Migration flows: Political Economy of Migration and the Empirical Challenges

Kevin H. O'Rourke
Department of Economics and IIIS,
Trinity College Dublin

and

Richard Sinnott
Department of Politics and ISSC
University College Dublin

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Abstract

Immigration barriers began being erected in the New World in the late 19th century. They were motivated by fears that the immigration of unskilled workers would increase inequality. Controlling for economic factors, there appears to have been little independent role for factors such as racism or xenophobia in driving the retreat from liberal migration policies. A statistical analysis of individual voter attitudes towards immigration in the late 20th century leads to somewhat different conclusions: nationalism is strongly associated with more hostile attitudes towards immigrants. Heckscher-Ohlin theory and the Borjas theory of immigrant self-selection also help explain individual voter attitudes.

Keywords: immigration, political economy, nationalism, Heckscher-Ohlin theory, self-selection

Contact details:

Kevin H. O'Rourke
Department of Economics and IIIS
Trinity College
Dublin 2
Ireland
email: kevin.orourke@tcd.ie

Richard Sinnott
Department of Politics and ISSC
University College Dublin
Belfield, Dublin 4
Ireland
email: richard.sinnott@ucd.ie

1. Introduction

Despite the best efforts of the academic economics community and some politicians, ordinary people remain sceptical regarding the benefits of the international economy. While the 'anti-capitalism' or 'anti-globalization' protest movement may not be representative of the population at large, nonetheless many remain opposed to the free international movement of people, commodities and capital. Table 1 reports the results of a major international survey (described in Section 4) carried out in 24 countries (in the OECD, central and eastern Europe, and the Phillippines) in 1995. Of the many questions which respondents were asked to answer, two directly bear on their attitudes towards globalization. The first asked to what extent they agreed with the statement that their country 'should limit the import of foreign products in order to protect its national economy;' responses were ordered from 1 (strongly disagree) to 5 (strongly agree). In addition, respondents were asked if the number of immigrants to their economy should be increased a lot (1), a little (2), remain the same (3), be reduced a little (4) or reduced a lot (5). Table 1 reports the mean response to these questions in each country: a score greater than 3 indicates that on average respondents were leaning towards greater restriction, rather than freer trade or immigration. In every country in the sample, respondents on average favoured lowering the number of immigrants; in every country in the sample bar 2 (the Netherlands and Japan) respondents on average favoured limiting imports.[1]

[1] Note however that opinion surveys such as these may suffer from 'hypothetical bias', in that were referenda to take place on (for example) restricting immigration, the actual results might well be quite different. De Melo *et al.* (2002) found that this hypothetical bias was quite significant in the Swiss case: surveys indicated that a majority there were in favour of a 2000 proposal to reduce the proportion of foreigners in the population, but the proposal was in fact voted down. This discrepancy between 'hypothetical' opinion surveys and the real referendum poll was largely due to differences between those who actually participated in the referendum and

History suggests that we need to understand what drives these anxieties, since globalization is not irreversible: rather, it has periodically been supplanted by the forces of disintegration. Sometimes, these forces have been unleashed by war; at other times, by world depression; and sometimes they have arisen as an endogenous political response to the distributional consequences of globalization itself (O'Rourke and Williamson 1999). O'Rourke (1997) shows how the different responses of European countries to the influx of cheap grain at the end of the 19th century can be understood in terms of the different distributional impact which the grain invasion had in each; Timmer and Williamson (1998) show that the best predictor of countries' decisions to tighten immigration restrictions in the late 19th century is the relative income of unskilled workers. In turn, the rising inequality which provoked a gradual restriction of immigration into the New World was largely a result of the immigration of unskilled workers (Williamson 1997; Hatton and Williamson 1998).

Might history repeat itself, and might globalization once again go into reverse, even in the absence of a major world conflict? In order to get to grips with this question, we need to understand the underlying causes of voters' preferences regarding globalization. This paper examines those preferences, focussing on just one dimension of globalization: international migration. While there are many variables that can potentially determine attitudes towards migration, one central focus of this paper will be the extent to which these preferences are driven by purely economic considerations. Do citizens look to their pocket books when deciding where they stand on immigration, or do such non-economic factors as nationalism or chauvinism also matter? And if economic factors do play a role in determining preferences, what economic

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those who did not.

models are consistent with those preferences? In particular, to what extent do the theoretical insights of the workhorse Heckscher-Ohlin (HO) model of international trade help us in understanding how individuals feel about immigration?[2]

In previous work (O'Rourke and Sinnott 2001) we have exploited international survey evidence in order to explain the determinants of individual preferences regarding trade policy. The major conclusions there were twofold. First, non-economic factors such as nationalism and chauvinism do indeed play a major role in determining attitudes, with nationalism, and especially chauvinism, having a major positive effect on protectionist attitudes. Second, individual preferences relate to individual skill levels in a manner fully consistent with HO theory. That is, in rich countries being high-skilled is negatively correlated with protectionist attitudes, other things being equal; but this negative correlation declines in poorer countries, and is actually replaced with a positive (if small, and statistically insignificant) correlation in the poorest countries in the sample. (Mayda and Rodrik (2001) independently arrived at very similar conclusions, using the same dataset.)

The HO model yields very clear predictions about the links between skill and attitudes towards imports, since trade in the HO model is driven by comparative advantage. By contrast, immigration is driven by absolute advantage (i.e. absolute factor price differentials, namely wage gaps) rather than by comparative advantage (i.e. relative factor prices, for example the ratio of skilled to unskilled wages). Section 2 of the paper will therefore review what trade theory has to say about the determinants of attitudes towards both trade and migration, as well as the

[2] Recently, economists have begun analysing the potential role of cultural preferences and other 'non-economic' factors in determining attitudes towards immigration, as well as immigration policies: see for example Hillman and Weiss (1999).

relationship between those attitudes.

Section 3 will then introduce a broad historical perspective on the matter, by reviewing the late 19th century evidence that suggests that rising immigration barriers in the New World were driven by economic factors rather than by racism or xenophobia. In particular, immigration restrictions were driven by rising inequality, which was itself a by-product of the mass migration of unskilled workers from Europe to the New World. The fact that the mass migrations of the late 19th century largely involved unskilled workers is thus crucial to the argument. The section will then go on to discuss how the migration environment is now different from that pertaining 100 years ago, both in terms of the size and nature of the migration flows, and in terms of the types of migration policies which governments are adopting.

Section 4 then introduces the survey data which are used in the paper. Section 5 estimates a series of equations relating individual attitudes towards immigration in 24 countries to individual level characteristics, including skills, nationalism and chauvinism, age and gender, place of birth, geographical mobility, attitudes towards trade, and other factors. Section 6 concludes.

2. Theory

Standard HO trade theory is quite clear in its predictions regarding who should benefit and who should lose from free trade in commodities. Imagine a two factor world in which countries are distinguished only by their relative endowments of skilled and unskilled workers. The relative wages of skilled workers will be lower, other things being equal, in skill abundant countries (which we will denote by R, and refer to as rich countries) than in unskilled labour

abundant countries (denoted by P, and referred to as poor countries): we have $(w_S/w_{US})^R < (w_S/w_{US})^P$. It is this inequality that drives comparative advantage: the rich countries will export skill intensive goods, while the poor countries will export unskilled labour intensive goods. The result is then relative factor price convergence (or, in the limit, factor price equalization): when countries move towards freer trade, the relative price of skilled labour rises in rich countries, and falls in poor countries. Moreover, the abundant factor gains in real terms in all countries, while the scarce factor loses. Thus the skilled should favour free trade in rich countries, while they should favour protection in poor countries; the unskilled in rich countries should favour protection, while the unskilled in poor countries should support free trade.

In a pure HO world in which technology is identical across countries, and in which countries are only distinguished by their relative endowments of skilled and unskilled labour, it is again possible to make unambiguous predictions about who should favour immigration and who should not. This is the case, even though international migration is not driven by comparative advantage and relative factor prices, but by absolute advantage, and by absolute factor price differentials. In a pure HO world, the real wages of skilled workers will be higher in poor countries (where skilled workers are scarce) than in rich countries (where they are abundant), while unskilled wages will be higher in rich countries than in poor countries: we have (in real terms) $w_S^P > w_S^R$, but $w_U^R > w_U^P$. Thus, we should observe skilled workers migrating from rich to poor countries, and unskilled workers migrating from poor to rich countries. Immigration will hurt skilled workers in poor countries, but benefit the unskilled there; in poor countries the unskilled should favour immigration, while skilled workers should oppose it. The situation is the reverse in rich countries: immigration will hurt the unskilled, but benefit skilled workers. Thus

skilled workers should be pro-immigration, while the unskilled should oppose it.

Note that in such a pure 2-country, 2-factor HO world, in which countries are distinguished solely by their relative factor endowments, agents are consistent in their attitudes towards globalization. That is, in rich countries skilled workers favour both trade and immigration, while unskilled workers are protectionist and anti-immigration. In poor countries, it is the unskilled who are liberal in their attitudes towards both trade and immigration, while the skilled favour both protection and immigration restrictions. This symmetry reflects the fact that in a pure 2-factor HO world in which technology is identical across countries, trade and factor flows are substitutes: they have identical effects on factor prices (i.e. they both lead to relative and absolute factor price convergence), and thus the more you have of one dimension of globalization, the less incentive there will be for the other dimension to take place. In such a world, scarce factors lose as a result of either trade or immigration, while abundant factors gain from either. One immediate political consequence of the fact that trade and migration are substitutes for each other is that agents who are protectionist should also be anti-immigration: both trade and immigration have to be simultaneously restricted, since either phenomenon will hurt the scarce factor. Protection without immigration restrictions will not work, since protection without immigration restrictions will simply lead to more immigration; immigration barriers without protection will not work, since immigration barriers on their own will simply lead to more trade (Mundell 1957).

Things get a lot more complicated when we admit the possibility that technology may differ across countries, or that there are more than two factors of production. First, it is no longer the case that trade and factor flows are necessarily substitutes: they could instead be

complements. For example, Markusen (1983) shows that technological differences between countries can lead to trade and factor mobility being complements; while in the context of a three-factor model such as the specific factors model, trade and factor mobility can be either substitutes or complements (O'Rourke and Williamson 1999, Chapter 13). Second, if technology is better in the rich country, or if the rich country is better endowed with some third factor of production than the poor country, then it no longer follows from an inequality such as $(w_S/w_{US})^R < (w_S/w_{US})^P$ that skilled workers will migrate from rich to poor countries: it is quite possible that $(w_S/w_{US})^R < (w_S/w_{US})^P$, but that (in real terms) $w_S^R > w_S^P$. In this case, skilled workers will move from poor (unskilled labour abundant) countries to rich (skill abundant) countries: unskilled workers will move in the same direction as skilled workers. This is, of course, what happens in the real world, suggesting that richer countries do indeed enjoy superior technology to poor countries, and that endowments alone cannot explain differences in income, or for that matter trade patterns and factor flows. The issue of whether skilled or unskilled workers should be more anti-immigration in rich countries thus becomes unclear. Presumably it depends on whether immigration predominantly involves skilled or unskilled workers; but which is true is not immediately obvious.[3]

In fact, there is a large theoretical literature which asks whether migrants are more likely to be skilled or unskilled, but this literature tends not to be located within standard HO trade models. For example, Katz and Stark (1984) argue that asymmetric information can lead to

[3] Things get even more complicated once we allow for the fact that households may own capital, as well as being endowed with labour (since immigration will affect returns to capital as well as labour): the distribution of capital among households will now also matter for preferences (see for example Bilal *et al.* 2003).

migration flows disproportionately involving unskilled workers, since employers in rich countries may not be able to correctly discern the skill levels of potential migrants; although the equilibrium outcome can change if various devices reinstating informational symmetry are employed (Katz and Stark 1987). An alternative theory is provided by Borjas (1987), who adapts Roy's (1951) model of occupational self-selection to the issue of migration. The conclusion of the analysis is that there will be positive self-selection of migrants if (a) the correlation between the earnings which they receive in the home and destination countries is sufficiently high; and (b) if income is more dispersed in the destination country than in the home country. On the other hand, there will be negative self-selection if (a) the correlation between the earnings which they receive in the home and destination countries is sufficiently high; and (b) if income is less dispersed in the destination country than in the home country.

O'Rourke and Sinnott (2001) stress that it is important, when using survey data to test HO trade theory, to use data for more than one country. For example, previous findings (e.g. Scheve and Slaughter 2001) that the unskilled are more protectionist than the skilled in the US are not on their own evidence in favour of the HO view, since in principle it might be the case that the unskilled everywhere were protectionist (due for example to their being less familiar with the lessons of economic theory). This would be completely at variance with HO theory. It is the variation in the correlation between skills and attitudes across countries that is crucial in testing the theory. In this respect, it seems easier to empirically test the Borjas theory of migrant self-selection than other theories stressing asymmetric information. To test the Borjas theory, we need to see how the correlation between skills and attitudes towards immigration varies across countries, and in particular to see if this correlation varies systematically with domestic income

distribution.[4] Data on income distribution are more easily available across countries than information on the relative importance of informational asymmetries across countries, and so it is the Borjas theory (along with HO theory) which is the focus of this paper.

3. History

3.A. Late 19th century migration in comparative context

Late 19th century labour markets were clearly more globalized than today. Although the barriers to immigration that are the focus of this section were being erected by the end of the period, by and large the late 19th century stands out as a relatively liberal interlude in terms of migration policy, and falling transport costs eventually led to huge migration flows (roughly 60 million Europeans emigrated to the temperate and land-abundant regions of the New World between 1820 and 1914).

At the beginning of the century, transport costs remained high, free labour flows were still small, and intercontinental migration was dominated by slavery. During the 1820s, free immigration into the Americas averaged only 15,380 per annum, compared with a slave inflow of 60,250 per annum. By the 1840s, the free inflow had increased to 178,530 per annum (and the slave inflow had declined to 44,510 per annum: Chiswick and Hatton 2003, p. 68, Table 2.1), although it was not until the 1880s that the cumulative European migration exceeded that of the

[4] In principle, self-selection should depend not only on income distribution within host countries, but on the relationship between host country and source country income distribution. A complete test of the Borjas theory would thus involve calculating source country distributions for each host country. In this paper we make the simplifying assumption that source country distributions are sufficiently similar for all host countries that self-selection varies across host countries based on differences in host country distributions alone.

African (Eltis 1983, p. 255). In the first three decades after 1846, European intercontinental emigration averaged around 300,000 per annum; the numbers more than doubled in the next two decades, and rose to more than a million per annum after 1900 (Chiswick and Hatton 2003, p. 69, Figure 2.1). There were also significant migrations within Europe and the New World, as well as substantial intercontinental emigration from Asia.

One feature of these 19th century migrations that deserves to be noted is that they were ultimately self-limiting. That is, in those countries where the process had time to run its course before the intervention of the First World War, emigration followed an inverse U-shape, first rising and then declining (Hatton and Williamson 1998). Demographic forces were an important cause of the upswing, with path-dependence playing a strong reinforcing role; but eventually emigration led to international wage-convergence, and this led to emigration rates falling in countries such as Ireland.

As was the case with trade and capital flows, this dimension of globalization went into reverse after 1914. European emigration had averaged over 1.2 million per annum in the decade before the war, but was less than half that between 1916 and 1930; and during the 1930s it was lower than it had been in the late 1840s (Chiswick and Hatton 2003, p. 69, Figure 2.1). Decline was followed by recovery: gross immigration into the US was 4.1 million during the 1920s, 0.5 million in the 1930s, 1 million in the 1940s, 2.5 million in the 1950s, 3.3 million in the 1960s, 4.5 million in the 1970s, and 7.3 million in the 1980s (Chiswick and Hatton 2003, p. 76, Table 2.2). However, this recovery is not yet complete. The world stock of migrants was 2.3% of the total world population in both 1965 and 1990. Within Western Europe, the share of migrants in the total population increased from 3.6% to 6.1% over the same period, while within North

America, the migrant share increased from 6% to 8.6% (Zlotnik 1999). By contrast, the foreign born accounted for 14.7% of the population of the United States, and 22% of the Canadian population in 1911. Similarly, 1990s immigration rates into countries like the US (roughly 30 per thousand), Canada (70 to 80 per thousand in the early 1990s) and Germany (roughly 80 per thousand in the first half of the decade, and 50 per thousand thereafter), while substantial, were much smaller than those of the late 19th and early 20th centuries: in the first decade of the 20th century these were 167.6 in Canada, 118.4 in Cuba, 102 in the United States, and 291.8 in Argentina (O'Rourke 2002).

3.B. Immigration restrictions in the late 19th century

Given the unprecedented nature of late 19th century migration flows, it would have been surprising if there had been absolutely no political response: especially from the 1890s or so, when the US frontier was officially declared closed, and states were no longer able to cope with expanding populations by increasing the amount of land under cultivation. And indeed, there was a gradual closing of New World labour markets to would-be immigrants from the 1880s or so (Timmer and Williamson 1998; O'Rourke and Williamson 1999, Chapter 10), manifested in such legislation as head taxes, Chinese exclusion acts, the definition of various categories of persons as 'excludable', and so on. What explains this international trend towards excluding immigrants, which was common across the 'regions of recent settlement'? Was increased racism to blame; or a constant level of racism, combined with a shift in the ethnic composition of the migrants (fewer north-western Europeans, more southern and eastern Europeans)? Or were the roots of this backlash economic?

In order to understand the political economy of late 19th century immigration restriction, it is necessary to first be clear about who the migrants were (Hatton and Williamson 1998, Chapters 7, 8; O'Rourke and Williamson Chapter 7). Late 19th century migrants were typically young adults – for example, 76% of immigrants entering the US between 1868 and 1910 were aged between 15 and 40. They were thus disproportionately likely to enter the workforce, implying that the labour market impact of the mass migrations was large. Crucially, migrants were typically unskilled, partly reflecting the fact that they were young, but also reflecting limited educational opportunities in their home countries. Indeed, as the century progressed migrants became even less skilled, as the source of the European emigration shifted southwards and eastwards.

The implications of this were straightforward: immigration tended to lower the relative wages of unskilled workers in the New World. Williamson (1997) shows that the ratio of unskilled wages to GDP per worker hour fell sharply in New World countries such as the United States and Australia during the late 19th century, suggesting that unskilled workers were doing progressively less well relative to average income earners: by this measure, inequality was on the rise in the rich countries of the New World during the era of mass migration. Moreover, inequality got worse in countries which attracted more immigrants (Williamson 1997; O'Rourke and Williamson 1999, Chapter 11); while several studies, using various methodologies, have shown that in immigrant nations such as the US immigration had a significant negative impact on unskilled real wages (O'Rourke and Williamson 1999, Chapter 8).

What Timmer and Williamson (1998) do is to demonstrate that there was a causal link between this rising New World inequality, on the one hand, and rising barriers to immigration on

the other. Their crucial contribution is to provide an index of immigration barriers in the US, Canada, Argentina, Australia and Brazil from 1850 to 1930, based on a careful reading of each country's immigration legislation. An increase in the index signifies more pro-immigration policies, while a decline in the index implies a tightening of immigration barriers. Having constructed this index, they are then able to analyse the causes of increasingly restrictive policies in their sample countries, and their conclusions are striking. The most consistently significant variable in the analysis reported by Timmer and Williamson is the measure of inequality mentioned earlier, namely the ratio of the unskilled wage to per capita income, or of income near the bottom of the distribution to income in the middle. Regardless of what else is included in the regression equation, this measure of unskilled labour's relative economic position turns out to have been an important influence on policy. Rising equality encouraged more open immigration policies; rising inequality encouraged more restrictive immigration policies.

Other economic variables also seem to have mattered for policy: high real wage levels were associated with liberal policy in some countries, high real wage growth in others. Low and falling immigrant 'quality', as measured by real wages in source countries, induced immigration restrictions. There is also evidence of policy spillovers during the period: for example, Argentinian policy tended to mimic policy in Australia, Canada and Brazil, while Brazil tended to mimic policies in Argentina and the US. However, there is no evidence that widening ethnicity gaps between immigrants and host country populations were responsible for tighter controls: policy can be well explained by the economic effects of immigration, and by policy overseas. Once other variables have been controlled for, there does not seem to have been an independent role for xenophobia, of the sort frequently stressed by qualitative histories of the period.

3.C. Immigration policy in the 20th century

The late 19th century experience indicates that absent international institutions which can restrain individual countries' policies, globalization can undermine itself. Labour market integration undermined itself by increasing income inequality in the New World, which in turn led to immigration barriers. In a similar vein, cheap agricultural imports into Europe spurred a protectionist retreat across much of the Continent (Bairoch 1989).

In the trade sphere, the lesson that was learned from this experience was that international institutions were needed to spur international cooperation. Thus, the interwar League of Nations was supposed, among other things, to provide a forum within which countries could agree to lower trade barriers; and even though it failed dismally, the promise of the League would eventually be fulfilled via the GATT and WTO. The history of international migration is quite different in this regard, since there was never an international organisation dedicated to the removal of barriers to international migration. Both the French and German delegations at Versailles suggested that free migration be stitched into the post-World War I international economic architecture, but these proposals came to nought (James 2001, pp. 176-7). The Treaty of Versailles did establish the International Labour Organization, and some countries – such as France, Italy, Japan and Poland – argued that the ILO should be involved in regulating migration. New World countries disagreed however, and the result was that the ILO found itself limited to issues of domestic regulation: immigration control was left to the discretion of individual countries. The interwar period saw a progressive tightening of immigration restrictions; when Europeans found New World economies closed to them, they often migrated to other European countries, and this in turn prompted European immigration restrictions. Harold James has gone

so far as to speculate that the inability of countries in the interwar period to solve their economic problems by exporting people prompted calls for territorial expansion (James 2001, pp. 184-5).

While the post-1945 settlement did involve the promotion of freer trade, migration was once again left for individual countries to decide. The result has been enormous wage gaps between rich and poor countries, and equally enormous potential gains to freer migration: Hamilton and Whalley (1984) famously estimated that free migration could as much as double world income, gains that make the estimated effects of world trade rounds seem trivial. Within this overall context of restriction, immigration policies have taken a variety of forms (Chiswick and Hatton 2003). In the early postwar years, several European countries tried to attract low-skilled workers on a temporary basis, and short-term contracts for unskilled migrants have also been employed in the Persian Gulf and the US. Another factor potentially encouraging the immigration of less skilled labour has been the abandoning of traditional national quotas (biassed in favour of Europeans) in New World economies such as the US, Canada, Australia and New Zealand. On the other hand, several OECD countries have adopted points systems discriminating in favour of high-skilled immigrants, and this bias against the unskilled and in favour of the skilled is perhaps the most striking feature of many rich countries' immigration policies today.

Compared with the late 19th century, therefore, early 21st century policies make it far more difficult for developing countries to use migration as a means of convergence on the rich. One hundred years ago mass emigration raised living standards significantly in countries such as Ireland, Italy and Sweden, enabling them to converge on the core countries of the day, Britain and the US. Indeed, mass migration can account for as much as 70% of the convergence in living standards worldwide which occurred during the late 19th century (O'Rourke and Williamson

1997, 1999, Chapter 8; Taylor and Williamson 1997). Furthermore, since the emigration predominantly involved unskilled workers, it raised the incomes of the unskilled relative to average incomes in emigrant economies, making those economies more equal (Williamson 1997). From the point of view of poor countries, therefore, international labour markets offered not only higher living standards but more equal societies. Today's rich country immigration policies not only prevent developing economies from raising their average living standards via emigration; by admitting skilled workers rather than unskilled workers, these policies may actually hurt developing economies via the brain drain effect, and also make them less equal (by raising the relative wages of skilled workers).[5]

From a developing country perspective, therefore, it becomes crucial to understand the underlying forces driving rich country immigration policies today. It is true today, as it was a hundred years ago, that racism and xenophobia play a relatively minor role, and that economics alone can explain the existence and development of immigration barriers? And if economic factors matter, what factors are these? What models of migration can help us to understand the contemporary political economy of immigration restrictions?

An indispensable element in any complete answer to these questions will be an account of what drives individual voters' preferences. As Scheve and Slaughter (2001) point out, individual-level preferences regarding trade must lie at the heart of any rational choice account of policy-formation, and this paper follows them in using individual survey data. However, while Scheve and Slaughter use survey data for just one country, the US, we use data for 24. The next section

[5] This view is not universally accepted: some authors argue that skilled emigration can be a source of 'brain gain' rather than 'brain drain'; for a recent review of the literature, see Lucas (2004).

introduces our data set.

4. Data[6]

What do we need to accomplish our objectives? We need a data set that provides information on individuals' attitudes towards immigration, socio-economic position, socio-demographic characteristics and political attitudes. Since the Borjas and HO models predict that skill levels will have different implications for trade policy preferences in different countries, the data should be cross-national in scope.

What we have are data provided by the 1995 International Social Survey Programme (ISSP) module on national identity. The ISSP national identity survey was conducted in twenty-four countries in 1995-96. The countries concerned were: Australia, West Germany, East Germany, Great Britain, the USA, Austria, Hungary, Italy, Ireland, the Netherlands, Norway, Sweden, the Czech Republic, Slovenia, Poland, Bulgaria, Russia, New Zealand, Canada, the Phillippines, Japan, Spain, Latvia and Slovakia.

This data set provides individual-level measures of a range of demographic, socio-economic and political variables. Among the socio-economic variables, the most valuable from the point of view of testing the implications of the theories we surveyed earlier is the respondent's skill level. This is arrived at by coding the answers to questions on respondents' occupation using the International Labour Organisation's ISCO88 (International Standard Classification of Occupations) coding scheme. While a complex coding scheme of this sort allows for very fine distinctions between different occupations, we are interested in the four main

[6] The next two sections draw on O'Rourke and Sinnott (2004).

skill categories provided by ISCO88. In brief, these are: (1) 'elementary occupations' (i..e. 'manual labor and simple and routine tasks, involving…with few exceptions, only limited personal initiative' (ILO 1990, p.7)); (2) 'plant and machine operators and assemblers; craft and related trades workers; skilled agricultural and fishery workers; service workers and shop and market sales workers; clerks;' (3) 'technicians and associate professionals;' and (4) 'professionals.' A fifth group, 'legislators, senior officials and managers,' do not have a skill coding under this four-step skill classification and were included as a separate, fifth, skill category. Finally, we excluded members of the armed forces, since it was unclear what their skill levels were. Skill data were available for 21 of our 24 countries; we have had to omit the other three (Italy, Sweden and Japan) when estimating models involving skill.

We also make use of a subjective economic variable, namely the stated willingness of people to move from one location to another in order to improve their standard of living or their work environment. Respondents were asked: "If you could improve your work or living conditions, how willing or unwilling would you be to move to another neighbourhood or village; another town or city within this county or region; another county or region; outside [named country]; outside [named continent]?" Based on the responses to these questions, we derived two binary variables, indicating whether or not individuals were nationally mobile, and internationally mobile.[7] Arguably, those willing to relocate within the country should be more sanguine about the dislocation implied by immigration than those who are immobile. This will be particularly true if immigrants tend to concentrate in particular regions or cities. The rationale behind including the international mobility variable is that people who view themselves as potential

[7] Details available on request.

emigrants may see migration as an opportunity rather than as a threat. Alternatively, being willing to live overseas may signal an openness to other cultures, and hence a greater tolerance for immigrants. By the same token, we also make use of a question which asks whether the respondent had ever lived abroad, on the basis that previous experience of living abroad may provide a signal regarding willingness to move again, as well as familiarity with foreigners. In addition, we have information on respondents' age; their gender; their religion; on whether they and their parents are native born or not; on their marital status; and on a variety of other personal characteristics and attitudes.

The ISSP national identity data set includes a wide range of indicators of nationalist attitudes. Rather than focussing on just one or two of these as indicators of what is, after all, a complex phenomenon, the approach taken here is to seek to identify an underlying dimension (or dimensions) of nationalism that would be measured by a subset (or subsets) of the items. We focus on the following seven questions (versions implemented in Ireland, other country/nationality labels substituted as appropriate):

- "Generally speaking, Ireland is a better country than most other countries"
- "The world would be a better place if people from other countries were more like the Irish"
- "I would rather be a citizen of Ireland than of any other country in the world"
- "It is impossible for people who do not share Irish customs and traditions to become fully Irish"
- "People should support their country even if the country is in the wrong"

- "Ireland should follow its own interests, even if this leads to conflicts with other nations"
- "How important do you think each of the following is for being truly Irish?"... ... ..."to have been born in Ireland"

In each case, respondents were asked to rank their responses along a scale, in the case of the first six items, from 1 (strongly disagree) to 5 (strongly agree) and, in the case of the seventh item, from 1 (very important) to 4 (not at all important). The seventh item was reordered to make it consistent with the other six. Principal components analysis of these responses yielded two factors or underlying dimensions of nationalist attitudes. As can be seen from the rotated factor loadings in Table 2, the first factor is a straightforward preference for and sense of the superiority of one's own country (here labelled patriotism). The second factor identifies a narrow or exclusive sense of nationality combined with a degree of chauvinism of the "my country right or wrong" variety (here labelled chauvinism). On the basis of this analysis, patriotism and chauvinism scores have been calculated by averaging responses across the relevant subsets of items identified in the factor analysis.[8]

5. Explaining individual attitudes towards immigration

Table 3 presents the results of a series of ordered probit regressions that were run explaining attitudes towards immigration. The dependent variable is the scaled response to the question mentioned earlier, which asked respondents whether they thought that the number of

[8] The Cronbach's alpha reliability coefficient for the three-item patriotism scale is 0.68 and the item-total correlations vary from 0.41 to 0.57. The four-item ethnic chauvinism scale is somewhat less satisfactory in this regard: an alpha of 0.53 and inter-item correlations ranging from 0.31 to 0.36.

immigrants to their economy should be increased a lot (1), a little (2), remain the same (3), be reduced a little (4) or reduced a lot (5). Skill 345 is a binary variable which takes the value one if the respondent's skill level is either three, four or five, and zero if his or her skill level is one or two; the variable thus indicates whether the respondent is high-skilled or not. All equations include country dummy variables (coefficients not reported).

Equation (1) establishes that both patriotism and chauvinism are strongly correlated with anti-immigration attitudes, with chauvinism having much the larger effect, as expected. These results are robust across all specifications, and indicate that non-economic factors are extremely important in determining voters' attitudes towards immigration.

Does economic self-interest also have a role in explaining attitudes towards immigration, and if it does, which economic theories are useful in understanding what the interests of individual agents are?[9] Equations (2) through (6) test the relevance of both the HO and the Borjas theories in explaining individual attitudes towards immigration. First, they include Skill345 as an explanatory variable. The coefficient on this variable is always negative, indicating (consistent with Scheve and Slaughter 2001) that the high-skilled are less likely to favour immigration restrictions than the low-skilled. However, the coefficient only becomes statistically significant at conventional levels when additional control variables are included (in equations (3) and (4)); and loses significance in equations (5) and (6), which use data for a smaller sample of countries. The

[9] Note that in all cases what is being tested below is a joint hypothesis: that agents' attitudes reflect economically rational calculations, plus the specific economic hypothesis being tested. Strictly speaking, therefore, the results allow us to conclude that agents' attitudes are consistent (or inconsistent) with particular economic models, and nothing more; but if their attitudes are indeed consistent – or inconsistent – with (say) Heckscher-Ohlin theory, then that is an interesting finding in itself.

test of HO theory, however, lies not in the sign of this coefficient, but in the sign of the coefficient on the interaction term between Skill345 and GDP per capita (measured in thousands of PPP-adjusted 1995 international US dollars). If HO theory is correct, then it is the unskilled who should favour immigration restrictions in rich countries (i.e. the coefficient on Skill345 should be negative in rich countries), but the skilled who should favour restrictions in poor countries (i.e. the coefficient on Skill345 should be positive in poor countries). It follows that the interaction term between Skill345 and GDP per capita should be negative: the high-skilled should be less anti-immigration in rich countries than in poor countries.[10] This prediction is broadly born out by the evidence in Table 3: the interaction term is negative in all specifications, and significant in all but two (equations (4) and (6)).

The above exercises are fairly simple in their methodology. However, Mayda (2003) has recently and independently arrived at similar conclusions to these, using the same data set, as well as the World Values Survey, but going into much greater detail and employing many additional individual- and country-level variables to test the basic HO predictions. She uses both education and skills as measures of human capital, and runs probit regressions explaining a dichotomous 'immigrant opinion' variable. Her results are even more favourable for factor proportions theory than ours, even though she does not correct for differences in inequality across countries. Our findings regarding HO theory thus appear to be robust.

What about the Borjas theory? This predicts that in countries with less equal income distributions, immigration should predominantly involve skilled workers, while immigration

[10] Strictly speaking, testing HO theory should involve using data on skill endowments; the assumption here is that these are strongly and positively correlated with GDP per capita. See O'Rourke and Sinnott (2001) for further discussion on this point.

should be biassed towards the unskilled in more egalitarian countries. Thus, as we move from more equal societies to less equal ones, immigration should increasingly involve skilled workers, and skilled workers should become increasingly anti-immigration. That is, the coefficient on an interaction term between Skill345 and a measure of inequality should be positive; and this is indeed the case. The measure of inequality used here is simply the Gini coefficient, taken from the World Bank's World Development Indicators. The Borjas theory is broadly speaking vindicated, since the coefficient is positive in all cases, and statistically significant in all but two (equations (2) and (6)).

Results for the other variables are mixed. As expected, people who have previously lived abroad are significantly more liberal in their attitudes towards immigration, while there is weaker evidence that those who describe themselves as internationally mobile are similarly more liberal; while the native-born, and those whose parents are native-born, are significantly more likely to favour immigration restrictions. Older people are more anti-immigration, although this is not true in all countries (and thus the effect vanishes in equation (5), which can only be estimated using data for some of the countries in our sample). Somewhat surprisingly, being unemployed has no effect on preferences either way (of which more later).

Equations (4) through (6) test another implication of HO theory: that agents who are protectionist will also favour immigration restrictions. 'Protect' is the same variable as that given in Table 1; i.e. it contains responses to the question as to what extent respondents agreed with the statement that their country 'should limit the import of foreign products in order to protect its national economy,' with responses ordered from 1 (strongly disagree) to 5 (strongly agree). If agents view trade and migration as substitutes, as HO theory suggests, then the coefficient on

protect should be positive; and indeed it is, in all equations.

For some countries, we have information on a number of other variables, and these are included in equations (5) and (6). Equation (5) shows that rural residents are significantly more likely to be anti-immigration, as are trade union members. Being self-employed, or being a public sector worker, has no effect on attitudes. Equation (6) shows that respondents who place themselves on the right of the political spectrum are more likely to be anti-immigration than those who self-identify as left-wing.

Both the Borjas and the HO theories thus appear to be vindicated by the evidence. It is also the case that HO theory stands up better to the data when tested in a conditional form, than when tested unconditionally. For example, when equation (2) is re-run, omitting the interaction term between Skill345 and inequality, the interaction term between Skill345 and GDP per capita becomes statistically insignificant (regression not shown). The HO theory assumes that countries are identical in all respects other than their relative endowments of skilled and unskilled labour, and the prediction of the theory is thus very much a *ceteris paribus* one; once inequality has been controlled for, the HO results begin to come through in these regressions.

Another approach to testing the HO and Borjas theories is to run a series of regressions explaining attitudes towards immigration in individual countries, and compare the coefficients on Skill345 across countries. We did this using the specification in equation (3) (obviously we omitted the country dummies as well as the two interaction terms). Figure 1 plots the resultant coefficients on Skill345 for each country, against that country's level of GDP per capita.[11] As can be seen, support for the HO predictions is in this case unclear. There is indeed a negative

[11] The country abbreviations used are given in Appendix Table 1.

relationship between the coefficient on Skill345 and per capita GDP for the poorer countries in the sample (i.e. the Phillippines and the transition economies of Central and Eastern Europe); and in two of the poorest countries, Latvia and the Phillippines, the impact of skills on anti-immigrant attitudes is actually positive. However, for the richer countries in the sample the relationship is unclear. This methodology provides stronger evidence for the Borjas theory: Figure 2 shows a positive relationship between the Skill345 coefficient and the Gini coefficient (with a correlation coefficient of 0.401).

Of course, Figure 1 just plots the bivariate relationship between the Skill345 coefficient and GDP per capita; while the regressions in Table 3 control for a simultaneous relationship between the Skill345 coefficient and inequality. It appears that the evidence for the predictions of Heckscher-Ohlin theory is weak when the unconditional version of that theory is tested; however, conditional on other factors the predictions of the theory hold up well.

Finally, one possible problem with the results in Table 3 is that they do not take adequate account of the fact that attitudes towards trade and immigration are correlated with each other, and (crucially) that unobserved determinants of globalization could have similar effects on both variables. Table 4 therefore presents the results of seemingly unrelated bivariate probit regressions explaining attitudes towards both trade and immigration. It estimates two regressions with binary dependent variables (equal to one when respondents gave the most restrictionist response possible to the questions about trade and immigration restrictions, and zero otherwise); and allows the disturbance terms in both regressions to be correlated with each other.[12] The 'rho' coefficient reported at the bottom is the correlation between the disturbances in the two

[12] See Greene (2000), pp. 849-856.

equations, or '(roughly) the correlation between the outcomes after the influence of the included factors is accounted for' (Greene 2000, p. 854). The results confirm that protectionism and anti-immigrant sentiment are correlated with each other, in that 'rho' is strongly positive. The predictions of HO theory are also confirmed, in that the interaction term between 'Skill345' and GDP per capita in the anti-immigration equation is negative. There is less strong support for the Borjas theory: while the interaction term between 'Skill345' and the Gini coefficient in equation (2) is positive, it is statistically insignificant at conventional levels (with a p-value of 0.151). The other big difference between the results here and those obtained earlier is that unemployment now has a positive effect on anti-immigrant sentiment (which is reassuring).

6. Conclusions

The late 19th century was a period of unprecedented intercontinental mass migration, which mostly involved unskilled workers. This mass migration helped poor countries along the European periphery to catch up with rich core countries such as the United States; and it also led to more equal income distributions in those peripheral economies. Mass migration thus led to major economic benefits for poor countries, although these benefits were at the expense of widening income distributions in the New World. By contrast, the 20th century saw much tighter immigration controls. Not only have these prevented mass migration from being a force for international convergence in our own period; by favouring the immigration of skilled workers, rich-country policies in recent years may have promoted a brain drain from developing countries, leading to divergence at the international level, and worsening income distributions within the developing world (but see footnote 5).

Understanding the evolution of rich-country policies towards immigration is thus an area of major practical concern. Immigration barriers began to be erected in the rich countries of the New World in the late 19th century. During that period, immigration restrictions appear to have been motivated by economic concerns, and in particular by fears that the immigration of unskilled workers would lead to increased levels of inequality. Controlling for economic factors, there appears to have been little independent role for factors such as racism or xenophobia in driving the retreat from liberal migration policies. Rather, mass migration undermined itself via the distributional changes which it provoked. The basic message from the history of late 19th century immigration policies is broadly consistent with HO theory, despite all the complications implied by the existence of third factors and differing technologies: unskilled workers moved from Europe (where they were relatively abundant) to the New World (where they were relatively scarce), thus lowering unskilled wages in the New World. It was this fact above all else which prompted immigration restrictions in the decades leading up to the Great War.

Our analysis of individual voter attitudes in the late 20th century leads to somewhat different conclusions. Most notably, patriotism, and above all chauvinism, is strongly associated with more hostile attitudes towards immigrants: economics alone cannot explain the hostility which is directed against immigrants in many countries. On the other hand, economic factors are also important in explaining attitudes. The econometric exercises lend support to the basic HO prediction that the highly skilled should be less anti-immigration in rich countries than in poor countries, although the theory works better once other factors, notably inequality, have been controlled for. They also support HO theory in that protectionism is positively associated with anti-immigrant sentiment, suggesting that voters view trade and factor flows as substitutes rather

than as complements. The Borjas theory of immigrant self-selection also receives support from the data, in that the high-skilled are more anti-immigration in countries with unequal income distributions than in more egalitarian societies.

The two sets of results are not entirely comparable, however, since they use different data: the Timmer and Williamson results for the 19th century look at policy outcomes, whereas we look at individual preferences. Presumably there is some relationship between voter attitudes and policies, at least in democracies; but policies depend on not just on preferences, but on political institutions, the lobbying capacity of various interest groups, and so on. It may be that there was a strong individual-level correlation between chauvinism and anti-immigrant sentiment in the 19th century, but that for some reason politicians paid more attention to economic factors when making their decisions. To test such a hypothesis, we would need late 19th century survey data, something which we do not and will never have. Maybe today's policy makers similarly try to ignore racist sentiments when making policy, and focus solely on economics (although recent elections in countries such as Austria and Denmark cast some doubt on this possibility).

In order to test such a hypothesis, we would need measures of immigration policy that are consistent across countries. The striking difference between the amount of work that has been done trying to explain trade policy, and the amount of work on immigration policy, is presumably largely due to the fact that it is easier to measure the former than the latter (or, rather, it is easy to obtain average tariff data; whether these are a good measure of trade policy is another matter--see Anderson and Neary 1994). True, asylum systems generate comparable data across countries, such as recognition rates for asylum applicants; but the extent to which this measures immigration policy per se, rather than differing commitments to countries' international human

rights obligations, is open to question. A major research focus should thus be to generate cross-country panel data on immigration regimes – on their overall restrictiveness, and on the extent to which they are biassed in favour of skilled workers – which can then be analysed using econometric methods. A second focus should be the collection of better immigration statistics– to 19th century historians, it is striking how patchy are today's migration data. A third focus should be to generate more internationally comparable data on the characteristics of immigrants – their educational attainment, for example, since migrants' skill levels are of crucial concern to policy makers, and are also important when testing various theories of migration. A fourth focus should be the collection of data on skill differentials which are easily comparable across countries, since the 19th century experience suggests that these differentials could be important in explaining attitudes towards immigration. Finally, it would obviously be interesting to perform exercises such as the ones undertaken here using survey data for a series of years, in order to see how the determinants of attitudes towards immigration change over time; and in order to relate such changes to shifts in the economic and political environment.

While the agenda for researchers seems clear, the lessons for policy makers are more mixed. On the one hand, the fact that economics does have an impact on voter attitudes leaves open the possibility that governments might compensate those who lose as a result of immigration by means of a range of side payments, or other policies. On the other hand, attitudes motivated by nationalist attitudes are much less susceptible to such policies. The clear link between nationalism and anti-immigrant hostility which emerges clearly from these data suggests that politicians have a responsibility to avoid nationalist grandstanding during election campaigns.

From the point of view of developing countries, the experience of the late 19th century suggests that they are losing out by not being able to export surplus unskilled labour as peripheral European countries did a hundred years ago; the fact that some rich country policies are promoting skilled immigration only compounds their difficulties. Current rich country immigration policies increase the moral onus on the OECD to facilitate convergence through other means, for example by liberalising trade in 'sensitive' products, and this point should be made forcefully by poorer countries in the context of international trade negotiations.

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Table 1. Summary statistics, selected variables

Country	Protect		Anti-immigrant	
	Mean	Std. Dev.	Mean	Std. Dev.
Australia	3.997	0.988	3.768	1.042
W. Germany	3.083	1.232	4.226	0.910
E. Germany	3.563	1.189	4.338	0.871
Britain	3.723	1.004	4.052	0.962
USA	3.707	1.016	3.873	1.044
Austria	3.873	1.163	3.804	0.933
Hungary	4.047	1.075	4.402	0.817
Italy	3.571	1.216	4.151	0.900
Ireland	3.65	1.128	3.071	0.829
Netherlands	2.912	0.992	3.826	0.924
Norway	3.144	1.038	3.847	0.982
Sweden	3.228	1.081	3.961	1.017
Czech Rep.	3.415	1.294	4.158	0.880
Slovenia	3.465	1.174	3.939	0.868
Poland	3.787	1.083	3.888	1.060
Bulgaria	4.190	1.09	4.219	0.990
Russia	3.670	1.282	3.717	0.971
New Zealand	3.406	1.147	3.742	1.053
Canada	3.264	1.135	3.317	1.135
Phillippines	3.624	0.918	3.796	1.102
Japan	2.919	1.282	3.391	1.008
Spain	3.813	0.906	3.401	0.813
Latvia	4.042	1.18	4.182	0.884
Slovakia	3.488	1.273	4.004	0.911

Source: Data from ISSP National Identity Survey 1995

Table 2. Factor analysis of nationalist items in ISSP National Identity Survey 1995

	Factor 1	Factor 2
[COUNTRY] better country than most other countries	0.86	0.02
World better place if people from other countries more like the	0.78	0.2
Rather be citizen of [COUNTRY] than of any other country in world	0.61	0.29
Impossible for people who do not share [NATNL.]traditions to be fully	-0.01	0.71
People should support their country even if country is wrong	0.20	0.63
Importance of having been born in [COUNTRY] to be fully	0.16	0.63
[COUNTRY] should follow own interests, even if conflicts with other	0.23	0.55
Percent variance	**26.34**	**24.50**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Source: O'Rourke and Sinnott (2001). Data from ISSP National Identity Survey 1995.

Table 3. Exploratory regressions: ordered probit

	(1)	(2)	-3	(4)	(5)	(6)
Patriotism	0.1090***	0.0997***	0.0787***	0.0606***	0.0613***	0.0597***
	[0.0193]	[0.0208]	[0.0148]	[0.0140]	[0.0199]	[0.0185]
Chauvinism	0.3606***	0.3418***	0.3204***	0.2833***	0.2875***	0.3198***
	[0.0461]	[0.0484]	[0.0516]	[0.0497]	[0.0686]	[0.0457]
Skill345		-0.2662	-0.2784*	-0.3045**	-0.1906	-0.2609
		[0.1765]	[0.1625]	[0.1544]	[0.1325]	[0.2001]
Skill345*GDPCAP		-0.0072*	-0.0068*	-0.006	-0.0132***	-0.0057
		[0.0041]	[0.0039]	[0.0038]	[0.0032]	[0.0051]
Skill345*Inequality		0.007	0.0072*	0.0083**	0.0071**	0.0069
		[0.0047]	[0.0043]	[0.0041]	[0.0034]	[0.0045]
National mobility			-0.0133	-0.0119	-0.0275	-0.0283
			[0.0197]	[0.0195]	[0.0240]	[0.0236]
International mobility			-0.0806**	-0.0700**	-0.0434	-0.0518
			[0.0326]	[0.0338]	[0.0436]	[0.0410]
Never lived abroad			0.1228***	0.1106***	0.1099***	0.0978***
			[0.0276]	[0.0274]	[0.0404]	[0.0372]
Native			0.1842***	0.1860***	0.1974**	0.1394**
			[0.0569]	[0.0581]	[0.0765]	[0.0608]
Native parents			0.2002**	0.1996***	0.1437*	0.1635**
			[0.0779]	[0.0730]	[0..0846]	[0.0806]
Age			0.0075***	0.0064***	-0.0076	0.0111***
			[0.0025]	[0.0024]	[0.0049]	[0.0028]
Age squared			-0.0001**	-0.00005*	0.0001	-0.0001***
			[0.0000]	[0.00003]	[0.0001]	[0.00003]
Female			0.0327	0.0096	0.0185	-0.0024
			[0.0261]	[0.0251]	[0.0329]	[0.0339]
Married			0.0018	0.0006	[0.0091]	0.0134
			[0.0233]	[0.0231]	[0.0388]	[0.0310]
Catholic			-0.023	-0.0281	0.0156	-0.0702
			[0.0418]	[0.0418]	[0.0446]	[.0432]
Unemployed			0.037	0.0284	-0.0833	0.0102
			[0.0535]	[0.0533]	[0.0652]	[0.0608]
Protectionism				0.1228***	0.1080***	0.1442***
				[0.0134]	[0.0180]	[0.0127]
Rural					0.0914***	
					[0.0132]	
Public sector					-0.0486	
					[0.0316]	
Self-employed					0.0314	
					[0.0421]	
Trade union					0.0083**	
					[0.0037]	
Right-wing						0.0883***
						[0.0304]
No. of observations	26484	23246	21220	21191	10239	13443
Log likelihood	-32707.20	-28671.76	-25883.56	-25709.22	-12550.889	-16299.179
Pseudo-R-squared	0.07	0.07	0.08	0.08	0.09	0.09

Robust standard errors in brackets assume clustering at country level. * significant at 10%; ** significant at 5%; *** significant at 1%. Country dummy variables included; coefficients not reported.

Table 4. Determinants of anti-globalization preferences
(seemingly unrelated bivariate probit)

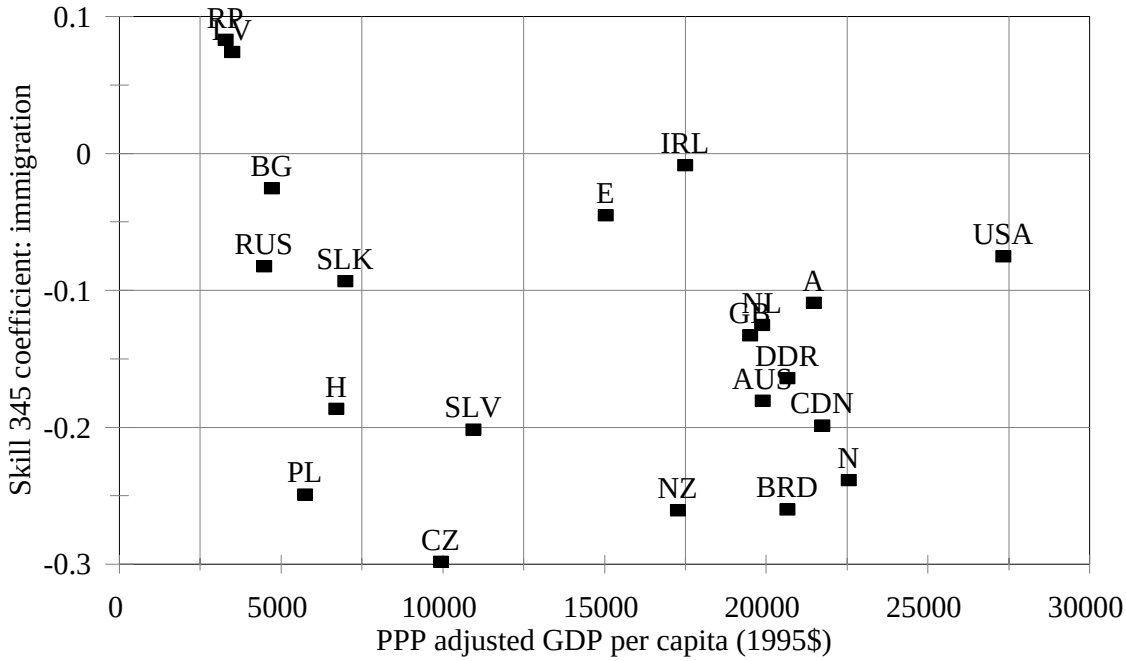
	-1	-2
Dependent variable	Highly protectionist	Highly anti-immigrant
Patriotism	0.1967***	0.0803***
	[0.0214]	[0.0225]
Chauvinism	0.3677***	0.3754***
	[0.0285]	[0.0479]
Skill345	0.0387	-0.2137
	[0.0717]	[0.1703]
Skill345*GDPCAP	-0.0137***	-0.0093**
	[0.0040]	[0.0038]
Skill345*Inequality		0.0057
		[0.0040]
National mobility	-0.0301	0.0063
	[0.0189]	[0.0176]
International mobility	0.0029	0.0233
	[0.0324]	[0.0292]
Never lived abroad	0.0330	0.0537
	[0.0310]	[0.0363]
Native	0.0873	0.2182**
	[0.0827]	[0.0873]
Native parents	-0.0466	0.2515***
	[0.0690]	[0.0785]
Age	0.0164***	0.0204***
	[0.0049]	[0.0031]
Age squared	-0.0001***	-0.0002***
	[0.0000]	[0.0000]
Female	0.0985***	-0.0301
	[0.0262]	[0.0224]
Married	0.0086	-0.0239
	[0.0194]	[0.0231]
Catholic	0.0588***	-0.0082
	[0.0226]	[0.0293]
Unemployed	0.0917**	0.0986*
	[0.0362]	[0.0580]
Constant	-2.8535***	-2.7675***
	[0.1675]	[0.1754]
No. of observations	24180	
Rho [standard error of rho]	0.221349 [0.013959]	
Wald test of rho = 0	Chisquared(1) = 235.13, pvalue = 0.0000	

Robust standard errors in brackets assume clustering at country level. * significant at 10%; ** significant at 5%; *** significant at 1%. Country dummy variables included; coefficients not reported.

Appendix Table 1. List of country abbreviations used in figures

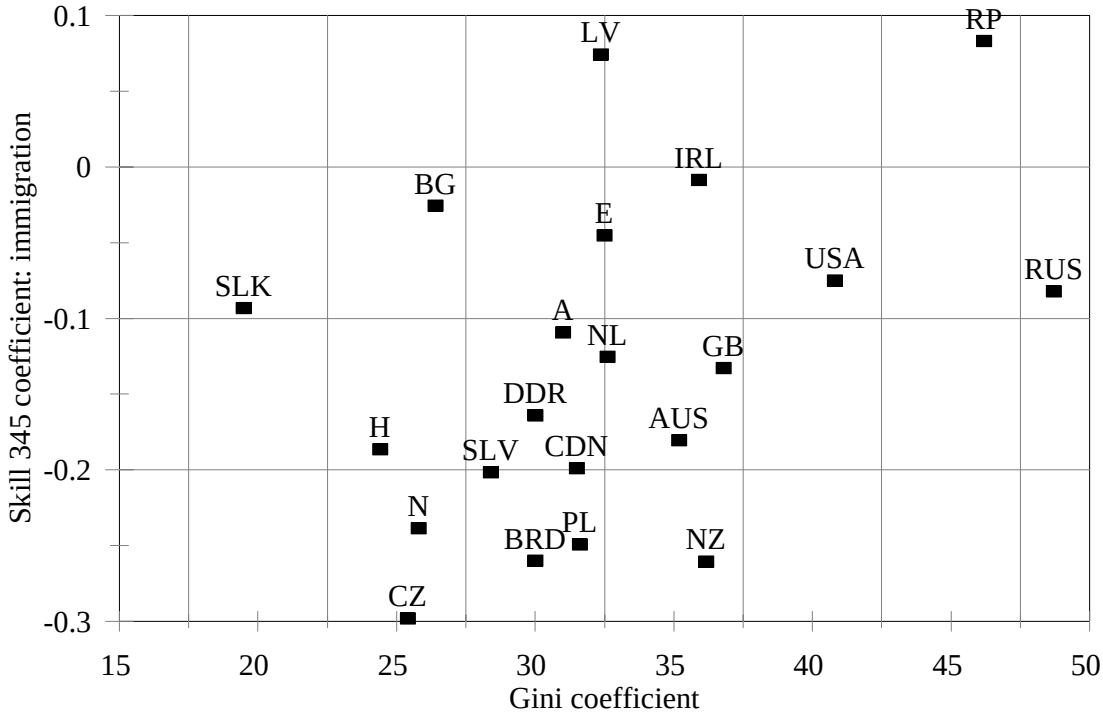
A	Austria
AUS	Australia
BG	Bulgaria
BRD	West Germany
CDN	Canada
CZ	Czech Republic
DDR	East Germany
E	Spain
GB	Great Britain
H	Hungary
I	Italy
IRL	Ireland
J	Japan
LV	Latvia
N	Norway
NL	Netherlands
NZ	New Zealand
PL	Poland
RP	Republic of the Philippines
RUS	Russia
S	Sweden
SLK	Slovak
SLV	Slovenia
USA	United States of America

Figure 1. Impact of skill and GDP



Source: see text.

Figure 2. Impact of skill & inequality



Source: see text.