External and Internal Determinants of Development

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As Rodrik, Subramanian, and Trebbi (2004) point out, factors that affect economic development can be classified using a two-tier approach. Based on a standard production function, inputs such as labor and physical and human capital directly affect per capita income. Much of the empirical cross-country growth literature has focused on these covariates. But the factors themselves are the product of deeper and more fundamental determinants and, thus, are at best proximate factors of economic development. The deeper determinants fall into two broad categories: internal and external. Among the former, institutions and geography have received the most attention, while international trade has been the focus of the latter.[1] The main purpose of this paper is to add an external factor, namely measures of migration, to the existing geography-institutions-trade setup and to evaluate its contribution to the observed differences in per capita income across countries.

Geography refers to the physical location of a nation and the various physical characteristics it is endowed with (for instance, distance from the equator, access to sea, agro-climatic zone, disease environment, soil type, and natural resources). A country's size, access to sea, and general topography can crucially affect transport costs and the extent of its integration with the world. Climate and soil affect the types of crops planted. Interestingly, geography may even contribute to the nature of a country's early institutions (Gallup, Sachs, and Mellinger 1998; Sachs 2003). Thus, geography is an obvious choice as an essential factor that shapes the course of a nation's development.

The role of institutions for development can be directly linked to the work of Douglass North (1993; 1994a, b, c). North's motivation was the inability of neoclassical theory to explain widespread differences in economic performance

across countries. If only factor accumulation led to progress, all countries would advance, provided the payoffs are high enough. Since progress is absent in many countries, the payoffs must be different for different countries—and institutions may be the reason for the differences (North 1994a). Institutions define the rules of the game that determine the incentives people face and the choices they make. An alternative way of looking at institutions is through the transaction-cost approach. Well-defined rules and their smooth enforcement—for example, better institutional quality—greatly reduce transaction costs faced by economic agents and, thus, lead to more efficient economic outcomes (North 1993; 1994b). One of the first studies to carefully examine the impact of institutions on productivity levels across countries was Hall and Jones (1999). Unlike geography, however, there is a potential endogeneity problem with institutions that needs to be addressed in the empirical investigation.

International trade may affect economic development in several ways. In addition to gains from specialization in production based on comparative cost advantages, trade can make available new technologies and ideas, which, in turn, enhance total factor productivity. Moreover, operating in a larger market allows firms to take advantage of economies of scale and consumers to take advantage of a larger variety of goods. The empirical literature on the international trade-development nexus is extensive, but a few papers stand out. Sachs and Warner (1995) construct an openness index and find that greater openness leads to higher growth. Similarly, Frankel and Romer (1999) find that international trade plays an important role in explaining cross-country differences in economic performance. Since trade measures, too, are likely to be endogenous, the authors construct an instrument for trade using a gravity-type model that explains the volume of trade between countries through their joint economic size and the distance between them.

Migration can affect development in numerous ways, such as changes in the cost of labor, the loss or gain of human capital, knowledge spillovers, or workers' remittances. While empirical literature on the impact of remittances is fairly extensive,[2] fewer studies examine the role of emigration of skilled workers (brain drain) or the potential brain gain due to migration (Beine, Docquier, and Rapoport 2001).

This study indicates that both internal and external determinants matter for development. The internal measures—institutions and geography—exhibit the expected signs and are typically statistically significant, but they differ in their economic impact. Institutional measures appear to have large elasticity estimates, while geography measures are rather small. Among the external determinants, trade measures and the foreign-born population share (destination-country measure) exhibit the expected signs and are significant in most specifications. Interestingly, remittances (source-country measure) appear to contribute little to the

observed variation in per capita income across countries unless the sample is restricted to the top half of all countries receiving remittances. In that case, remittances have a positive impact on economic development.

In the next section, we provide an overview of the literature on trade, migration, and development. In the sections that follow, we describe the empirical models used, discuss the data set, and present and interpret the empirical results.

Review of the Literature

In this section, we review the literature on the trade, migration, and development nexus. We begin with the welfare and labor market implications of migration as well as a brief discussion of political economy issues related to migration. We then investigate the special relationship between trade and migration in the context of their joint effect on economic development. Finally, we review a number of papers that examine the impact of both migration and trade within a regional context.

Migration and Development

Welfare Effects of Immigration. From an empirical standpoint, there is no agreement on the gains or losses from immigration at the aggregate (national) level for either destination or source country. Martin (2003) maintains that economic gain from the current level of immigration in the United States is small, and even doubling the number of entering migrants would not make a great deal of difference. Head and Ries (1998) suggest in passing that immigration lowers transaction costs and generates trade gains that would not have been realized otherwise. In a welfare analysis, Razin and Sadka (1997) determine that those left behind in the source country lose, landlords in the destination country gain, and wage earners in the destination country lose, though their loss is less than the gain of the landlords.

While the Razin and Sadka findings—like the majority of studies in the migration literature[3]—suggest a net gain in the destination country, an empirical study by Davis and Weinstein (2002) finds that U.S. natives collectively suffer a $72 billion loss per year due to migration, roughly equal to 0.8 percent of gross domestic product. Davis and Weinstein argue that immigration increases the output of the destination country while decreasing the output of the source country. The net effect in the U.S. is deterioration of trade as prices for U.S. goods go down while those of foreign goods go up. Furthermore, gains that accrue to the immigrants' source country may be greater than the loss sustained by the destination country.

Labor Market Effects of Migration. A key result of the Heckscher–Ohlin model is the Rybczynski theorem, which states that a difference in a country's endowment of labor will be reflected in its output of goods. Gandal, Hanson, and Slaughter (2000) cast some doubt on the empirical validity of the theorem in a case study of Israeli immigration. In the early 1990s, Israel experienced a massive influx of highly skilled Russian immigrants (relative to the Israeli population). Curiously, this did not significantly depress the wages of Israeli workers. The authors show that the mix of output in Israel did not change during this period to reflect the change in labor composition. The most skill-intensive industries were not always the fastest growing. Instead, a global wave of skill-biased technological change helped Israel adjust to such a shock in factor supply. In fact, the change in production technology was such that the effective supply of skilled labor in Israel decreased even as its raw supply increased. The technological advances could have come to Israel from the United States through bilateral trade, capital flows, and government activities.

Interestingly, in a related study using U.S. state-level data, Hanson and Slaughter (2002) find evidence in support of the Rybczynski effects.

Political Economy of Immigration. Rising differentials in global per capita income and advances in technology and transportation have contributed to an upsurge in international migration flows. Russell and Teitelbaum (1992) find this increase is most dramatic among illegal migrants. Futhermore, migration movements have become not only greater but also more volatile and unpredictable and are accompanied by significant remittance flows. They also play a role in the trade of many services previously considered "nontradable."

This trend raises concerns in wealthy countries, where the native populace is often resistant to immigration because of its potential to depress wages, displace native workers, or benefit from wealth redistribution tax schemes. Dolmas and Huffman (2004) model the behavior of a voting population when it decides on the level of immigration. A critical determinant is the native's initial wealth level. Those endowed with relatively more capital will allow maximum immigration because the influx of migrants raises the marginal product of capital. Natives endowed with relatively less capital have to rely comparatively more on labor for their income, and since immigration erodes the marginal product of labor, poorer natives' optimal decision is to allow zero migration. Interestingly, the natives' collective decision is associated with the population's level of wealth inequality: Greater inequality is likely to lead to a no-immigration policy, while inequality that approaches zero can bring a maximum-immigration policy. In the survey article by Razin and Sadka (1997), the potential loss suffered by the native population in a welfare state through wealth redistribution tax policies is given as a possible reason for native resistance to immigration. The Dolmas and Huffman model also addresses this scenario and shows that the tax rate approaches zero as

the number of voting immigrants approaches 100 percent of the original population. However, the tax rate rises significantly once immigrants outnumber natives. Razin and Sadka also mention that the reallocation of investment from physical to human capital further erodes native welfare.

The Relationship Between Trade and Migration

Migration and Trade as Substitutes. If the fear is tenacious that immigration may result in losses for the host country, the Heckscher–Ohlin model suggests one approach for reducing the flow: The unimpeded movement of goods will lead to the equalization of factor prices, and that will remove an incentive for labor to move from one country to another. Horiba (2000) finds empirical evidence of the Heckscher–Ohlin theory. He shows that the convergence toward a more similar relative labor supply (which would equalize wages) is limited in magnitude, perhaps due to the costs associated with migration. Instead, the trade in goods, which can be considered trade in the factors that produced these goods, follows the same path as one would expect the factors to move according to Heckscher–Ohlin.

Migration and Trade as Complements. Razin and Sadka (1997) point out that trade and immigration are substitutes only under the somewhat restrictive conditions of the Heckscher–Ohlin framework, allowing for country differences in the relative factor endowments only. For countries that differ in other aspects—technology, for example—free trade cannot equalize factor prices and may even widen factor price differentials. Immigration will allow each country to further specialize in the goods in which it has a technological advantage, leading to complementarity between trade and migration.

Helliwell (1997) and Head and Ries (1998) both offer empirical evidence that trade and migration are complementary insofar as migration is capable of facilitating trade. Specifically, Head and Ries find that a 10 percent increase in immigration in Canada is associated with a 3 percent increase in imports and a 1 percent increase in exports to the immigrant's source country. They attribute this finding to two factors: Immigrants may have a preference for goods produced at home, and immigrants' knowledge about their home economies can lower the cost of foreign trade. However, the authors note that the tendency for immigration to increase imports more than exports creates a decrease in net exports, which can translate into currency depreciation and a loss of welfare for the destination country, though such a loss can be offset by social and economic gains that accrue from increased diversity.

Migration and Trade as Complements in the Short Run and Substitutes in the Long Run. Two recent papers, both theoretical in nature, conjecture that the relationship between trade and migration depends on the time horizon of the analysis.[4] Ludema and Wooton (1997) find that trade liberalization is initially

agglomerative, creating a manufacturing core that attracts labor from the country of origin (an argument earlier posited by Krugman 1991), but as trade liberalization continues, the cost of trade becomes sufficiently low that a manufacturing core loses its advantages and some labor shifts back to the periphery. Ludema and Wooton emphasize the importance of timing revealed by this diversification–agglomeration–diversification pattern and suggest that countries in the midst of liberalizing trade ought to restrict labor mobility until agglomerative forces weaken.

Lopez and Schiff (1998) deconstruct migration patterns by skill composition in a small, labor-abundant developing economy after unilateral trade liberalization. Initial liberalization does not have much effect on the movement of skilled labor, but it does increase the number of unskilled workers leaving the country. The total labor force decreases, though the average skill level of the remaining population rises. Once trade has become substantially liberalized, the number of unskilled emigrants decreases and the total labor force stabilizes. This result is consistent with the pattern described above: a temporary spike in migration followed by a stabilization of migration flow.

Immigration and Trade: Regional Analysis

Taylor (1995) looks at the Asia–Pacific region and, in particular, the determinants of the region's relatively high economic growth rates. His empirical findings point to the high investment rate, primarily imported capital, as the biggest factor. Secondary causes include human capital accumulation and low population growth. Migration plays a very limited role, partly because the movement of people has become relatively restricted, unlike the massive immigrant flows that characterized the pre-World War I days. Taylor does suggest, however, that the movement of goods may have substituted, to some extent, for the movement of labor.

Examining the effects of immigration and trade on a host country's wage structure, Borjas et al. (1997) perform an empirical study on the U.S. labor pool and find that neither immigration nor trade can be counted as a sufficient explanation for the widening differential between unskilled and skilled wages. However, in the case of native workers with less than a high school education, immigration has a decidedly large effect on the relative wages, more so than trade. The magnitude of this impact can be attributed to the flow of less-educated immigrants into the country, which raised the relative supply of unskilled workers (those without a high school education) 15 to 20 percent between 1980 and 1995. The authors do concede, however, that isolating the effects of immigration on the native labor market is difficult, in part because immigration does not have large regional effects. The movement of native migrants tends to balance that of immigrants so that relative skill endowments stay the same. As a result, comparing regions

especially receptive of immigrants to other regions does not provide meaningful results. In addition, other factors that influence the U.S. labor market are not adequately controlled, and a realistic counterfactual is difficult to establish.

Dunlevy and Hutchinson (1999) base their paper upon recent findings that immigrants have a pro-trade effect between source and host country (Head and Ries 1998). Data on U.S. trade and immigration between 1870 and 1910 provide empirical evidence for this pro-trade effect, particularly on finished foodstuffs and manufactures. For these two categories of goods, a 10 percent increase in migrant stock increased imports from the source country by 4 percent. The authors also find that the pro-trade effect diminished or was nonexistent for New European countries (eastern and southern Europe) as well as for the period between 1900 and 1910. They hypothesize that immigrants from New Europe were unable to form the kind of links or relationships that would facilitate trade. They also suggest that from 1900 to 1910, a significant shift in source countries occurred, which also weakened the pro-trade effect. In general, this study supports the Head and Ries paper, which focuses exclusively on U.S.–Canada trade.

Martin (2003) also focuses on post-NAFTA Mexico, though his paper is more descriptive than empirical. He argues that when the assumptions involved in Heckscher–Ohlin are relaxed, trade and migration are more likely to be complements. He calculates that migration to the United States will increase by 10 to 30 percent in the five to fifteen years following the North American Free Trade Agreement, creating what he terms a migration hump. He does predict, however, that migration will decrease soon after due to social and economic trends in Mexico.

Robertson (2005) takes an empirical approach to the Mexican labor market following NAFTA. He uses wage convergence as a measure of labor market integration and finds that the rate of wage convergence in post-NAFTA Mexico did not significantly increase. Integration was not uniform, as one would expect if trade were the main force behind wage convergence, nor was it higher in manufacturing industries that received large amounts of foreign direct investment. Instead, integration was highest in the two border cities—Tijuana and Ciudad Juárez—that experienced large immigrant flows. Robertson thus concludes that migration plays the most significant role in labor market integration. Liberalization in trade and capital flows alone is insufficient to induce wage equalization. This, of course, contradicts the Heckscher–Ohlin premise of factor price equalization following free trade.

Empirical Models

The starting point of our empirical investigation into the internal and external determinants of economic development is the following linear empirical model:

$$(1) \qquad Income_i = \theta_1 + \theta_2 Inst_i + \theta_3 Geog_i + \theta_4 Trade_i + \theta_5 Mig_i + \varepsilon_i$$

where $Income_i$ is income per capita in country i and $Inst_i$, $Geog_i$, $Trade_i$, and Mig_i are measures of country i's institutions, geography, international trade volume or policy, and migration, respectively. As mentioned before, institutions and geography represent the internal determinants of development, while trade and migration are the external measures. Simple least square (OLS) estimates of equation (1) will serve as the benchmark for subsequent specifications.

Our second empirical specification addresses the issue of endogeneity of regressors. Institution, trade, and migration measures are likely to be endogenous due to measurement error, survey bias, and/or reverse causality.[5] Consequently, appropriate instruments are needed for all measures. Of the various external instruments found in the literature, two stand out due to their widespread use: *settler mortality* as an instrument for institutions (Acemoglu, Johnson, and Robinson 2001),[6] and *predicted trade shares* as an instrument for a country's actual trade share (Frankel and Romer 1999) (*Table 1*). Since the exogeneity of the geography measure is indisputable (and assuming for now that migration is exogenous), our second specification is the two-stage least square (2SLS) estimator version of equation (1), with the following first-stage regressions for the two endogenous regressors (institutions and trade):

$$(2a) \qquad Inst_i = \alpha_1 + \alpha_2 SM_i + \alpha_3 PTrade_i + \alpha_4 Geog_i + \theta_5 Mig_i + \eta_i$$

$$(2b) \qquad Trade_i = \beta_1 + \beta_2 SM_i + \beta_3 PTrade_i + \beta_4 Geog_i + \beta_5 Mig_i + \nu_i$$

where SM_i measures settler mortality and $PTrade_i$ is the predicted trade share in country i.

One problem with specifications (2a) and (2b) is that the two instruments used are highly correlated. As a result, they may not be able to identify the impact of the endogenous regressors they are instrumenting for (Dollar and Kraay 2003). As an alternative to the external instruments, our third specification uses internal instruments instead (Lewbel 1997). In particular, we use second- and third-order-central moments of the endogenous variables as instruments.[7] In this specification, we not only account for the potential endogeneity of the trade and institution measures but of the migration measures as well.

Finally, a shortcoming of all the above models is that they assume that all covariates have the same impact for all countries. In other words, the model ignores unobserved time-invariant heterogeneity across countries. Using a panel-data approach enables us to exploit the time dimension of the data to account

Table 1
Variable Definitions and Data Sources

Institutions	
Name	**Definition and source(s)**
CIM (contract intensive money)	Defined as the ratio of noncurrency (M1 minus currency) to total money (M2). Compiled by R. M. Bittick, California State University, Dominguez Hills, based on data from the International Monetary Fund (1998).
Rule of law	Measures the quality of contract enforcement, police and courts, as well as the likelihood of crime and violence, average for 1996, 1998, and 2000. From Kaufmann et al. (2003)
Trade	
Name	**Definition and source(s)**
Trade share	Imports plus exports relative to GDP. From PWT Mark 6.1 (Heston et al. 2002).
Import tariffs	Import duties as a percentage of total imports. From World Bank (2003), author's calculations.
Geography	
Name	**Definition and source(s)**
Distance equator (relative distance from the equator)	Calculated as distance from the equator, divided by 90. From Gallup et al. (1998) and Hall and Jones (1999).
Migration	
Name	**Definition and source(s)**
Remittances share	Ratio of remittances to GNP. From World Bank (2000).
Foreign population share	Ratio of foreign born to total population. From United Nations (1994).
Instrumental variables (external) for 2SLS regressions	
Name	**Definition and source(s)**
Settler mortality	Mortality rate of European colonialists in the 1500s. From Acemoglu et al. (2001).
Predicted trade share	Obtained from bilateral gravity-type equations and controlling for geography. From Frankel and Romer (1999).

for this unobserved country-specific heterogeneity. The following panel model is estimated:

$$(3) \qquad Income_{it} = \gamma_1 + \mu_i \lambda_t + \gamma_2 Inst_{it} + \gamma_3 Geog_{it} + \gamma_4 Trade_{it} + \gamma_5 Mig_{it} + \delta_{it}$$

where μ_i and λ_t are country- and time-specific fixed effects, respectively. A panel-data specification such as (3), however, is problematic if some of the right-hand-side variables are time invariant. Thus, when using mean- or first-differencing to remove the unobserved time-invariant country-specific effects—the standard procedure in fixed effect (FE) estimation—all time-invariant covariates such as most geography measures are removed from the estimation equation as well. However, the "lost" parameter estimates can be recovered through an auxiliary regression of the estimated fixed effects on the time-invariant covariates. As an alternative to the above FE model, we also estimate a random effects (RE) model. Hausman specification tests guide us in the model-selection procedure.

Data

In general, the data set covers the four decades from 1961 to 2000, though fewer time periods may be available for certain variables. For the cross-section estimates, all time-varying variables are averaged, except for the dependent variable that is measured in 2000. The number of countries varies among the different specifications of the baseline regression model, ranging from $N = 65$ to $N = 125$.

For the panel-data estimates, the time-varying variables are averaged over 10 years to smooth out temporary shocks and business cycle fluctuations common across countries. As a result, the time dimension of the panel-data regressions includes four years of observations. The number of countries in the panel regressions is $N = 68$.

Dependent Variable. Our measure of economic development (the dependent variable in all regressions) is the log of per capita GDP in 2000, expressed in purchasing power parity-adjusted dollars (Heston, Summers, and Aten 2002).

Explanatory Variables. Our main measure of institution is contract intensive money (CIM), which was proposed by Clague et al. (1999). It is defined as the ratio of noncurrency money to total money. The basic argument for such a measure stems from the fact that in societies where the rules of the game and property and contract rights are well defined, even transactions that heavily rely on outside enforcement can be advantageous. Currency in this setting is used only in small transactions. Agents are increasingly able to invest their money in financial intermediaries and exploit several economic gains. Clague et al. discuss the various gains from increased use of CIM and augment their use of CIM with

case studies. They also show that CIM is a measure of contracting environment and not of financial development, as one might suspect. This measure is thus in line with the definition of institutions as noted above. Moreover, CIM is a rather objective measure without the many biases and measurement errors that are typical of the survey-based measures of institutions.

While CIM is our preferred measure of institutions, we also use the *rule of law* (Kaufmann, Kraay, and Mastruzzi 2003) as an alternative measure. This variable captures the extent to which agents abide by the rules of society.

To control for the effect of geographic location and climate, we use a country's distance from the equator (*distance equator*).

We measure the extent of a country's openness to international commerce in two ways: by its *trade share*, as defined by the ratio of exports and imports to GDP, and by the average import tariff, constructed as the ratio of import duties to imports (*tariff rate*).

A country's exposure to international migration is also captured in two ways. First, we use the share of remittances in gross national product (*remittances share*) as an indicator of the potential benefits from emigration for the source country. Second, we employ the ratio of foreign born to total population (*foreign-born share*). The foreign-born share can be interpreted as measure of the potentially beneficial impact of immigration for the destination country, either as a proxy for the size of the immigration surplus or the positive externalities associated with immigration. A third migration measure, the ratio of emigrants to total native population, can be interpreted as an indicator of the negative brain-drain effect of emigration for the source country. However, reliable emigration data are either difficult to obtain or not available. For this reason, we do not consider the measure in this study.[8]

Empirical Results

Cross-Section Estimates

To contrast our empirical results with the literature, we first estimate the cross-section specification used by Rodrik, Subramanian, and Trebbi (2004); see Table 2A, col. 1. The measure of economic development is the log of *per capita GDP*, expressed in international prices.[9] Openness to international trade is measured as the average *trade share* from 1961 to 2000. *Rule of law* is used to measure the quality of public institutions, while the measure of geography is distance from the equator, *distance equator*. While the magnitude of the coefficient estimates in col. 1 are not exactly identical to the ones reported in Rodrik, Subramanian, and Trebbi, all signs are the same and both geography and institutions are statistically significant (at the 1 percent level), while trade share is not statistically significant.

Table 2A
Cross-Section Regressions I: Remittances, Rule of Law, and Trade Share

(Dependent variable natural log GDP per capita in 2000, in purchasing power parity dollars)

	(1)	(2)	(3) 2SLS	(4) 2SLS
Model	**OLS**	**OLS**	**IV Set A**	**IV Set B**
Rule of law	.812	1.024	2.849	2.735
	(11.7)**	(7.14)**	(3.32)**	(3.43)**
Trade share	.0277	.0475	–.434	–.300
	(.33)	(.43)	(–1.00)	(–.74)
Distance equator	1.348	.736	–1.940	–1.342
	(4.05)**	(1.68)†	(–.93)	(–.69)
Remittances share		–.0226	–.131	–.190
		(–.96)	(–1.51)	(–1.93)†
Observations	131	80	42	42
R-squared	.70	.48	–.55	–.41
DWH test: OLS (null) vs. 2SLS (*P*-value)			[.0008]	[.0023]

NOTES: *t* statistics in parentheses, **$p<0.01$, *$p<0.05$, †$p<0.1$; *P*-values in square brackets; IV Set A: Settler mortality for *rule of law*; predicted trade share for *trade share*; IV Set B: Same as Set A plus higher-centered moments of *remittances share*.

SOURCE: Author's calculations.

Adding remittances as a covariate (col. 2) does not lead to substantive changes in the results. This is not surprising given that the (negative) coefficient on remittances is insignificant by itself. However, the potential endogeneity of institutions, trade, and remittances has not been taken into consideration so far and, thus, all results may be biased. In column 3, we use the 2SLS estimator with settler mortality and predicted trade share as instruments while continuing to assume that the remittances share is exogenous. As in Rodrik, Subramanian, and Trebbi, using instruments for institutions and trade makes the geography measure insignificant without changing the lack of significance of the trade measure and the remittances share. When we use instrumental variables to account for the potential endogeneity of the remittances share (col. 4), both institutions and remittances are significant at 1 percent and 5 percent, respectively, while geography and trade measures remain insignificant. Given the negative sign on the remittances share, remittances appear to have a negative impact on a country's macroeconomic performance. At this point, our results appear to support Rodrik et al.'s conclusion that "institutions rule," with the added twist of the negative impact of remittances. Note that the Durbin–Wu–Hausman (DWH) test easily rejects the simple OLS models (col. 2) in favor of the two 2SLS estimators (cols. 3 and 4).

Next, we reestimate Table 2A with different and, we believe, better measures of institution and trade. Instead of *rule of law*, we use *CIM* for institutions, while *trade share* is replaced with a trade policy measure, the average *import tariff*. In addition, we use internal instruments for trade and institutions rather than the external instrumental variables in Table 2A. The results are shown in Table 2B. The immediate consequence of the substitutions is a reduction in the sample size for the OLS estimates (cols. 5 and 6), while the 2SLS sample sizes are slightly larger (cols. 7 and 8). In terms of the estimates, the main differences pertain to the impact of geography and trade. In every specification of Table 2B, trade and geography measures have the expected signs and are significant at least at the 10 percent level. The remittances share, however, is negative and insignificant throughout. Note that at the 10 percent level, the DWH test indicates that OLS (col. 6) is preferred over the 2SLS estimates.

So far, the skewed nature of the remittances variable has not been taken into consideration. As Table 3 reveals, more than half the countries listed have remittance shares that are less than 1 percent of GNP. To account for this, we construct two remittance dummies, one for countries with shares between 1 percent and 10 percent (*medium remittances share*), and one for countries with shares larger

Table 2B
Cross-Section Regressions II: Remittances, CIM, and Tariff Rate

(Dependent variable natural log GDP per capita in 2000, in purchasing power parity dollars)

	(5)	(6)	(7) 2SLS	(8) 2SLS
Model	**OLS**	**OLS**	**IV Set A**	**IV Set B**
CIM	2.529	2.438	2.029	2.201
	(6.73)**	(5.03)**	(3.58)**	(3.80)**
Tariff rate	−.152	−.345	−.453	−.405
	(−2.56)*	(−1.73)†	(−2.23)*	(−1.94)†
Distance equator	2.602	1.473	1.560	1.671
	(5.45)**	(2.02)*	(2.23)*	(2.37)*
Remittances share		−.0263	−.0160	−.0616
		(−.57)	(−.36)	(−1.12)
Observations	86	47	47	47
R-squared	.73	.53	.52	.51
DWH test: OLS (null) vs. 2SLS (*P*-value)			[.3173]	[.1492]

NOTES: *t* statistics in parentheses, **$p<0.01$, *$p<0.05$, †$p<0.1$; *P*-values in square brackets; IV Set A: Higher-centered moments of *CIM* and *tariff rate*; IV Set B: Higher-centered moments of *CIM, tariff rate*, and *remittances share.*

SOURCE: Author's calculations.

than 10 percent (*high remittances share*). The results are shown in Table 2C.

Once again, we compare simple OLS (col. 9) with 2SLS (col. 10), in which we use high-order-central moments of *CIM* and *tariff rate* as instruments. The results indicate that discretization of the remittances variable does not change the outcome. The medium- and high-share dummies aren't significant, and both are negative.

In our final cross-section model, we drop from our sample all countries with a remittances share of less than 1 percent of GDP since remittances are likely to play no role in these countries. The results are given in Table 2D. In addition to the OLS estimates, we report 2SLS estimates using internal instruments for institutions and trade (col. 13) and institutions, trade, and remittances (col. 14). We also use the trade share instead of the trade policy measure. Despite the reduction in power (N = 24 in cols. 12–14), the coefficient estimates for institutions, geography, and trade are statistically significant (except for trade in col. 11) and have the expected sign, while the coefficient estimate on the remittances share is now positive throughout and even statistically significant at the 10 percent level in two specifications (cols. 12 and 13). The insignificance of the coefficient estimate on

Table 2C
Cross-Section Regressions III: Remittances Group

(Dependent variable natural log GDP per capita in 2000, in purchasing power parity dollars)

	(9)	(10) 2SLS
Model	**OLS**	**IV Set A**
CIM	2.102	1.773
	(4.86)**	(3.48)**
Tariff rate	–.306	–.391
	(–1.58)	(–2.01)*
Distance equator	2.417	2.503
	(3.42)**	(3.67)**
Medium remittances share	–.238	–.228
	(–1.25)	(–1.25)
High remittances share	–.0920	–.0830
	(–.18)	(–.17)
Observations	64	64
R-squared	.50	.49
DWH test: OLS (null) vs. 2SLS (*P*-value)		[.3606]

NOTES: *t* statistics in parentheses, **p<0.01, *p<0.05, †p<0.1; *P*-values in square brackets; IV Set A: Higher-centered moments of *CIM* and *tariff rate.*
SOURCE: Author's calculations.

Table 2D
Cross-Section Regressions IV: High Remittances Sample

(Dependent variable natural log GDP per capita in 2000, in purchasing power parity dollars)

Model	(11) OLS	(12) OLS	(13) 2SLS IV Set A	(14) 2SLS IV Set B
CIM	3.85	2.16	2.351**	2.296**
	(7.42)**	(3.89)**	(4.60)	(4.56)
Trade share	.0003	.356	.362*	.361*
	(.00)	(2.08)*	(2.05)	(2.05)
Distance equator	3.25	3.21	3.183**	3.223**
	(6.86)**	(4.26)**	(4.58)	(4.63)
Remittances share		.17	.166	.143
		(1.72)†	(1.86)†	(1.48)
Observations	48	25	25	25
R-squared	.83	.68	.73	.73
DWH test: OLS (null) vs. 2SLS (*P*-value)		[.2279]	[.4877]	

NOTES: Sample is restricted to countries in which remittances share of GDP exceeds 1 percent; *t* statistics in parentheses, **$p<0.01$, *$p<0.05$, †$p<0.1$; *P*-values in square brackets; IV Set A: Higher-centered moments of *CIM* and *trade share*; IV Set B: Higher-centered moments of *CIM, trade share*, and *remittances share.*
SOURCE: Author's calculations.

remittances in the last specification (col. 14) is mitigated by the fact that the DWH test cannot reject the OLS null hypothesis (col. 12). Thus, it appears that for the group of countries with substantial unilateral foreign transfers, remittances appear to matter for a source country's economic development, in addition to the effects of trade, institutions, and geography.

Panel Estimations

We use the panel-data approach to investigate the impact of the share of the foreign-born population on economic development. As previously discussed, the foreign-born share measures the impact of migration on destination countries, compared with the remittances share, which affects only source countries. Furthermore, while the remittances share is important for developing countries only, nontrivial foreign-born population shares can be found in both developing and developed countries (see Table 4 for a ranking of countries by the foreign-born share).[10] Our estimation results are given in Table 5. Column 1 contains the random-effects specification since the Breusch-Pagan (BP) test reveals that RE is strongly preferred over pooled OLS (the null hypothesis). While institutions,

(*Continued on page 53*)

Table 3
Ranking of Countries by Remittances-to-GNP Ratio

Rank	Country	Mean 1970–98	Rank	Country	Mean 1970–98
1	Lebanon	.312		Honduras	.011
2	Yemen, Rep.	.263	42	Nigeria	.010
3	Samoa	.245	43	Guatemala	.009
4	Eritrea	.196	44	Barbados	.008
5	Tonga	.172		Mexico	.008
6	Jordan	.170	46	Seychelles	.006
7	Cape Verde	.169		Philippines	.006
8	Albania	.131		Colombia	.006
9	Egypt, Arab Rep.	.075		Mauritania	.006
10	Dominica	.072	50	Armenia	.005
11	Morocco	.067		Oman	.005
12	St. Kitts and Nevis	.065	52	Cameroon	.004
13	Burkina Faso	.064		Niger	.004
14	El Salvador	.057		Ecuador	.004
15	Jamaica	.051		Cambodia	.004
16	Haiti	.048	56	Peru	.003
17	Pakistan	.046		Djibouti	.003
18	Benin	.045		Mongolia	.003
	Sri Lanka	.045		Guinea-Bissau	.003
	Belize	.045	60	Costa Rica	.002
21	Vanuatu	.044		Panama	.002
22	Comoros	.042		Indonesia	.002
23	Tunisia	.041		Guinea	.002
24	Dominican Republic	.039		Trinidad and Tobago	.002
	St. Vincent and the Grenadines	.039		Poland	.002
26	Mali	.038	66	Madagascar	.001
27	Grenada	.035		Sao Tome and Principe	.001
28	St. Lucia	.031		Belarus	.001
29	Sudan	.027		Ghana	.001
30	Croatia	.025		China	.001
31	Turkey	.023		Korea, Rep.	.001
32	Macedonia, FYR	.021		Rwanda	.001
33	Senegal	.020		Moldova	.001
34	Bangladesh	.019		Brazil	.001
35	Somalia	.017		Paraguay	.001
	Nicaragua	.017		Guyana	.001
	Nepal	.017		Kyrgyz Republic	.001
38	Algeria	.014		Bolivia	.001
39	Togo	.013		Congo, Dem. Rep.	.001
40	India	.011			

NOTE: Countries with no remittances were omitted.

SOURCE: World Bank (2000); author's calculations.

Table 4
Ranking of Countries by Share of Foreign-Born Population

Rank	Country	1965	1975	1985	1990	Mean 1965–90
1	United Arab Emirates	.842	.675	.663	.900	.770
2	Kuwait	.529	.524	.594	.715	.590
3	Qatar	.515	.588	.586	.633	.580
4	Macau	.674	.601	.536	.446	.564
5	Hong Kong	.466	.430	.405	.400	.425
6	Israel	.560	.416	.339	.309	.406
7	Jordan	.362	.261	.261	.265	.287
8	Bahrain	.202	.213	.329	.351	.274
9	Luxembourg	.158	.192	.270	.316	.234
10	Oman	.080	.158	.319	.335	.223
11	Singapore	.282	.235	.186	.155	.215
12	Australia	.179	.195	.219	.234	.206
13	Cote D'Ivoire	.024	.218	.261	.292	.199
14	Saudi Arabia	.065	.115	.285	.257	.181
15	New Zealand	.146	.158	.151	.155	.152
16	Switzerland	.129	.162	.140	.160	.148
17	Canada	.017	.152	.151	.155	.118
18	Taiwan	.171	.114	.085	.079	.112
19	Gambia	.118	.100	.094	.112	.106
20	France	.090	.105	.108	.104	.102
	Libya	.043	.098	.143	.123	.102
22	Lebanon	.080	.076	.104	.122	.096
23	Belgium	.055	.078	.090	.090	.078
24	Argentina	.110	.083	.060	.052	.076
25	Malawi	.075	.056	.040	.121	.073
26	Sweden	.050	.069	.078	.089	.071
	Pakistan	.106	.054	.065	.061	.071
28	Zimbabwe	.050	.060	.078	.079	.067
29	Somalia	.004	.096	.093	.072	.066
30	Ireland	.032	.053	.080	.093	.064
	Puerto Rico	.023	.043	.099	.092	.064
	Iran	.091	.044	.059	.062	.064
	Syria	.061	.060	.068	.066	.064
34	United States	.050	.054	.070	.079	.063
35	Malaysia	.088	.072	.047	.042	.062
	Gabon	.040	.040	.078	.088	.062
37	Zambia	.092	.063	.045	.041	.060
38	Togo	.087	.062	.047	.041	.059
39	Venezuela	.063	.057	.061	.053	.058
	Costa Rica	.023	.014	.043	.153	.058
41	United Kingdom	.045	.056	.062	.065	.057
42	Burundi	.048	.038	.070	.061	.055
	Uganda	.109	.077	.013	.019	.055
44	Congo	.044	.047	.052	.059	.050
	Poland	.070	.053	.040	.036	.050

(*Continued on page 52*)

Table 4 (continued)
Ranking of Countries by Share of Foreign-Born Population

Rank	Country	1965	1975	1985	1990	Mean 1965–90
46	Netherlands	.029	.025	.054	.078	.047
47	Zaire	.052	.062	.031	.028	.043
48	Nigeria	.002	.161	.003	.003	.042
	Liberia	.031	.039	.046	.050	.042
50	Paraguay	.028	.037	.048	.043	.039
51	Sierra Leone	.024	.032	.044	.050	.037
	South Africa	.048	.038	.029	.030	.037
53	Austria	.017	.028	.036	.059	.035
54	Tanzania	.041	.040	.025	.023	.032
	Norway	.020	.027	.037	.044	.032
	Senegal	.047	.037	.017	.025	.032
57	Denmark	.021	.026	.035	.041	.031
58	Sudan	.019	.019	.049	.033	.030
59	Honduras	.022	.014	.020	.056	.028
	Cameroon	.034	.029	.024	.024	.028
61	Ghana	.058	.029	.014	.009	.027
62	Burkina Faso	.008	.017	.034	.047	.026
63	Nepal	.033	.023	.017	.021	.024
64	Turkey	.029	.022	.019	.020	.023
65	Italy	.016	.018	.023	.027	.021
	Greece	.008	.013	.030	.032	.021
67	Iraq	.003	.009	.033	.028	.018
	Mali	.023	.024	.014	.012	.018
69	Guatemala	.011	.006	.014	.029	.015
	Portugal	.007	.017	.021	.014	.015
71	India	.019	.015	.012	.010	.014
72	Algeria	.016	.014	.009	.015	.013
	Yugoslavia	.008	.010	.017	.017	.013
	Korea	.005	.008	.017	.021	.013
75	Spain	.009	.009	.010	.018	.011
	Kenya	.017	.012	.008	.007	.011
	Romania	.018	.011	.007	.006	.011
78	Chile	.012	.011	.007	.008	.009
	Niger	.004	.003	.015	.015	.009
	Brazil	.009	.011	.009	.008	.009
	Thailand	.014	.010	.007	.006	.009
	Bangladesh	.009	.010	.008	.007	.009
83	Japan	.006	.006	.006	.007	.006
	Mexico	.005	.004	.006	.008	.006
85	Ethiopia	.001	.002	.003	.016	.005
	Czechoslovakia	.004	.004	.005	.006	.005
	Egypt	.007	.005	.004	.003	.005
88	Colombia	.004	.004	.003	.003	.004
89	Myanmar	.002	.001	.002	.002	.002

NOTE: List shows countries reporting these data to the U.N.

SOURCE: United Nations (1994).

Table 5
Panel Regressions: Share of Foreign-Born Population

(Dependent variable natural log GDP per capita in 2000, in purchasing power parity dollars)

	(1)	(2)	(3)	(4)
			RE-IV	RE-IV
Estimation method	**RE**	**FE**	**Set A**	**Set B**
CIM	1.377	.982	.755	.814
	(6.43)**	(4.50)**	(2.17)*	(2.36)*
Tariff rate	–.0706	–.0684	–.0653	–.0624
	(–3.60)**	(–3.52)**	(–2.85)**	(–2.73)**
Distance equator	3.127		3.419	3.404
	(7.40)**		(7.62)**	(7.61)**
Foreign-born share	.100	.0257	.111	.117
	(2.09)*	(.48)	(2.23)*	(1.87)†
Observations	175	175	175	175
Number of countries	68	68	68	68
R-squared		.33		
BP test: pooled (null) vs. RE (*P*-value)	[.0000]			
Hausman test: RE (null) vs. FE (*P*-value)		[.0000]		
Hausman test: RE (null) vs. IV RE (*P*-value)			[.1613]	[.1783]

NOTES: *z* statistics in parentheses, **$p<0.01$, *$p<0.05$, †$p<0.1$; *P*-values in square brackets; RE-IV Set A: Higher-centered moments of *CIM* and *tariff rate*; RE-IV Set B: Higher-centered moments of *CIM*, *tariff rate*, and *foreign-born share*.
SOURCE: Author's calculations.

trade, and geography coefficients are significant and have the expected sign, the most important finding pertains to the foreign-born share, which is positive and significant.

Interestingly, the RE result on the foreign-born share is not robust when we estimate an FE model instead of the RE model (col. 2). While institutions and trade continue to be significant (and have the expected signs), the foreign-born coefficient estimate is now much smaller in size and insignificant.[11] However, given the small time-series dimension ($T = 4$), the FE model suffers from overfitting and the corresponding decline in degrees of freedom.[12] In the next two columns, we thus revert to the FE specification but use different sets of instruments to account for the potential endogeneity of the institutions, trade, and foreign-born share. Initially (col. 3), we use internal instruments only for the institution and trade variables, while in the final specification (col. 4), we add internal instruments for the foreign-born share. The random effects/instrumental variables (RE-IV) estimates

confirm the finding from the simple RE model (col. 1), namely that the foreign-born share has a positive impact on macroeconomic performance. Overall, the differences in the estimated coefficients between the RE and RE-IV models are small, with a small preference for the RE model (according to the Hausman test, we cannot reject the RE model at the 10 percent level).

Conclusions

To our knowledge, this paper represents the first attempt to integrate measures of migration into a framework that analyzes the economic impact of the so-called deep determinants of development: institution, geography, and international trade. Using both cross-section and panel-data estimation methods, we find that both measures of migration used in this study—remittances as a share of GNP (top half of receiving countries) and foreign-born relative to the total population—have a positive impact on economic development even after controlling for institutions, geography, and trade. The findings go beyond establishing correlations. Using instrumental variable methods to counter the estimation bias of the three potentially endogenous covariates (institutions, trade, and migration), the findings provide evidence for a causal link between external measures (migration and trade) and per capita income.

In terms of their economic impact, institutions appear to matter the most. This is especially true if we measure the quality of institutions by the extent of contract-intensive money in the economy, which has a high elasticity with respect to per capita income. Openness to trade (when measured as the average import tariff) and migration (when measured as the foreign-born share) exhibit point elasticities that are more than ten times smaller than the one for institutions. The (positive) economic impact of geography appears to be rather small.

This study can be extended in several directions. First, better measures of migration for both source and destination countries are desirable. As mentioned before, the migration measures used here cannot account for the negative brain drain or the potentially positive brain gain of migration in countries with liberal emigration rules. Similarly, the destination-country measure (foreign-born share) cannot differentiate between the positive and negative externalities associated with immigration. In addition to the "average" effect captured in this study, identifying the size of both positive and negative migration effects for the destination country would be desirable from a policymaking perspective. Second, methodologies could be improved. In addition to the extremes of random- and fixed-effects estimations, a middle-ground panel-data estimator such as Hausman–Taylor (1981) could prove to be a superior specification and, thus, may produce less-biased estimates.

Notes

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[1] See Easterly and Levine (2003) for a detailed overview of deep-determinant literature.

[2] See Gosh (2006) for a survey of the literature on remittances and development.

[3] See, for example, the study by the National Research Council (Smith and Edmonston 1997) for an assessment of the overall impact of immigration on the U.S. economy.

[4] Martin (2003) points to a similar conclusion, though his work is narrower in scope, focusing exclusively on Mexico following NAFTA.

[5] See Frankel and Romer (1999) for a more detailed discussion of this issue.

[6] Acemoglu, Johnson, and Robinson (2001) argue that settler mortality is a suitable instrument for institutions since it is not correlated with current income other than through current institutions. Settler mortality determined the colonization strategies, which, in turn, shaped past institutions and subsequently formed current institutions.

[7] The second central moment about the mean is commonly known at the variance of a random variable, while the third central moment is related to the skewness of a random variable; that is, the degree to which the *mass* of the distribution is concentrated on the left or right side of probability distribution.

[8] Furthermore, emigration ratio measures are unable to distinguish between the negative brain-drain and positive brain-gain effect, with the latter a result of increased human capital accumulation in emigrant countries (Stark, Helmenstein, and Prskawetz 1998).

[9] Note that in this study, income is measured in 2000, compared with 1995 in Rodrik, Subramanian, and Trebbi (2004).

[10] Note that while the paper discusses *migration flows* throughout, here we use *migration stocks* as the explanatory variable due to the nonavailability of data on migration flows for all but a small number of countries and time periods.

[11] As a time-invariant measure, distance from the equator is dropped from the equation in any FE specification.

[12] Note that the Hausman test rejects the RE null in favor of the FE model specification.

References

Acemoglu, Daron, Simon Johnson, and James A. Robinson (2001), "The Colonial Origins of Comparative Development: An Empirical Investigation,"*American Economic Review* 91: 1369–1401.

Beine, Michel, Frederic Docquier, and Hillel Rapoport (2001), "Brain Drain and Economic Growth: Theory and Evidence," *Journal of Development Economics* 64: 275–89.

Borjas, G. J., R. B. Freeman, L. F. Katz, J. DiNardo, and J. M. Abowd (1997), "How Much Do Immigration and Trade Affect Labor Market Outcomes?" *Brookings Papers on Economic Activity* 1: 1–90.

Clague, Christopher, Philip Keefer, Stephen Knack, and Mancur Olson (1999), "Contract-Intensive Money: Contract Enforcement, Property Rights, and Economic Performance," *Journal of Economic Growth* 4 (June): 185–211.

Davis, D. R., and Weinstein, D. E. (2002), "Technological Superiority and the Losses from Migration," NBER, Working Paper no. 8971 (Cambridge, Mass.: National Bureau of Economic Research, June).

Dollar, David, and Aart Kraay (2003), "Institutions, Trade, and Growth: Revisiting the Evidence," World Bank Policy Research Working Paper Series, no. 3004 (Washington, D.C.: World Bank, March).

Dolmas, James, and Gregory W. Huffman (2004), "On the Political Economy of Immigration and Income Redistribution," *International Economic Review* 45 (November): 1129–68.

Dunlevy, J. A., and W. K. Hutchinson (1999), "The Impact of Immigration on American Import Trade in the Late Nineteenth and Early Twentieth Centuries," *Journal of Economic History* 59 (December): 1043–62.

Easterly, William, and Ross Levine (2003), "Tropics, Germs, and Crops: How Endowments Influence Economic Development," *Journal of Monetary Economics* 50 (January): 3–39.

Frankel, Jeffrey A., and David Romer (1999), "Does Trade Cause Growth?" *American Economic Review* 89 (June): 379–99.

Gallup, John Luke, Jeffrey D. Sachs, and Andrew D. Mellinger (1998), "Geography and Economic Development," NBER Working Paper no. 6849 (Cambridge, Mass.: National Bureau of Economic Research, December).

Gandal, N., G. H. Hanson, and M. J. Slaughter (2000), "Technology, Trade, and Adjustment to Immigration in Israel," NBER Working Paper no. 7962 (Cambridge, Mass.: National Bureau of Economic Research, October).

Gosh, Bimal (2006), "Myths, Rhetoric, and Realities: Migrants' Remittances and Development" (Report to the International Organization for Migration, Brussels, September).

Hall, Robert E., and Charles I. Jones (1999), "Why Do Some Countries Produce So Much More Output Per Worker Than Others?" *Quarterly Journal of Economics* 114 (February): 83–116.

Hanson, G. H., and M. J. Slaughter (2002), "Labor-Market Adjustment in Open Economies: Evidence from U.S. States," *Journal of International Economics* 57 (June): 3–29.

Hausman, Jerry A., and William E. Taylor (1981), "Panel Data and Unobservable Individual Effects," *Econometrica* 49 (November): 1377–98.

Head, K., and J. Ries (1998), "Immigration and Trade Creation: Econometric Evidence from Canada," *Canadian Journal of Economics* 31 (February): 47–62.

Helliwell, J. F. (1997), "National Borders, Trade and Migration," NBER Working Paper no. 6027 (Cambridge, Mass: National Bureau of Economic Research, March).

Heston, Alan, Robert Summers, and Bettina Aten (2002), "Penn World Table Version 6.1," Center for International Comparisons at the University of Pennsylvania (October).

Horiba, Y. (2000), "U.S. Interregional Migration and Trade" (Paper presented at the Murphy Institute Conference on the Political Economy of Migration, Murphy Institute of Political Economy, Tulane University, March 24–25).

International Monetary Fund (1998), *International Financial Statistics Yearbook*, CD-ROM (Washington, D.C.: International Monetary Fund, July).

Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi (2003), "Governance Matters III: Governance Indicators for 1996–2002," World Bank Policy Research Working Paper no. 3106 (Washington, D.C.: World Bank, June).

Krugman, Paul (1991), *Geography and Trade* (Leuven, Belgium, and Cambridge, Mass.: Leuven University Press and MIT University Press).

Lewbel, Arthur (1997), "Constructing Instruments for Regressions with Measurement Error When No Additional Data Are Available – with an Application to Patents and R&D," *Econometrica* 65 (September): 1201–13.

Lopez, R., and M. Schiff (1998), "Migration and the Skill Composition of the Labour Force: The Impact of Trade Liberalization in LDCs," *Canadian Journal of Economics* 31 (May): 318–36.

Ludema, R. D., and I. Wooton (1997), "Regional Integration, Trade, and Migration: Are Demand Linkages Relevant in Europe?" Centre for Econometric Policy Research Discussion Paper Series, no. 1656 (June).

Mankiw, Gregory N., David Romer, and David N. Weil (1992), "A Contribution to the Empirics of Economic Growth," *The Quarterly Journal of Economics* 107 (May): 407–37.

Martin, P. (2003), "Economic Integration and Migration: The Mexico–U.S. Case," World Institute for Development Economics Research Discussion Paper, no. 35 (April).

North, Douglass C. (1993), "Five Propositions about Institutional Change," Economic History Working Paper Archive no. 9309001 (St. Louis: EconWPA, September).

——— (1994a), "Institutions Matter," Economic History Working Paper Archive no. 9411004 (St. Louis: EconWPA, November).

——— (1994b), "Transaction Cost Through Time," Economic History Working Paper Archive no. 9411006 (St. Louis: EconWPA, November).

——— (1994c), "Institutional Change: A Framework for Analysis," Economic History Working Paper Archive no. 9412001 (St. Louis: EconWPA, December).

Razin, A., and E. Sadka (1997), "International Migration and International Trade," in *Handbook of Population and Family Economics*, ed. M. R. Rosenzweig and O. Stark (Amsterdam: Elsevier Science), 851–87.

Robertson, R. (2005), "Has NAFTA Increased Labor Market Integration Between the United States and Mexico?" *The World Bank Economic Review* 19 (September): 425–48.

Rodrik, Dani, Arvind Subramanian, and Francesco Trebbi (2004), "Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development," *Journal of Economic Growth* 9 (June): 131–65.

Russell, S. S., and M. S. Teitelbaum (1992), "International Migration and International Trade," World Bank Discussion Paper no. 160 (Washington, D.C.: World Bank).

Sachs, Jeffrey D. (2003), "Institutions Don't Rule: Direct Effects of Geography on Per Capita Income," NBER Working Paper no. 9490 (Cambridge, Mass.: National Bureau of Economic Research, February).

Sachs, Jeffrey D., and Andrew M. Warner (1995), "Economic Reform and the Process of Global Integration," *Brookings Papers on Economic Activity* 1: 1–118.

Smith, J. P., and B. Edmonston, ed. (1997), *The New Americans: Economic, Demographic, and Fiscal Effects of Immigration* (Washington, D.C.: National Academies Press, May).

Stark, Oded, Christian Helmenstein, and Alexia Prskawetz (1998), "Human Capital Depletion, Human Capital Formation, and Migration: A Blessing or a 'Curse'?" *Economic Letters* 60: 363–67.

Taylor, A. M. (1995), "Growth and Convergence in the Asia–Pacific Region: On the Role of Openness, Trade, and Migration," NBER Working Paper no. 5276 (Cambridge, Mass.: National Bureau of Economic Research, September).

United Nations (1994), U.N. Population Division, New York.

World Bank (2000), Global Development Finance CD-ROM (Washington, D.C.: World Bank).

——— (2003), World Development Indicators CD-ROM (Washington, D.C.: World Bank).