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HOW TO IMPROVE LONG-TERM IMMIGRATION PROJECTIONS

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Introduction

In recent years, policy experts worldwide have come to understand the importance of demographic projections in their efforts to think strategically about long-term challenges, from national security to retirement security. Much progress has been made in improving the fertility and longevity modules of the demographic projection puzzle. Little progress, however, has been made in dealing with cross-border migration or (more specifically, from the point of view of most developed countries) immigration.

Official immigration projections, both in the United States and abroad, remain largely ad hoc and judgmental.[1] Some projection-making agencies simply assume that net immigration will stay constant at the current level throughout the projection period. Most of the rest trend the current level until it reaches a "target" or "ultimate" level, which is typically based on the historical average over some recent period. A few agencies explicitly build their projections around current national immigration policy. When describing how they make assumptions, most agencies offer little more than a vague reference to "expert opinion," "national policy," or "historical experience." Few if any use assumptions that are justified by any explicit reference to a theory of how or why immigration happens.

The rudimentary state of immigration projections is a cause for concern. Over the past few decades, net immigration rates in most developed countries have surged, more than doubling in the United States and Western Europe as a whole since the 1960s. This surge has occurred, moreover, during a period in which both public opinion and immigration policy in most countries have grown increasingly restrictive. With undocumented or "illegal" entry growing faster than any other type of immigration, policy experts are no longer confident that total immigration is still subject to the effective control of national policy.

The range of plausible assumptions regarding long-term immigration rates is therefore widening. Unbounded by any consensus projection method, this widening range can generate a similarly widening and often dramatic variety of long-term population outcomes. The spread between the "low" and "high" immigration variants for the U.S. Census Bureau projection for the national population in 2100, for example, is 417 million — from a total of 438 million in the low variant to a total of 854 million in the high variant (see Figure 1).[2] This is a very significant difference from any policy perspective.

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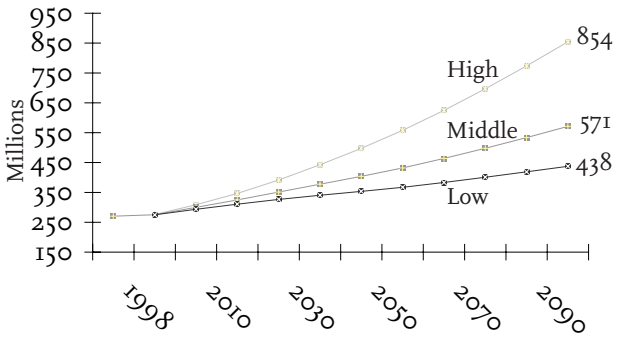
Figure 1. Census Bureau Projections of the U.S. Population under Different Immigration Assumptions, in Millions, 1998-2100*



Source: U.S. Census Bureau (2000).

The poverty of current projection practice contrasts sharply with the wealth of insights offered by the large and growing theoretical and empirical literature on the causes of international migration. On a theoretical level, researchers have identified a variety of dynamic social and economic processes that may explain migration.[3] On an empirical level, they have come to some solid conclusions about which causal drivers ultimately matter and which probably don't.

This *Issue in Brief* describes a new "driver based" approach to projecting long-term international migration flows that draws on this rich literature. It begins with a general discussion of why, despite widespread pessimism, improvements in long-term immigration projections are indeed possible. It next explains how research into the causes of international migration could be harnessed to create a superior projection model based on relationships between immigration behavior and other projectable social and economic conditions, such as multinational trends in population growth, age distribution, wages, education, and market orientation or "globalization." Finally, it describes how the proposed projection model could be used to help answer important public policy questions.

Dispelling the Pessimism

If official agencies have not done more until now to improve their migration projection methods, it is less for lack of time and resources than for the general perception that little improvement is possible. It is said that the theory is too fragmented and the causation too random. The U.S. Census Bureau observes that migration is the "component for which demographic science offers the least to future projections."[4] Many agencies seem to go further and assume that it offers almost nothing at all. Before presenting a new framework for projecting immigration, it will be useful to clear the stage by dispelling some of the groundless pessimism that surrounds what is, admittedly, a challenging task.

First, for all of the diversity of their theoretical perspectives on migration, demographers and economists do in fact broadly agree on the direction and rough magnitude of a large number of causative variables. Nearly all agree, for example, that the "wage gap" (however adjusted) between origin and destination countries is a major causative driver, as is the stock of foreign-born residents in the destination country. Most also agree, in direction at least, on the influence of everything from age structure, urbanization, literacy, and education to distance, inequality, and type of political regime.

Second, long-term projections are often more feasible than short-term projections. Most agencies (especially national agencies) focus much of their attention on the near term — and, in the near term, immigration is often volatile, even chaotic. Unexpected movements of refugees and asylum seekers, not to mention the erratic vagaries of the business cycle and geopolitical events, can trigger dramatic year-to-year oscillations in in- and out-migration. Agencies are tempted to conclude that if the near term is so difficult to project, the long term must be just about impossible.

This conclusion, however, is unwarranted. Nature abounds in phenomena, the classic example being the weather, that become more predictable (adjusting for scale) over longer time periods. In all such cases, a longer time frame is required to detect projectable trends that are otherwise buried in near-term "white noise." Scholars like Barry Chiswick, Timothy Hatton, and Jeffery Williamson, with their research on the Great Migration of the nineteenth and early twentieth centuries, have shown that this is true of migration as well.[5] Their work explains how gradual and projectable shifts in the demographic, economic, and political environment, which do not figure much in near-term fluctuations, dominate any explanation of long-term migration trends.

Third, *a projection is not a prediction*. It is rather an if-then statement, which argues on the basis of logic and research that if event A happens, then (given certain assumptions) event B must follow. This is as true for fertility and mortality projections as it is for

migration projections. An agency that develops a new migration projection method will naturally want to defend its likelihood. But it need not aim for some unrealistic standard. Its projection does not have to "predict" migration any more than it has to predict any other demographic outcome.

Finally, *a migration projection cannot be avoided*. The bottom line is that any agency charged with projecting population needs to assume something for migration — and that something, given the emerging demographic trends of the twenty-first century, is likely to influence the final population outcome more than any other input variable. The choice facing agencies is whether to base their assumptions on a fully articulated causal model of migration or continue to rely on ad hoc judgments and crude rules of thumb.

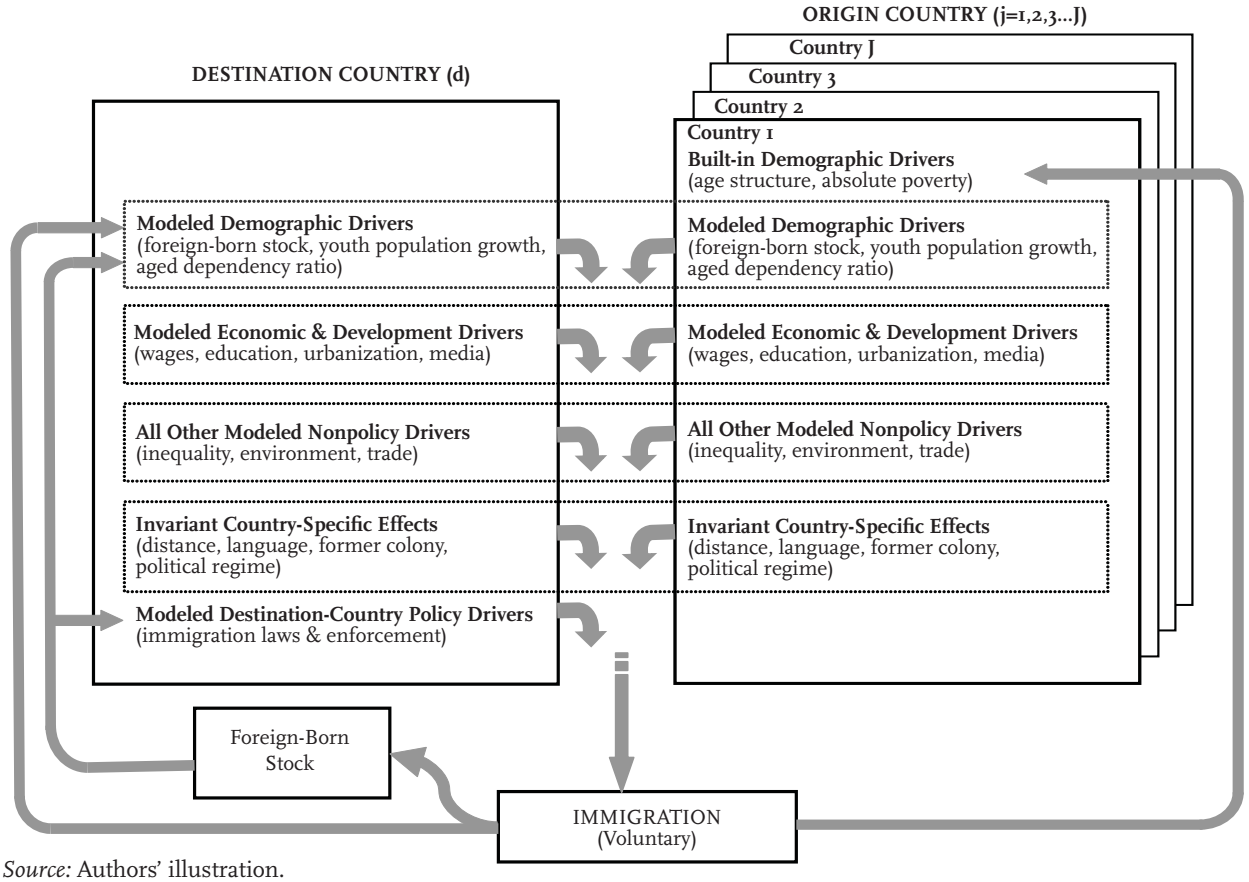
Toward a Driver-Based Model

The proposed model is designed to project long-term migration flows from multiple origin countries into a major developed country like the United States. It is structured as a multivariate model with additive drivers. Total immigration for a destination country is calculated by summing the results of all the drivers across all origin countries. The model projects gross immigration and gross emigration separately because they have different causative drivers. It also distinguishes between voluntary migration, which is ultimately dependent on individual (or family) decisions, and involuntary migration — that is, the movement of refugees, asylum seekers, and military personnel.

The model draws heavily on existing academic migration models. At the same time, it adopts a somewhat different perspective and order of presentation. Most academic models are designed to test a specific hypothesis and are only fitted to historical data to check their ability to explain past trends. The task here is to develop a model that is more comprehensive (if less theoretically complex) and to equip it to project future trends.

Figure 2 offers a schematic view of how the various components of the model are combined to make a projection. Most (though not all) of the individual drivers include terms that compare origin-country values with destination-country values — for example,

Figure 2. Long-Term Immigration Projection Model Flow Chart*



Source: Authors' illustration.
*Note: This list of drivers is illustrative, not exhaustive.

wages or educational levels. The driver structure is modular, meaning that a working projection model could incorporate some drivers while leaving out others. As can be seen in the figure, there are five driver modules:

(1) Built-in demographic drivers. The main built-in driver is the age-structure of the population in origin countries.
(2) Modeled demographic drivers. These include the rate of growth in the youth or prime migration-age population in origin countries and the size of the foreign-born stock and the aged dependency ratio in destination countries.
(3) Modeled economic and development drivers. These include differentials in wages and living standards between origin and destination countries, differentials in educational and skill levels, and key development indicators, such as rates of urbanization.
(4) Other modeled non-policy drivers. These include a variety of miscellaneous factors that may influence incentives to migrate, such as trends in income inequality, trade, technology, and the environment.
(5) Modeled destination-country policy drivers. These include factors that may influence public opinion about immigration in destination countries — chiefly, the size and skill level of the immigrant stock relative to native-born workers and voters.

A driver-based model would be a vast improvement over current practice.

The driver modules are introduced in descending order of the presumed certainty of their future values. This order allows projection-making agencies to establish a threshold between more and less plausible conjectures about future changes in independent variables. An agency, for instance, may want to incorporate demographic modeling into its forecasts without venturing further, in which case it would limit itself to modules (1) and (2). Or it may want to incorporate best-guess estimates for future economic and development trends, in which case it would include module (3). Or it may want to experiment with a full range of social and political drivers and include modules (4) and (5).

The study on which this summary is based offers a full and complete description of the proposed model.[6] It does not, however, specify exact variables or functional forms, nor does it test or refine quantitative results. The study's purpose is rather to discuss the underlying logic of such a driver-based model, explore some of the design suggestions already made in the growing academic literature on migration modeling, and explain some of the limiting assumptions and data challenges posed by any model-building effort. Building and operationalizing a working version of the model would require a number of additional steps.

The first step is to improve the migration data, which, for many developed countries, are so partial and fragmented as to be practically unusable. Available migration data will need to be analyzed and integrated with overall population data so that modelers have at their disposal reliable, continuous, and long-term data series for bilateral migration flows by country of origin.[7] The data series should include a best estimate for illegal flows and be accompanied by foreign-born stock data.

The second step is to examine the proposed drivers. Which functional form best fits our theoretical expectation? Which historical data series offers the most frequent and most reliable values over the longest time period? And which data series can be most easily projected into future years? Sometimes, these questions will be theoretically difficult. Which of many inequality indices, for example, best embodies the "relative deprivation" concept described in the theoretical literature? At other times, the modeler will have to make trade-offs. The best wage-gap measure for historical modeling, for example, may not be one that is projectable into the future.

The third step is to evaluate the estimating equations and test results from a statistical perspective. Are any of the drivers likely to be biased? Does the chosen estimator generate a maximum likelihood result for the panel data in question? Once the results are in, do they exhibit any of the classic trouble signs such as excessive correlation between independent variables or nonrandom error terms?

The fourth step is to project future values for all of the independent variables required by the drivers. This may involve making entirely new projections, as is the case with the proposed endogenous policy driver. Or it may involve using the projections of other agencies or experts, such as the demographic or economic projections of the United Nations or World Bank. Sometimes it will involve a little of both. To project inequality and poverty, for example, one approach would be a modeled or hypothesized relation-

ship with real GDP per capita, which may in turn be derived from an outside projection.

The fifth step is to assess the compatibility among projected independent variables and the influence of global feedbacks. Ultimately, it is up to the modelers to use their qualitative judgment to assess, for example, whether the assumed demographic future for each country is tolerably consistent with its assumed economic future. If not, they will need to intervene and make adjustments. Likewise, it is up to the modelers to reflect on how migration outcomes may themselves affect these futures. In some cases, the feedbacks can be integrated into the model. In other cases, they can be dismissed as not quantitatively significant.

No one seriously believes that social science is on the verge of constructing a "unified field theory of immigration" that takes into account all the dimensions of this extraordinarily complex phenomenon. Any projection model will be partial and approximate. It will have to wrestle with questionable data, reconcile sometimes hostile theoretical perspectives, and cut corners on feedback effects. Even with all this, however, the development of a driver-based projection model would constitute a vast improvement over anything now attempted by current projection practice.

Better projections could have enormous policy payoffs.

The Policy Payoff

A driver-based immigration projection model like the one outlined above could have enormous payoffs. After all, projections of the size, age structure, and national origin of the population are crucial to understanding and preparing for many of tomorrow's most important policy challenges. Demographic trends are at the heart of the current debate over the sustainability of pay-as-you-go retirement and healthcare systems in the developed countries. They will also affect the long-term prospects for economic and living standard growth, and may even influence the geopolitical balance of power.

As stressed earlier, projections are not predictions. No model, no matter how robust, can actually tell us what future immigration flows will be. It may therefore be desirable to turn the projections into forecasts by assigning confidence intervals to the key assumptions. The advantage of this approach is that, by making the projections stochastic, it is possible to generate a probability distribution for a range of immigration and population outcomes. The disadvantage is that using confidence intervals can mask rather than clarify the critical role of the chosen assumptions.

Another option is to supplement the projections with scenario analysis. Although the model's drivers are based on empirically well-established relationships, the specification of some will nonetheless involve choices between competing economic theories and visions of the future. Will per-capita GDP in the developing and developed worlds converge — and if so, how fast? What is the likely future trend in the volume of global trade or the pace of technological innovation? There is also the issue of wild cards. What happens if economic growth greatly accelerates in India or Africa? Or if China eliminates current restrictions on emigration? The model would allow policymakers to plug in alternative assumptions and generate alternative scenarios.

Taken together, the projection and scenario-building capabilities of the model could help illuminate some of the most consequential policy issues of the twenty-first century. The following list gives an idea of the range of questions the model could address:

- Many U.S. policymakers favored NAFTA in part because they assumed that free trade would ultimately reduce Mexican immigration to the United States. Since NAFTA, however, immigration has risen, not fallen. Were policymakers wrong in assuming that trade and immigration are substitutes? Is Mexico an exception to the rule? Or did other developments intervene? The model would be able to isolate the independent impact on immigration of greater trade between the United States and Mexico or other countries in Latin America.
- Many policymakers, especially in Europe, similarly favor development aid because they assume that it will reduce migration pressure. The idea is that higher incomes in the Middle East or Africa will reduce incentives to migrate. Whether rising incomes restrain or encourage emigration, however, depends on how developed a country is — in other words, where it is located on the so-called development hump. The model would be able to quantify the impact that higher per capita

income, lower absolute poverty, or higher educational attainment is likely to have in countries at different stages of development.

- It is often remarked that China today generates very little emigration for a country of its population and living standard. How much of this reality is due to China's geography, history, and culture — that is, to factors that will not change — and how much is due to restrictive government policy? The model would be able to isolate the effect of China's current policy regime, and hence tell us how much emigration is likely to rise if economic reform ultimately leads to political liberalization.
- Many policymakers hope that more immigration from younger and faster growing developing countries will in the future help provide economic and fiscal support for aging welfare states throughout the developed world. What they often overlook is that the growth of old-age benefit programs may itself discourage immigration. The model not only projects immigration in a no-change future, it could also (via its old-age dependency driver) tell policymakers how reforms to old-age entitlements might affect the final outcome.
- Population aging is not just a phenomenon of the developed world. Falling fertility and rising longevity will soon lead to a dramatic aging of the population in East Asia and Latin America — and this in turn could have a dramatic impact on global migration patterns. Will slower population growth in Latin America translate into less emigration in future decades? Will faster growth in Africa translate into more? And among African countries, which are likely to receive a further emigration boost from higher levels of education and economic development? The model could tell policymakers how divergent demographic and development trends are likely to affect the size and composition of future migration flows.

Conclusion

Given the pivotal role that immigration is likely to play in shaping the long-term demographic, economic, and social landscape of the United States and other developed countries, the rudimentary state of current projection practice should be a major cause for concern among policymakers. A driver-based model like the one described in this *Issue in Brief* has the potential to greatly improve immigration projections.

Developing such a model, however, will not be possible without a great deal of research and effort. While the academic community would need to contribute essential expertise, it may not have either the resources or the inclination to launch and manage the overall effort. In all likelihood, the project would need to be undertaken by a government agency that already has the responsibility for making long-term projections — or perhaps, as the cooperative effort of several such agencies. These organizations are in the best position to make productive use of the results. And it is their "clients" — namely the public and government policymakers — who have the most to gain from a successful outcome.

Endnotes

1 The study summarized in this *Issue in Brief* — Howe and Jackson (2006) — surveyed the long-term projection methods of fifteen national and international institutions. It covers the multi-country population projections prepared by Eurostat, the International Institute for Applied Systems Analysis, the International Program Center of the U.S. Census Bureau, the United Nations Population Division, and the World Bank, as well as the projections prepared by national agencies in Australia, Canada, France, Germany, Japan, the Netherlands, the United Kingdom, and the United States (including both the Census Bureau and Social Security Administration).

2 U.S. Census Bureau (2000).

3 Howe and Jackson (2006) discuss six major theoretical frameworks, each having its own unique history and literature: the neoclassical, the world systems, the new economics, the social network, the dual labor market, and the policy frameworks.

4 U.S. Census Bureau (2000).

5 See, for example, Chiswick and Hatton (2002); Hatton and Williamson (1994a, 1994b, 1998, 2003, and 2006); and Williamson (2005).

6 Howe and Jackson (2006).

7 Passel and Suro (2005).

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The Center for Retirement Research at Boston College was established in 1998 through a grant from the Social Security Administration. The Center's mission is to produce first-class research and forge a strong link between the academic community and decision makers in the public and private sectors around an issue of critical importance to the nation's future. To achieve this mission, the Center sponsors a wide variety of research projects, transmits new findings to a broad audience, trains new scholars, and broadens access to valuable data sources. Since its inception, the Center has established a reputation as an authoritative source of information on all major aspects of the retirement income debate.

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