90			
		Lower	Upper	1987	1988	1989	1990
October	16,923	14,703	19,477	18,032	19,215	20,475	21,817
November	15,997	13,639	18,529	16,939	18,050	19,234	20,495
December	16,053	13,615	18,930	17,106	18,228	19,423	20,696
January	15,528	13,027	18,509	16,546	17,631	18,787	20,018
February	14,199	11,791	17,098	15,130	16,122	17,179	18,306
March	16,622	13,669	20,213	17,712	18,874	20,111	21,430
April	16,701	13,608	20,496	17,796	18,963	20,206	21,531
May	17,328	13,936	21,455	18,464	19,675	20,965	22,339
June	18,481	14,799	23,079	19,692	20,984	22,359	23,826
July	19,065	15,142	24,005	20,315	21,647	23,066	24,578
August	19,723	15,542	25,026	21,016	22,394	23,862	25,427
September	18,921	14,797	24,193	20,161	21,483	22,892	24,393
Total	**205,439**			**218,910**	**233,264**	**248,558**	**264,856**

[a]The data for some years do not add exactly to the totals reported here because of rounding.

As is characteristic of series that are nonstationary before differencing, the confidence intervals around a projected value increase as the forecast lead time becomes longer. For each increase in lead time, forecast variance increases. For this reason, confidence intervals are not particularly helpful in interpreting forecasts for nonstationary series.

Another way, however, to assess the forecast properties of the model is to use a shorter time series to estimate the model's parameters and then compare the model's forecasts to actual results for a future time period not used in the estimation process. We performed such a test by estimat-

Figure III.4: Projected Monthly Exempt-Immediate-Relative Immigration to the United States in Fiscal Years 1986-90



Note: We have projected annual legal immigration for fiscal years 1986-90, based upon the methodology developed in this study.

Source: The actual data were taken from the U.S. Immigration and Naturalization Service, Immigrant Public Use Tapes, Washington, D.C., fiscal years 1972-85.

ing the log model from 1972 through 1983 and then forecasting for 1984 and 1985. The model overpredicted for 1984 and underpredicted for 1985, but the cumulative 2-year forecast was within 1 percent of the actual total: 375,500 forecast and 375,926 actual.

A final way to assess the plausibility of the forecast is to compare its implied growth rate to the actual growth rate over the previous 5-year period. The projected 5-year growth rate should be approximately equal to the rate over the previous 5-year period. The cumulative 5-year forecast for exempt relatives was 1,171,027, an annual compound growth rate of 6.0 percent. Exempt-immediate-relative immigration totaled 858,000 over the past 5 years, an annual compound growth rate of 5.6 percent. Both the cumulative total and the growth rate implicit in the model forecast appear plausible by this comparison to past patterns.

Projected Annual Legal Immigration to the United States During Fiscal Years 1986-90

Table IV.1: Total Projected Annual Legal Immigration to the United States in Fiscal Years 1986-90

	Actual	Projected				
Origin	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
Cambodia	14,966	7,391	7,395	7,398	7,402	7,406
China	24,438	25,098	25,517	25,977	26,444	26,953
Cuba	5,433	5,437	5,492	5,546	5,601	5,561
Dominican Republic	23,784	24,106	24,487	24,903	25,325	25,785
India	25,985	26,264	26,720	27,219	27,725	28,278
Iran	14,035	14,234	14,577	14,965	15,359	15,789
Jamaica	18,923	19,972	20,252	20,558	20,868	21,207
Korea	35,248	35,681	36,677	37,764	38,867	40,072
Laos	4,546	11,604	11,722	11,727	11,732	11,737
Mexico	61,059	63,936	66,620	69,552	72,528	75,775
Philippines	48,169	49,090	50,836	52,751	54,694	56,815
Taiwan	14,891	14,971	15,121	15,288	15,456	15,640
United Kingdom	13,393	13,755	14,178	14,644	15,117	16,382
Vietnam	29,221	26,209	26,345	26,448	26,554	26,669
Total	**334,091**	**337,749**	**345,938**	**354,739**	**363,672**	**374,170**
Total legal immigration	**542,744**	**546,190**	**564,660**	**579,374**	**589,308**	**605,606**
Sex						
Male	269,744	271,590	278,073	285,155	292,343	300,187
Female	273,000	274,600	284,975	291,707	296,965	305,419
Age						
0-19	159,178	161,521	165,847	168,634	169,687	172,773
20-29	168,273	168,270	174,650	180,123	184,307	190,369
30-39	105,615	105,135	108,523	111,063	112,578	115,392
40-49	45,487	45,633	46,907	47,739	48,071	48,993
50-64	44,791	45,602	47,626	49,557	51,263	53,403
65+	19,400	19,936	20,009	22,154	23,294	24,563
Unknown	0	94	98	103	108	113

Table IV.2: Projected Annual Legal Immigration to the United States by Numerically Limited Immigrants in Fiscal Years 1986-90

	Actual	Projected				
Origin	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
Cambodia	133	150	150	150	150	150
China	17,600	18,000	18,000	18,000	18,000	18,000
Cuba	4,493	4,500	4,500	4,500	4,500	4,500
Dominican Republic	17,890	18,000	18,000	18,000	18,000	18,000
India	19,016	19,000	19,000	19,000	19,000	19,000
Iran	5,451	5,500	5,500	5,500	5,500	5,500
Jamaica	14,599	15,500	15,500	15,500	15,500	15,500
Korea	19,495	19,500	19,500	19,500	19,500	19,500
Laos	147	150	150	150	150	150
Mexico	20,633	20,500	20,500	20,500	20,500	20,500
Philippines	19,605	19,750	19,750	19,750	19,750	19,750
Taiwan	12,496	12,500	12,500	12,500	12,500	12,500
United Kingdom	6,632	6,750	6,750	6,750	6,750	7,500
Vietnam	3,615	3,500	3,500	3,500	3,500	3,500
Total	**161,805**	**163,300**	**163,300**	**163,300**	**163,300**	**164,050**
Total numerically limited	**264,208**	**265,000**	**270,000**	**270,000**	**265,000**	**265,000**
Sex						
Male	132,189	133,151	133,151	133,151	133,151	133,151
Female	132,019	131,849	134,336	134,336	131,849	131,849
Age						
0-19	91,416	94,100	95,876	95,876	94,100	94,100
20-29	74,331	72,593	73,963	73,963	72,593	72,593
30-39	56,650	56,355	57,418	57,418	56,355	56,355
40-49	26,949	27,153	27,666	27,666	27,153	27,153
50-64	13,575	13,530	13,786	13,786	13,530	13,530
65+	1,287	1,243	1,266	1,266	1,243	1,243
Unknown	0	26	26	26	26	26

Table IV.3: Projected Annual Legal Immigration to the United States by Exempt-Immediate-Relative Immigrants in Fiscal Years 1986-90

	Actual	Projected				
Origin	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
Cambodia	35	51	55	58	62	66
China	6,193	6,421	6,842	7,302	7,769	8,278
Cuba	730	757	807	861	916	976
Dominican Republic	5,600	5,806	6,187	6,603	7,025	7,485
India	6,663	6,964	7,420	7,919	8,425	8,978
Iran	5,089	5,421	5,777	6,165	6,559	6,989
Jamaica	4,107	4,272	4,552	4,858	5,163	5,507
Korea	14,642	15,181	16,177	17,264	18,367	19,572
Laos	65	67	72	77	82	87
Mexico	37,983	40,936	43,620	46,552	49,528	52,775
Philippines	25,784	26,733	28,486	30,401	32,344	34,465
Taiwan	2,237	2,319	2,471	2,638	2,806	2,990
United Kingdom	6,271	6,502	6,928	7,394	7,867	8,382
Vietnam	1,454	1,450	1,545	1,648	1,754	1,869
Total	**116,853**	**122,881**	**130,938**	**139,739**	**148,672**	**158,420**
Total exempt relatives	**198,143**	**205,439**	**218,910**	**233,624**	**248,558**	**264,856**
Sex						
Male	95,390	98,879	105,363	112,444	119,632	127,477
Female	102,753	106,560	113,547	121,180	128,926	137,379
Age						
0-19	37,534	38,909	41,460	44,247	47,075	50,162
20-29	73,211	76,408	81,419	86,891	92,445	98,507
30-39	34,950	35,465	37,790	40,330	42,908	45,722
40-49	11,392	11,618	12,380	13,212	14,057	14,979
50-64	25,843	26,972	28,741	30,673	32,633	34,773
65+	15,213	16,000	17,049	18,195	19,358	20,627
Unknown	0	67	71	76	81	86

Table IV.4: Projected Annual Legal Immigration to the United States by Refugees in Fiscal Years 1986-90

	Actual	Projected				
Origin	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
Cambodia	14,768	7,175	7,175	7,175	7,175	7,175
China	379	377	375	375	375	375
Cuba	179	145	150	150	150	150
Dominican Republic	0	0	0	0	0	0
India	0	0	0	0	0	0
Iran	3,384	3,163	3,150	3,150	3,150	3,150
Jamaica	0	0	0	0	0	0
Korea	0	0	0	0	0	0
Laos	4,334	11,387	11,500	11,500	11,500	11,500
Mexico	0	0	0	0	0	0
Philippines	514	357	350	350	350	350
Taiwan	2	2	0	0	0	0
United Kingdom	1	3	0	0	0	0
Vietnam	24,101	21,209	21,250	21,250	21,250	21,250
Total	**47,662**	**43,818**	**43,950**	**43,950**	**43,950**	**43,950**
Total refugees	**67,775**	**62,251**	**62,250**	**62,250**	**62,250**	**62,250**
Sex						
Male	37,032	33,870	33,869	33,869	33,869	33,869
Female	30,743	28,381	28,381	28,381	28,381	28,381
Age						
0-19	25,021	22,981	22,981	22,981	22,981	22,981
20-29	16,624	15,269	15,269	15,269	15,269	15,269
30-39	12,184	11,191	11,190	11,190	11,190	11,190
40-49	6,357	5,839	5,839	5,839	5,839	5,839
50-64	4,851	4,456	4,456	4,456	4,456	4,456
65+	2,738	2,515	2,515	2,515	2,515	2,515
Unknown	0	0	0	0	0	0

Table IV.5: Projected Annual Legal Immigration to the United States by Other Exempt Immigrants in Fiscal Years 1986-90

	Actual	Projected				
Origin	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
Cambodia	30	15	15	15	15	15
China	266	300	300	300	300	300
Cuba	31	35	35	35	35	35
Dominican Republic	294	300	300	300	300	300
India	306	300	300	300	300	300
Iran	111	150	150	150	150	150
Jamaica	217	200	200	200	200	200
Korea	1,111	1,000	1,000	1,000	1,000	1,000
Laos	0	0	0	0	0	0
Mexico	2,443	2,500	2,500	2,500	2,500	2,500
Philippines	2,266	2,250	2,250	2,250	2,250	2,250
Taiwan	156	150	150	150	150	150
United Kingdom	489	500	500	500	500	500
Vietnam	51	50	50	50	50	50
Total	**7,771**	**7,750**	**7,750**	**7,750**	**7,750**	**7,750**
Total other exempt	**12,618**	**13,500**	**13,500**	**13,500**	**13,500**	**13,500**
Sex						
Male	5,133	5,690	5,690	5,690	5,690	5,690
Female	7,485	7,810	7,810	7,810	7,810	7,810
Age						
0-19	5,207	5,530	5,530	5,530	5,530	5,530
20-29	4,107	4,000	4,000	4,000	4,000	4,000
30-39	1,831	2,125	2,125	2,125	2,125	2,125
40-49	789	1,022	1,022	1,022	1,022	1,022
50-64	522	643	643	643	643	643
65+	162	178	178	178	178	178
Unknown	0	1	1	1	1	1

Average Annual Legal Immigration to the United States During Fiscal Years 1983-85

Table V.1: Average Annual Legal Numerically Limited Immigration to the United States in Fiscal Years 1983-85

Origin	1983	1984	1985	Average 1983-85
Cambodia	120	120	133	124
China	19,116	16,919	17,600	17,878
Cuba	3,579	5,032	4,493	4,368
Dominican Republic	17,552	17,874	17,890	17,772
India	19,348	18,492	19,016	18,952
Iran	5,083	5,217	5,451	5,250
Jamaica	15,805	15,905	14,599	15,436
Korea	19,991	18,992	19,495	19,493
Laos	116	143	147	135
Mexico	21,000	19,576	20,633	20,403
Philippines	18,494	19,957	19,605	19,352
Taiwan	14,843	10,574	12,496	12,638
United Kingdom	8,214	7,555	6,632	7,467
Vietnam	2,310	3,642	3,615	3,189
Total	**165,571**	**159,998**	**161,805**	**162,458**
Total numerically limited	**269,213**	**262,016**	**264,208**	**265,146**
Sex				
Male	130,251	131,518	132,199	131,323
Female	127,597	130,498	132,019	130,038
Age				
0-19	96,473	94,567	91,416	94,152
20-29	74,991	68,577	74,331	72,633
30-39	57,147	55,360	56,650	56,386
40-49	26,627	27,929	26,949	27,168
50-64	12,740	14,298	13,575	13,538
65+	1,166	1,277	1,287	1,243
Unknown	69	8	0	26

Table V.2: Average Annual Legal Exempt-Immediate-Relative Immigration to the United States in Fiscal Years 1983-85

Origin	1983	1984	1985	Average 1983-85
Cambodia	39	63	35	46
China	5,775	5,572	6,193	5,847
Cuba	1,236	981	730	982
Dominican Republic	4,250	4,907	5,600	4,919
India	5,728	6,185	6,663	6,192
Iran	4,472	4,901	5,089	4,821
Jamaica	3,549	3,739	4,107	3,798
Korea	12,173	13,075	14,642	13,297
Laos	38	42	65	48
Mexico	35,394	35,824	37,983	36,400
Philippines	20,311	20,510	25,784	22,202
Taiwan	1,694	1,753	2,237	1,895
United Kingdom	6,071	5,943	6,271	6,095
Vietnam	902	1,511	1,454	1,289
Total	**101,632**	**105,006**	**116,853**	**107,830**
Total exempt relatives	**172,106**	**177,783**	**198,143**	**182,677**
Sex				
Male	77,413	86,147	95,390	86,317
Female	84,677	91,636	102,753	93,022
Age				
0-19	32,394	33,877	37,534	34,602
20-29	64,291	66,348	73,211	67,950
30-39	28,721	30,945	34,950	31,539
40-49	9,695	9,910	11,392	10,332
50-64	23,120	22,996	25,843	23,986
65+	13,774	13,699	15,213	14,229
Unknown	111	8	0	60

Table V.3: Average Annual Legal Refugee Immigration to the United States in Fiscal Years 1983-85

Origin	1983	1984	1985	Average 1983-85
Cambodia	17,957	11,663	13,365	14,328
China	547	643	728	639
Cuba	4,118	4,560	15,080	7,919
Dominican Republic	4	5	3	4
India	17	22	41	27
Iran	1,450	3,544	5,420	3,471
Jamaica	7	0	0	2
Korea	10	9	5	8
Laos	23,503	12,094	8,921	14,839
Mexico	13	26	18	19
Philippines	326	338	323	329
Taiwan	18	11	6	12
United Kingdom	30	15	16	20
Vietnam	34,285	32,033	26,775	31,031
Total	**82,285**	**64,963**	**70,701**	**72,650**
Total refugees	**102,685**	**92,127**	**95,040**	**96,617**
Sex				
Male	57,914	52,162	53,429	54,502
Female	44,592	39,965	41,611	42,056
Age				
0-19	41,984	34,734	35,086	37,268
20-29	29,305	25,573	23,312	26,063
30-39	15,641	15,766	17,085	16,164
40-49	7,601	7,280	8,914	7,932
50-64	5,510	5,796	6,803	6,036
65+	2,637	2,978	3,840	3,152
Unknown	7	0	0	2

Table V.4: Average Annual Legal Immigration of Other Exempt Immigrants to the United States in Fiscal Years 1983-85

Origin	1983	1984	1985	Average 1983-85
Cambodia	4	10	30	15
China	339	229	266	278
Cuba	45	26	31	34
Dominican Republic	252	361	294	302
India	358	265	306	310
Iran	158	145	111	138
Jamaica	174	178	217	190
Korea	1,165	966	1,111	1,081
Laos	5	0	0	2
Mexico	2,672	2,671	2,443	2,595
Philippines	2,415	1,963	2,266	2,215
Taiwan	143	140	156	146
United Kingdom	515	436	489	480
Vietnam	63	50	51	55
Total	**8,308**	**7,440**	**7,771**	**7,840**
Total other exempt	**15,859**	**11,977**	**12,618**	**13,485**
Sex				
Male	6,388	5,069	5,133	5,530
Female	8,317	6,908	7,485	7,570
Age				
0-19	5,835	5,370	5,207	5,471
20-29	4,285	3,511	4,107	3,968
30-39	2,997	1,654	1,831	2,161
40-49	1,599	764	789	1,051
50-64	927	517	522	655
65+	213	160	162	178
Unknown	3	1	0	1

Comments From the U.S. Department of State

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

United States Department of State

Comptroller

Washington, D.C. 20520

September 10, 1987

Dear Mr. Conahan:

I am replying to your letter of August 6, 1987 to the Secretary which forwarded copies of the draft report entitled "Immigration: The Future Flow of Legal Immigration to the United States" for review and comment.

The enclosed comments on this report were prepared in the Bureau of Refugee Programs.

We appreciate the opportunity to review and comment on the draft report.

Sincerely,

Joseph H. Linnemann
Acting

Enclosure:
As stated.

Mr. Frank C. Conahan,
Assistant Comptroller General
National Security and
International Affairs Division
U.S. General Accounting Office,
Washington, D. C. 20548

DRAFT REPORT COMMENTS: IMMIGRATION: THE FUTURE FLOW OF LEGAL IMMIGRATION TO THE UNITED STATES

Refugees

The report properly addresses the methodological problem of comparing statistics for refugee admissions with statistics for other immigrants due to the fact that refugees do not attain legal status as permanent resident aliens until at least one year after entry, and some may never convert their status.

See comment 1.
Now page 36.
Now pages 36-38.

The footnote on page 3-2 of the draft report and the discussion on pages 3-4 to 3-5 clearly explain the methodology adopted for the projection of future flows. We do not understand, however, the explanation offered for the decision to measure past flows by counting refugees at the time they achieve permanent resident alien status (cf., footnote on page 1-4 of the draft). The problem of the time delay and the potential for excluding from the statistics those who do not come forward to convert appears to be just as serious for this section of the analysis.

Now page 14.

This point is particularly significant where the report addresses immigration totals. For example, the report states on page 1-4 that "during FY 1985, about 95,000 refugees became immigrants..." Although this figure may be accurate, it is misleading for the analysis, since the actual number of refugees entering the country in FY 1985 (and participating in the economy and government service programs) was 68,000. Furthermore, FY 1982 was the last year for which actual refugee admissions reached the 95,000 level (97,000), dropping sharply thereafter to 62,000 in FY 1983 and 71,000 in FY 1984.

Now page 14.

See comment 2.

Inasmuch as Congress exercises close oversight of the refugee admissions levels, it is unfortunate that the report gives a misimpression concerning the magnitude of refugee admissions in recent years. Although we recognize that more detailed data is required for the demographic analysis undertaken in the report, we wonder whether the necessary information for current year admissions could not be obtained from INS files or from the data base of the State Department's Refuge Data Center.

Now page 12.

This concern is especially relevant to the report's conclusion (page 1-2) that a factor working against the immigration chain phenomenon "is that the annual number of refugees becoming immigrants is currently decreasing." We believe the conclusion would be more powerful if it were based on the declining (in fact more or less stabilized) trend of actual admissions.

Now pages 37-38.

Now page 16.

Now pages 16 and 77. See comment 3.

The second principal point we wish to raise concerns the projections of future refugee flows. The report's decision to straightline for five years forward the refugee admissions figures (page 3-6) is fully explained, but it belies the earlier statements that the analysis "relies on assessment and modification of State Department projections" (page 1-8) and that refugee flows were forecast "by assessing State Department projections and historical relationships ..." (pages 1-15 and 6-1). It seems to us that the statements on pages 1-8, 1-15, and 6-1 should be modified or deleted.

These problems aside, we found the report to be useful, and we look forward to receiving it in final form.

Carol P. Hecklinger
Deputy Assistant Secretary
for Refugee Admissions, Acting
Bureau for Refugee Programs

The following are GAO's comments on the September 10, 1987, U.S. Department of State letter.

GAO Comments

1. Our analysis of the past flow of refugees could have counted refugees either at the time of arrival or at the time the refugees adjusted to permanent resident alien status. Over the long period of analysis of past flows, either number would have conveyed the trends we show in figures 2.1 and 2.4, because approximately 95 percent of the refugees who arrive in the United States subsequently adjust their status to that of permanent resident. We chose to count refugees at the time of adjustment on pragmatic grounds; data on the demographic and geographic characteristics of refugees were more readily available at the time of adjustment than at the time of arrival. This decision enabled us to present some of the data shown for refugees in chapter 2 without reconstructing some of the data bases from INS or Department of State files.

The Department of State is correct that during fiscal years 1983-85 the number of refugee adjustments to permanent resident status was higher than the number of refugee arrivals. To avoid any possible misimpression that more refugees entered the country than were authorized, we have also included in chapter 2 the number of refugee arrivals during this time period.

2. In the draft sent to the Department of State, we observed that "the annual number of refugees becoming immigrants is currently decreasing." There has been a short-term decline in both measures—the number of refugee arrivals and the number of refugee adjustments to permanent resident alien status. The potential impact of a short-term decrease in the number of refugees on the potential for chain migration is about the same under either measure. If the number of refugees is going down, that does somewhat decrease the potential for chain migration, since refugees who subsequently become naturalized citizens have the right to petition to bring relatives into the United States. However, the 3-year period 1982-85 is not sufficient to determine whether such a trend is occurring; moreover, figure 2.4 suggests the reverse during fiscal years 1972-85. Further, our analysis of exempt-immediate-relative petitioning in chapter 4 includes former refugees.

3. The text that was on pages 1-8 and 6-1 has been changed. See now pages 16 and 77. The material on page 1-15 has been deleted.

Comments From the U.S. Bureau of the Census

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

OFFICE OF THE DIRECTOR

SEP 14 1987

Ms. Lois-ellin Datta
Associate Director
Program Evaluation and
Methodology Division
United States General Accounting Office
Washington, D.C. 20548

Dear Ms. Datta:

Thank you for giving us the opportunity to comment on your draft report entitled "IMMIGRATION: The Future Flow of Legal Immigrants to the United States." I am enclosing the Census Bureau's comments.

This is an important report and represents a significant contribution to the understanding of the process of immigration to the United States. It represents one of the few systematic attempts to forecast immigration in a rigorous sense, as opposed to simply assuming what future levels of immigration will be. The study of exempt immediate-relative immigrants in relation to the characteristics of their sponsors represents a milestone in immigration research. Finally, the report is significant in its recognition of the importance of emigration in determining the level of net immigration.

See comment 1.

The report concludes correctly that "explosive chain migration" is not a widespread phenomenon. This conclusion is based on the high proportion of immediate relatives who are sponsored by native-born citizens and on the long average waiting times between events. However, on the basis of our analysis (admittedly cursory and based only the data published in the report), it appears that chain migration from Asia may be fairly common. The general statements in the Executive Summary, the Introduction, and the rest of the report should be tempered by a caveat about the nature of migration from Asia.

See comment 2.

Our suggestion with regard to tempering the statements on chain migration relates to a need to place the phenomenon in historical context. The GAO data are for a specific point in time and they do indeed support their general statement. However, chain migration is clearly related to historical, cultural, and country-specific factors. The balance could change at any time.

The Census Bureau commends GAO for their efforts in producing the linked immigrant file and for their breakthroughs in research in this area. We would encourage more research in this area of modeling the process of immigration of immediate relatives. We also suggest you

See comment 3.

recommend to the Immigration and Naturalization Service that they incorporate into computer files for future immigrants, the characteristics (and identification number) of the petitioner. This would allow you to replicate and extend your study with much less effort.

The Census Bureau appreciates the support for our efforts in the area of emigration. We agree strongly that the development of methods for measuring emigration is important for programmatic and policy purposes. We are pursuing a number of research efforts in this area and welcome cooperation from INS in this area. We strongly support the report's recommendations for improving the measurement of emigration.

See comment 4.

The sections on emigration are not the main methodological focus of the report and are understandably weaker than the rest of the report, in large part because of the dearth of hard data on the subject. Our work in this area leads us to conclude that the most practical method of producing timely and accurate data on emigration would rely on analytic estimates derived from annual alien registration data (possibly coupled with a multiplicity survey). Counting of emigrants and tracking of immigrants would be very complicated, if it is even possible. Requiring resident aliens to register is much simpler than counting emigrants and would provide needed information on emigration and net immigration. In addition, data from such a system would also fill a myriad of other statistical and programmatic needs. For example, annual alien registration data would be extremely important for monitoring the pace of undocumented immigration to the United States, measuring coverage of the 1990 census, and measuring internal migration of the foreign-born population. We feel that the report fails to emphasize the potential value of an alien registration program. A stronger statement of support for such a program is warranted on the basis of the existing research results.

If you have any questions concerning our response, please call Michael S. McKay, Chief, Organization and Management Systems Division, on 763-7452.

Sincerely,

William P. Butz
Associate Director for
Demographic Programs

See comment 5.

Enclosure

The following are GAO's comments on the September 14, 1987, U.S. Bureau of the Census letter.

GAO Comments

1. The final report has been modified to show there is some evidence of chain migration from Asian countries. However, our overall finding remains that chain migration accounts for a relatively small amount of legal immigration.

2. Our data are not for a specific point in time but instead reflect legal immigration that occurred during a substantial period of time. They show that the average time between the arrival of an immigrant to the United States and subsequent petitioning for an immediate relative was about 12 years. However, as we noted in chapter 4, it is true that as with any forecast, the pattern of past findings about chain migration could change, which means that our estimates must be interpreted with caution.

3. We agree that incorporating petitioners' characteristics into computer files for future legal immigrants certainly would greatly simplify the work required to construct an appropriate data base for future studies of the characteristics of petitioners for immediate relatives. However, we did not study the costs and benefits to INS of incorporating petitioners' characteristics into its computer files. Therefore, we are not taking a position on this issue.

4. We have examined the various methods that have been used during the past two decades to estimate emigration, particularly the emigration of permanent resident aliens and naturalized U.S. citizens. We have found weaknesses in the available data and have recommended that the attorney general direct the commissioner of INS to consult with the director of the Bureau of the Census to develop and implement a uniform measurement of net immigration to the United States. We have not studied the costs, benefits, and uses of alternative systems for accomplishing this objective and, therefore, cannot at this point endorse an annual alien registration system or any other method.

5. The Bureau of the Census enclosed with its letter a number of technical comments. We have not reproduced the enclosure but have made numerous changes in response to the comments.

Comments From the U.S. Department of Justice

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

U.S. Department of Justice

Washington, D.C. 20530

OCT 15 1987

Mr. William J. Anderson
Assistant Comptroller General
General Government Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Anderson:

This letter responds to your request to the Attorney General for the comments of the Department of Justice on your draft report entitled "Immigration: The Future Flow of Legal Immigration to the United States."

We have reviewed the draft report and have no major problems with the subjects it discusses. We find the General Accounting Office's (GAO) approach and analysis concerning legal immigration to be logical and straightforward.

See comment 1.

See comment 2.

With respect to the findings of the draft report, the Department is concerned about the overall applicability of the GAO finding that roughly two-thirds of the petitioners of immediate relatives are native born rather than naturalized citizens. Although we have no definitive data to contradict this finding, we are concerned that first, the sample relates to a single year, and second, that because the sample was drawn from the largest five Immigration and Naturalization Service (INS) offices and focused on certain nationalities, it may not be representative of the universe of petitioners of immediate relatives.

See comment 3.

See comment 4.

On the subject of emigration, although the enumeration of emigration flows is important especially for GAO's purposes in this project, we believe that emigration receives perhaps disproportionate attention in the report. Further, based on the work of INS' Office of Plans and Analysis, which is heavily cited in the emigration section, the conclusion that the propensity to emigrate is especially high among the youngest and oldest age groups is incorrect; emigration was found to be highest among recent immigrants.

See comment 5.

As a final concern, we caution that development and implementation of a system to gather data on emigration are likely to be costly

See comment 6.

undertakings. As soon as the GAO report becomes public information, INS will assemble a team to assess the recommendations pertaining to the Nonimmigrant Information System.

We appreciate the opportunity to respond to your report while in draft form. Should you have any questions concerning our response, please feel free to contact me.

Sincerely,

Harry H. Flickinger
Assistant Attorney General
for Administration

The following are GAO's comments on the October 15, 1987, U.S. Department of Justice letter.

GAO Comments

1. Our data are not for a specific point in time but instead reflect legal immigration that occurred during a substantial period of time. They show that the average time between the arrival of an immigrant to the United States and subsequent petitioning for an immediate relative was about 12 years. Because of the relatively long period of time that is represented by these data, we think that our finding that about two thirds of the petitioners of immediate relatives are native-born rather than naturalized citizens is well supported by the evidence.

2. Because of a typographical error and unclear wording, a reader of our draft report could have mistakenly concluded that our total sample was drawn from 5 rather than from all 51 INS offices. We have corrected this error and clarified the report. With regard to nationalities, we focused upon the 40 countries that had the highest average annual legal immigration to the United States during fiscal years 1983 to 1985. Our analysis was based on the 10 major source countries and a residual category of the remaining 30 countries. We think the study design we used is powerful enough to provide valid answers to the questions we examined, and we believe that our analysis accurately represents the universe of petitioners of immediate relatives.

3. It is clear that legal emigration from the United States is a significant component in calculating total net legal immigration. Because of the lack of current data, however, we were unable to adjust our projections of legal immigration to account for emigration. Data issues are complex. The information on emigration is needed not just for our project but for oversight more generally.

4. We have supplemented our interpretation in the report.

5. The Department of Justice thought that measuring emigration would be costly. However, we believe that emigration data are needed to make valid estimates of net immigration and should be collected. Although no precise cost estimates are available, and we have not recommended a specific method, our opinion is that the benefits of the proposed data collection would exceed the costs of collecting this information.

6. In the draft report, we recommended that INS consider modifying its Nonimmigrant Information System to record the emigration of permanent resident aliens and non-U.S. citizens. We have changed this recommendation to the more general one that INS consult with the Bureau of the Census and develop and implement a uniform methodology for estimating net immigration to the United States by adequately accounting for the emigration of non-U.S. citizens and permanent resident aliens. Because we did not study alternatives, we do not take any position on which method or combination of methods should be used.

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Glossary of Terms

Unless otherwise noted, all terms were adapted from the 1985 Statistical Yearbook of the Immigration and Naturalization Service. Washington, D.C.: U.S. Immigration and Naturalization Service, 1986, pp. 217-222. Asterisked (*) terms were taken from the text of our report, where they have also been defined.

Adjustment to Immigrant Status

Procedure allowing certain aliens already in the United States to apply for immigrant status. Aliens admitted to the United States in a nonimmigrant or other capacity may have their status changed to that of lawful permanent resident if they are eligible to receive an immigrant visa as a permanent resident and an immigrant visa is immediately available. In such cases, the alien is counted as an immigrant as of the date of adjustment, even though the alien may have been in the United States for an extended period of time.

Alien

Any person not a citizen or a national of the United States.

Asylee

An alien in the United States or at a port of entry unable or unwilling to return to his or her country of nationality, or to seek the protection of that country because of persecution or a well-founded fear of persecution. For persons with no nationality, the country of nationality is considered to be the one in which the alien last habitually resided. Asylees are eligible to adjust to lawful permanent resident status after one year of continuous presence in the United States. These immigrants are exempt from the numerical limitation of 270,000; however, the Immigration and Naturalization Act of 1952 (Public Law 82-414) stipulates that only 5,000 asylees can adjust per fiscal year.

Chain Migration*

A term which has been used to describe the process by which naturalized citizens (persons who once were immigrants) petition for the admission of their immediate relatives into the United States. Only U.S. citizens and naturalized citizens can petition to sponsor their immediate relatives.

Cohort*

A group of individuals who experience the same demographic event during a specified time and who may be identified subsequently as a group on the basis of this experience.

Emigration*	The process of leaving a country or region to settle in another.
Emigrant*	A person who leaves one country or region to settle in another.
Exempt From Numerical Limitations	Those aliens accorded lawful permanent residence who are exempt from the provisions of the preference system set forth in immigration law. Exempt categories include immediate relatives of U.S. citizens, refugees, special immigrants, and certain other immigrants. (Also see Preference system, Subject to Numerical Limitations, and Immediate Relatives).
Exempt-Immediate-Relative Immigrant	See Immediate relative.
Hemispheric Ceilings	Statutory limits on immigration to the United States in effect from 1968 to October 1978. Mandated by the Immigration and Nationality Act Amendments of 1965, the ceiling on immigration from the Eastern Hemisphere was set at 170,000, with a per-country limit of 20,000. Immigration from the Western Hemisphere was held to 120,000, without a per-country limit, until January 1, 1977. The Western Hemisphere then was subject to a 20,000 per-country limit.
Immediate Relatives	Certain immigrants who because of their close relationship to U.S. citizens are exempt from the numerical limitations imposed on immigration to the United States. Immediate relatives are: spouses of citizens, children (under 21 years of age) of citizens, parents of citizens 21 years of age or older, and orphans adopted by U.S. citizens who are at least 21 years of age.
Immigrant	An alien admitted to the United States as a lawful permanent resident. Immigrants are those persons lawfully accorded the privilege of residing permanently in the United States. They may be issued immigrant visas by the Department of State overseas, or adjusted to permanent resident status by the INS in the United States.

Immigration*	The process of moving into a country of which one is not a native for the purpose of permanent residence. Immigration can be either legal immigration by an immigrant (see above), or illegal immigration by persons not authorized to enter a state or other national territory. Unless otherwise noted, the term "immigration" in this report is intended to refer to legal immigration.
Legal Immigrant*	An alien admitted to the United States as a lawful permanent resident.
Nationality	The country of a person's citizenship.
Naturalization	The conferring, by any means, of nationality upon a person after birth.
Naturalization Petition	The form used by a lawful permanent resident to apply for U.S. citizenship. The form is filed with a naturalization court through the INS.
Net Immigration*	See Net migration.
Net Migration*	The net effect of the number of immigrants and emigrants upon an area's population. Net migration may also be referred to as net immigration or net emigration, depending on whether immigration or emigration is larger.
New Arrival	A lawful permanent resident alien who enters the United States at a port of entry. The alien is generally required to present an immigrant visa, issued outside the United States by a consular officer of the Department of State.
Nonimmigrant	An alien who seeks temporary entry to the United States for a specific purpose. The alien must have a permanent residence abroad and qualify for the nonimmigration classification sought. Nonimmigrants are recorded in the Nonimmigrant Information System.

Nonimmigrant Information System (NIIS)*	A system used by the INS to provide a record of the arrival and departure of approximately 9 million nonimmigrants to the United States annually. This system is also used to verify that a nonimmigrant entered and is visiting the United States in a lawful status.
Nonpreference Category	Visa numbers not used in any of the first six categories of the preference system. Nonpreference numbers have been unavailable since 1978 because of high demand under the preference categories.
Numerically Limited Immigrant	See Preference system.
Orphan	For immigration purposes, a child whose parents have died or disappeared, or who has been abandoned or otherwise separated from both parents. In order to qualify as an immediate relative, the orphan must be under the age of 16 at the time a petition is filed on his or her behalf. To enter the United States, an orphan must have been adopted abroad by a U.S. citizen or be coming to the United States for adoption by a citizen.
Permanent Resident*	An alien who has been lawfully accorded the privilege of residing permanently in the United States.
Preference Category	See Preference system.
Preference System	The six categories among which 270,000 immigrant visa numbers are distributed each year: 1st, unmarried sons and daughters (over 21 years of age) of U.S. citizens (20%); 2nd, spouses, and unmarried sons and daughters of lawful permanent residents (26%); 3rd, members of the professions or persons of exceptional ability in the sciences and arts (10%); 4th, married sons and daughters of U.S. citizens (10%); 5th, brothers and sisters of U.S. citizens over 21 years of age (24%); and 6th, needed skilled or unskilled workers (10%). (Also see Exempt From Numerical Limitations, and Subject to Numerical Limitations).

Refugee	Any person who is outside his or her country of nationality and who is unable or unwilling to return to that country because of persecution or a well-founded fear of persecution. These immigrants are exempt from numerical limitations.
Refugee Arrivals	The number of refugees the Immigration and Naturalization Service initially admits to the United States through ports of entry during a fiscal year.
Refugee Authorized Admissions	The maximum number of refugees allowed to enter the United States in a given fiscal year. As set forth in the Refugee Act of 1980 (Public Law 96-212), the annual figure is determined by the President after consultations with Congress.
Silva Immigrants	Immigrants from independent Western Hemisphere countries and their spouses and children who were issued preference numbers under the Silva Program (1977-81). The Silva Program was instituted by court order to provide for the recapture of 144,999 preference visa numbers originally used for Cuban refugee adjustments. Silva numbers, although subject to an overall numerical limitation, were assigned in addition to the annual worldwide ceiling.
Subject to Numerical Limitations	Condition imposed on all immigration to the United States, except for the immediate relatives of U.S. citizens, certain special immigrants, and refugees. The number of aliens accorded lawful permanent residence under the provisions of the preference system must not exceed 270,000 in any fiscal year. The preference system provides for the admission of relatives of citizens (other than immediate relatives), immediate relatives of lawful permanent resident aliens, aliens in specified occupations, as well as other immigrants. (Also see Preference System).

*U.S. G.P.O. 1987-201-749:60213

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