

Ideal Point Estimation on immigration policy in the United States, 2005-2006

Mariana Medina
Department of Political Science
Washington University in Saint Louis*

November 30, 2008

Abstract

Immigration policy has emerged as an important policy debate across the advanced, industrialized countries, yet it remains relatively under explored in political science. To date, the majority of the work in political science focuses on questions of what determines individual preferences over immigration policy, and with few exceptions it has ignored economic factors. This paper seeks to insert the legislative process into the analysis by examining what determines the vote of senators on immigration reforms. Using a hierarchical item response theory model, I estimate the ideal points of the senators of the 109th United States Congress (2005-2006) on immigration. I then examine several competing hypotheses about what influences the voting behavior of legislators over immigration policy: are legislators' actions determined by the flow of immigrants, the main economic activities of the state, or by party identification. As immigration and trade are both movements of factors of production, I bring trade models to the immigration arena. But I also ask whether regions where low skill labor is abundant, and thus where trade is beneficial to a majority of voters, according to predictions of the Stolper-Samuelson theorem, are regions where legislators vote against immigration, because the latter dilutes the effects of the former on wages as shown by Hatton and Williamson (2005a).

*Previous versions of this paper have been presented at the Conference on Bayesian Methods in the Social Sciences, Mexico City, November 6-7, 2008, the 65th Meeting of the Midwest Political Science Association, April 12-15, 2007 and at Washington University's Empirical Research Workshop. This paper was greatly improved by the suggestions of Nate Jensen, Robert Walker, Andy Sobel, Kenneth Scheve, Dustin Tingley, Andrew Martin and Jeff Gill. The implementation of the statistical model would have been impossible without the programming skills of Mike Malecki. As usual, the responsibility for any errors contained here is only mine.

1 Introduction and literature review

During the first semester of 2006 and the last one of 2005, immigration became one of the most salient political issues in the United States. The debate was centered on the *Comprehensive Immigration Reform Act of 2006*, which among other policies included a proposal to build a fence in a portion of the United-States Mexico border, and temporary worker provisions ¹. However, some of the strongest supporters of immigration restrictions were legislators from states where there is a small proportion of Hispanic population. For example, the main supporter of the *Border Protection, Antiterrorism, and Illegal Immigration Control Act of 2005* in the lower chamber was Jim Sensenbrenner from Wisconsin's Fifth District ².

If the proportion of immigrants is not the only cause, why do legislators vote for immigration reform? This contrast with other periods in U.S.' history. Goldin (1993) shows that on the 1915 Vote to Override President Wilson's veto to the "literacy test" the higher the percentage of foreign born in the city, the lower the probability of voting against the override was (Goldin, 1993, 24). The main hypothesis of this paper goes against Goldin's findings, and it is that in the 109th U.S. Congress the position senators took on this issue was not due to the proportion of Hispanic/Latino population, but to economic reasons (factor endowment, dependence on trade, skills of the workforce, etc.).

A similar approach has been used previously for studies about immigration. Scheve and Slaughter (2001) analyze individual attitudes towards immigration in the United States and find that less-skilled workers are significantly more likely to prefer limiting immigrant inflows and they find no evidence that the relationship between skills and immigration opinions is stronger in high-immigration communities. This is consistent with the Stolper Samuelson theorem ³, because in the United States low skill labor is scarce in relative terms, and this model tells us that we would expect scarce factors to oppose liberalization⁴.

In contrast, Hiscox and Hainmueller find using data from the 2003 European Social Survey⁵ that,

¹The complete text of these bills can be accessed from LexisNexis Congressional <http://web.lexis-nexis.com/congcomp>

²However, illegal immigration from the southern border does not seem to be a threat for Wisconsin with only 4 percent of the population of Hispanic descent, according to the US Census Bureau

³Although Stolper and Samuelson (1941) talk about the effects of trade on wages, we can follow Rogowski (1989) and assume that those whose wages are affected by trade will oppose it

⁴This theorem will be explained later in this paper

⁵The survey covers twenty-two European countries: Austria, France, Norway, Sweden, Finland, Britain, Belgium, Ireland, the Netherlands, Denmark, Germany, Italy, Luxembourg, Switzerland, Greece, Spain, Portugal, Israel, Czech Republic, Hungary, Poland and Slovenia. It consists of answers of up to 42,000 respondents to an hour-long questionnaire,

in contrast to what would be expected from conventional arguments on labor market competition, people with higher levels of education are more likely to favor immigration regardless of whether respondents are in or out the labor force (Hiscox and Hainmueller, 2007, 436). In other words, they find that what matters is not the skill level but education. In other words, they do not argue that the Hecksher-Ohlin model adequately explains cleavages on immigration, but because individuals with higher levels of education are more tolerant according to their measures.

A previous piece on the topic, Citrin et al. find that self interest is not a significant influence on preference formation regarding immigration reform. The effects of labor market competition, pessimism about the state of the economy, and anxiety about rising taxes, regressed on opinions about immigration survive the imposition of controls for diverse background characteristics. They also find that the tendency of respondents in "high threat" blue-collar jobs to be more likely than those in white-collar occupations to favor a lower level of immigration is not a function of differences in their level of education (Citrin et al., 1997, 864). If the opposition of immigration is not due to skill levels, it might imply that either the factors are not mobile, or that in labor scarce economies, both skilled and low-skilled labor returns are affected by migration.

Individual preferences are important but citizens do not determine policies directly, legislators do. So it is germane to analyze what determines immigration *policies*, and not only *preferences*. Are the individual preferences reflected in legislators preferences? If we assume legislators (senators in this study) are just reelection seekers, and immigration is a "*hot topic*" these days, that should be the case, specially in an election year. This paper will contribute to the literature by bringing part of the policy making process to the discussion.

This is not the first study of the policy determinants of immigration policy. In the United States case Fetzer (2006) studies why members of the lower Chamber voted for the H.R. 4437 bill. However, he does not include any economic variables and he studies only one bill. Also, Hix and Noury (2007) look at the passage of six pieces of migration and immigrant integration legislation in the fifth European Parliament (1999 to 2004) and find that the main determinant of the direction of Parliamentary votes is the position in the left-right dimension of the Members of Parliament, and not economic variables such as skill level of the constituency or unemployment levels. They do not use a trade theoretical model and they only consider six pieces of legislation. Finally, Hiscox and

with an average country sample of about 2000 respondents (Hiscox and Hainmueller, 2007, 406-407).

Hainmueller argue, using public opinion for the European case, people with higher skill levels tend to have a more pro-immigration stance, not for labor market effects, but because they are more tolerant. If that is the case, the skill level of the constituency should be a statistically significant variable.

1.1 Why use trade models to study immigration policy?

There are many reasons to think trade and immigration are comparable. The most obvious similarity is that both trade and immigration change the supply of labor and change the mix of skills in the economy. With trade, the product of foreign labor comes to the United States in the form of goods. In the case of immigration, labor itself comes. Whether the workers come or only the goods they have produced, the relative supply of some types of labor relative to others is increased (Camarota, 1998).

The first text that talks about immigration (or, more in general, factor mobility) is Mundell (1957), who argues that "*an increase in trade impediments stimulates factor movements and that an increase in restrictions to factor movements stimulate trade*" (Mundell, 1957, 321).

In the case of immigration, we can follow Mundell's model, but using labor as the mobile factor. Then in a country with scarce labor, if a country puts up a tariff to protect the scarce factor in the absence of immigration, wages will increase. But if labor is allowed to move across borders, the tariff-induced wage increase will be undone by immigration (in other words, the price of labor will be equalized), and by the same logic, an immigration policy designed to protect domestic labor will be undone by free trade.

Even if a prohibitive tariff is not imposed, if labor migrates from the labor abundant country, the production of the exportable good will fall and the output of the importable sector will increase⁶. Trade liberalization should then reduce the incentives to migrate in the labor abundant country. This is all consistent with the so-called Heckscher-Ohlin model of international trade (Heckscher, 1919; Ohlin, 1967).

There are other pieces that seem to conclude that trade and immigration policies might not be

⁶This phenomenon can be explained by the Rybczynski theorem, which states that when one of two factors of production is increased there is a relative increase in the production of the good using more of that factor. This leads to a corresponding decline in that good's relative price (Rybczynski, 1955).

perfect substitutes. Vandebussche (2000) while talking about trade and competition policy⁷ finds that in the presence of country specific institutions like trade unions, they are not policy substitutes. Competition policy in the presence of labor unions is insufficient to reduce labor market distortions, while international competition (trade liberalization) reduces both labor and production distortions (Vandebussche, 2000, 625). In the case of labor mobility, if domestic institutions exist, such as trade unions that restrict the employability of immigrants, then the effects of trade and immigration in the labor market would also be different.

Wellisch and Walz also conclude that, even without assuming factors are specific, rich countries (scarce in labor) prefer free trade policies over free migration. Their conclusion is that the trade does not change the international allocation of unskilled individuals who benefit from welfare programs, while the latter increases the proportion of unskilled labor in rich countries and decreases it in poor countries. Hence, the costs of redistribution programs for rich countries are higher in the free migration case. Therefore, they do not find surprising that rich countries prefer free trade over free migration (Wellisch and Walz, 1998, 1597).

Head and Ries (1998) explain how higher levels of immigration in a country might lead to higher levels of commerce. Because of their links to their home countries, they may realize lower costs associated with foreign trade and thereby be more likely to trade than non immigrants. In addition to their superior information on market opportunities, immigrants also bring preferences for particular varieties of foreign products and thus may increase the demand for home country imports (Head and Ries, 1998, 48). These authors' results suggest that in the Canadian case, a ten per cent increase in the stock of immigrants increases exports by 1-1.3 per cent and imports by 3.1-3.9 percent (Head and Ries, 1998, 53).

Furthermore, Hatton and Williamson (2005a) find that historically in labor scarce economies - such as the United States and most countries in Western Europe- open trade policies and open immigration politics are not found at the same time. While today's labor scarce economies have open trade and closed immigration policies while the opposite was true a century ago. The hypothesis that trade and immigration effects dilute each other is supported by Mundell (1957), who said that if we think about a country with scarce labor, if a country puts up a tariff to protect the scarce factor, in the absence of immigration, wages will increase. But if labor is allowed to move

⁷The elimination of monopolies.

across borders, the tariff-induced wage increase will be undone by immigration, and by the same logic, an immigration policy designed to protect domestic labor will be undone by free trade.

The fact that there is no systematic piece in Political Science analyzing whether these are substitutes or complements might be caused by some confusion about what each of them means. If we assume that the leader of a country is motivated to achieve a certain goal, there might be several different policies that will help her attain that goal. If there are multiple paths to success we can say the policies are substitutable since they all help the leader and can be substituted for one another (Bennett and Nordstrom, 2000, 34). If instead, these policies attain different goals, they are complements.

Therefore, the contribution of this paper to the current literature is two-fold. First, it moves the discussion from citizen preferences to actual policies approved in the legislature. Second, it adds trade models to the current discussion on immigration, and third, it helps to solve the discussion in Economics about whether immigration and trade are policy substitutes or complements.

2 The Stolper-Samuelson theorem meets immigration

There are two main models that are used to analyze the effects of trade on wages and the consequent formation of coalitions. One is the factor endowment model - represented by the Stolper Samuelson Theorem and the Heckscher Ohlin model- and the other is the specific factors model -better known as Ricardo Viner-. I will focus on the Stolper Samuelson instead of the Ricardo Viner since the former studies factor-level cleavages, while the latter focuses more on industry cleavages⁸. Since immigration is the movement of labor (regardless of skill levels)⁹, a factor level analysis using the Stolper Samuelson theorem is more germane.

The Stolper and Samuelson theorem states that:

"In almost any society, protection benefits owners of factors in which relative to the rest of the world, that society is poorly endowed, as well as producers who use that factor intensively. Conversely, liberalization harms those factors that, again relative to the rest of the world, the given society holds abundantly, and the producers who use those locally abundant factors intensively. Thus, in a society rich in labor but poor in capital, protection benefits capital and harms labor; and liberalization of trade benefits labor and harms capital." (Rogowski, 1989, 3).

⁸A Ricardian model on immigration can be found in Faini, de Melo and Zimmermann (1999).

⁹An interesting study on attitudes towards high-skilled immigration is Hanson, Schemme and Slaughter (2005)

In the case of immigration, we would expect individuals in the societies that use labor intensively to oppose immigration because of the threat of losing their jobs to immigrants or to see their wages reduced. However, the owners of those labor intensive industries would be in favor of immigration, and if there is a larger supply of workers, there would be an incentive to create more labor intensive industries, therefore creating new jobs in that region. For example, an assembly line worker in a region with abundant manufacture industry might fear the arrival of more workers. If the latter accept to work for a lower salary than him, he might lose his job. But, if there is a large number of assembly line workers in that region, investors from other places will have an incentive to build a factory in that region, therefore creating more job opportunities for manufacturing workers.

Given that industries as interest groups are influential, we would expect senators from states with abundance in labor intensive industries to favor immigration.

Additionally, if we consider a Hecksher-Ohlin framework¹⁰ we can differentiate between states abundant or scarce in low or high skill labor by considering them different factors of production, and predict that senators from states abundant in low skill labor will be more likely to favor immigration restrictions. Senators from states where high-skill labor is abundant are predicted to be less likely to vote in favor of immigration restrictions. That is also consistent with what has been found in previous research (Scheve and Slaughter, 2001; Hiscox and Hainmueller, 2007).

Furthermore, the Stolper-Samuelson model has been succesfully utilized to study other international economic issues. Milner and Tingley (2007) use this model to explain domestic politics of foreign aid. Moreover, Broz and Hawes (2006) explain congressional politics of financing the IMF in the United States case.

3 Case selection: The Senate in the 109th United States Congress

This paper will analyze if the Stolper-Samuelson framework is useful to explain immigration policy formation, focusing on the 109th U.S. Congress, and in particular in the Senate. There are several reasons to chose this case. First, the United States is a country relatively scarce in labor and abundant in capital, thus it is a receiver of immigrants. In a labor abundant economy, this phenomenon

¹⁰The Stolper Samuelson theorem is an extension of the Hecksher-Ohlin model. While the former analyzes the effect of two factors on wages (originally capital and labor (Ohlin, 1967)) the Stolper-Samuelson adds land to the analysis. However, they reach similar conclusions about the effect of trade in wages.

would not be as relevant, given that what we would observe there is emigration, not immigration.

Second, immigration was a *hot topic* during the framework where this Congress was in session - second half of 2005 and first half of 2006- when thirty seven bills related to immigration were discussed in the Senate only in the month of May 2006 (forty in the whole period), which provides enough data for analysis.

Third, as pointed out by Carruba et al. (2006) in the United States almost all legislative votes cast are roll-call votes (RCV), while in other cases only a fraction of the legislation is decided that way. While in those cases, a legislative analysis using only RCV would be biased because these votes are not a random sample of the universe of votes cast, in the United States that would not be the case since almost all the votes are RCV.

Fourth, midterm elections were only a few months ahead. Again, if senators are reelection seekers, an constituents vote retrospectively, legislators were particularly worried to send their voters a signal they were voting in favor of their interests. Gimpel and Edwards find that for previous elections - particularly the presidential election of 1994- immigration was not an issue on which people voted in the United States. They find that "*in most of the nation, immigration is not like abortion, school prayer, gay rights, gun control, or civil rights; issues that elicit such strong feelings that they override other influences* (Gimpel and Edwards, 1999, 43)."

However, in the same page they also report that back then seventy percent of Americans reported that they had never met an immigrant. Twelve years later, that might not be the case. The 2000 U.S. Census reported that the largest racial minority was Hispanic, and not African American, which might mean a higher proportion of Americans have met a foreign national. Moreover, the attacks of September 11, 2001 might have also increased awareness of the topic in the media. So it might be the case that in 2006 immigration was an issue just as divisive and relevant electorally as abortion or the others mentioned above.

Additionally, the Senate is a more convenient unit of analysis because some economic data is available only at the state or county level, not the district level¹¹.

¹¹In the United States, districts and counties do not coincide territorially.

3.1 Why roll-call voting instead of survey data?

A valid option would be to use survey data, as similar studies in the past have done. However, Hiscox (2006) proves for the case of trade politics that respondents given a pro-trade introduction are seventeen percent more likely to favor trade than those given an anti-trade framing. If that is the case also for immigration, as would be logical, we should be wary about using survey level data to study immigration. Particularly because, unless we write the survey questionnaire, we have no control of how the issue is framed. With legislative voting, however, we do not have that problem.

Vandoren (1990) argues that there are three sources of error in inferences made from roll calls. First, only a small fraction of legislative decisions are subject to roll-call votes. Second, even if the processes affecting roll-call approval did not differ from roll call passage, the parameters estimated from roll call data do not take into account the probabilities of those prior events. Finally, the unknown causes of roll-call occurrence are correlated with the unknown causes of the actual roll-call decision (Vandoren, 1990, 313).

Carruba et al. (2006) also point out that in some cases roll-call votes are not a representative sample of the universe of votes casted, and find evidence of strategic behavior in the decision to request RCV. However, in the United States non RCV are extremely rare, so these votes are not only a representative sample of all the legislative votes, but also practically tantamount the universe of votes casted.

Since I care here for the determinants of policy positions on immigration by senators and how they differ from those of their constituencies (as they were described by Scheve and Slaughter (2001) and others) floor votes are more adequate. If constituents are going to reward or punish their legislators because of immigration policy decisions, I assume they will take into account the final vote that decided the policy, more than the committee position (and only a few legislators are members in each committee).

To avoid issues of collinearity between either individuals or bills one option is to use a panel regression model. Nonetheless, in this case all the votes are casted in the same legislative period. However, there are other options. Hix and Noury (2007) construct an index that they use as dependent variable, which consists of the percentage of the immigration bills in the sample where the Member of Parliament voted in favor of immigration. However, there are more robust options,

such as an estimation of the ideal points of legislators on this issue using Item Response Theory.

4 Item Response Theory

The main quandary I am trying to answer is what determines the position of a Senator on immigration issues. By studying a single bill, as Fetzer (2006) does, we are running the risk that there is some unobservable characteristic of that bill that alters the decision of senators that is not related to immigration policy. Since we are increasing our observations we are reducing that probability. If we have a larger sample, and we use a panel dichotomous regression model, we can only predict the probability of each legislator to vote in favor or against a bill, but we cannot compare particular legislators since we do not have legislator specific parameters.

Moreover, if we use a methodology such as the one Hix and Noury (2007) use¹², we don't have a robust measure to compare among legislators. The reason for that is that some Senators miss votes more often than others to determine the policy positions. For example, a unanimous vote would be should not have any effect differentiating one senator from another. Hix and Noury are not taking that into account. If a certain Senator (A) votes only in one of the bills, and she votes in favor, she would have an index value of 100. However if another Senator (B) votes in all the bills in the sample, but votes against immigration in one, she would have a lower index value than the former, and we have no evidence that the ideal position of Senator B is really less pro-immigration than the one of Senator A. Additionally, if we follow the methodology of Hix and Noury (2007) every bill is considered to have the same weight over the ideal point estimate. That could lead to a biased measurement because some bills are more important than others. The same problem occurs if we pool the votes and fit a logit or probit model, as Jeong (2007) points out.

That is why an item response theory (IRT) model is a better option. These models were originated in educational testing, but we can apply them to estimate "ideal points", where what is being measured is not the ability of individuals and the difficulty of items, but rather positions of individuals and items on some scale of values. Typically, item response data consists of a set $X_{ij} : i = 1, \dots, I; j = 1, \dots, J$ of J discrete observations on each of i individual subjects. IRT models quantify individual i 's propensity to answer item j correctly (or in this case, the propensity

¹²They build an index which consists on the percentage of the bills where the legislator voted pro-immigration. However they only take into account six bills in different parliamentary periods.

of voting pro-immigration) based on the examinee's location θ_i on a latent proficiency scale, and the characteristics of the items captured by parameter β . We also assume independence of measure between subjects given proficiency (i.e. local independence), and independence of measures across subjects given θ (Patz and Junker, 1999, 149).

In specific, for binary response data, like roll calls in this case, the probability of a legislator (student) i ($i = 1, \dots, n_j$) in group j ($j = 1, \dots, J$) voting in favor of immigration (responding correct) to a bill (item) k ($k = 1, \dots, K$) is given by:

$$P(y_{ijk} = 1 | \theta_{ij}, a_k, b_k) = \Phi(a_k \theta_{ij} - b_k), \quad (1)$$

where $\Phi(\cdot)$ denotes the normal cumulative distribution function, and a_k and b_k are the discrimination and difficulty parameter of item k (Fox, 2007). The discrimination parameter captures the importance of the position of the ideal point in determining the senator's vote. If $a_k = 0$, the votes on bill k are purely random; and if it is very large in absolute value, then the relative position of the senator and the bill wholly determines the outcome. Changes in the sign modifies which senators are expected to vote pro and against immigration (Gelman and Hill, 2007, 317). The difficulty parameter can be thought of as the cut point of each vote (Jeong, 2007)¹³.

The item response theory models can be addressed from a maximum likelihood or Bayesian perspective. The frequentist approach treats ideal points as fixed but unknown parameters. In the Bayesian approach, in contrast, the unknown ideal points and parameters are treated as random variables and conditions upon the observed roll call data. Some advantages of the latter are that we do not need a large number of roll calls to obtain an ideal point estimate, while the maximum likelihood approach assumes asymptotic conditions. Also, the Bayesian approach, allows us to make probability statements of the form: "Kennedy is more likely to vote in favor of immigration than Talent". This is impossible from the frequentist perspective because the ideal point are fixed (Clinton, Jackman and Rivers, 2004). Furthermore, as Fox (2005) points out, a Bayesian approach has the advantage that computations for estimation can be based on MCMC methods, which circumvent the computation of high dimensional integrals. Moreover, the Bayesian approach gives

¹³Being precise, the cutpoint of a vote is $\frac{b_j}{a_j}$

the possibility of modeling all dependencies among variables and all sources of uncertainty (Fox, 2005, 150).

The Bayesian ideal point estimates can be calculated using a Markov Chain Monte Carlo (MCMC) Algorithm. The central idea of MCMC is to define a stationary Markov chain M_0, M_1, M_2, \dots with states $M_k = (\theta^k, \beta^k)$ and then simulate observations (i.e. states) from the Markov chain. The simulated observations are then used to make inferences about the parameters θ and β in the IRT model. For Bayesian inference we want to define the Markov chain in such a way that $\pi(\theta, \beta)$ turns out to be the posterior distribution $p(\theta, \beta|X)$ that we are interested in. The act of generating $\theta^{(k)}$ might seem strange, but conceptually it is similar to using sufficient statistics for θ for which there are typically not consistent estimators (Patz and Junker, 1999, 150-152).

The measurement of the ideal points can be interesting by itself. However, in this case the interest is on relations between the latent variable and other observed variables, in this case state level measures related to immigration. Therefore, the optimal model here is a multilevel IRT model, just like the one described by Fox (2007). The structural multilevel model defines the population model of the underlying latent variable. A sample of clusters indexed $j = 1, \dots, J$ is considered. A total N individuals, labeled $i = 1, \dots, n_j, j = 1, \dots, J$ are nested within clusters. Consider at the first level, the latent variable θ and Q covariates denoted as x . In the second level, covariates are denoted as w . This corresponds with the following structural model:

Level 1:

$$\theta_{ij} = \beta_{0j} + \beta_{1j}x_{1ij} + \dots + \beta_{qj}x_{qij} + \beta_{Qj}x_{Qij} + e_{ij} \quad (2)$$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}w_{1j} + \dots + \gamma_{0s}w_{sj} + u_{0j} \quad (3)$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}w_{1j} + \dots + \gamma_{1s}w_{sj} + u_{1j} \quad (4)$$

$$\vdots = \vdots \quad (5)$$

$$\beta_{Qj} = \gamma_{Q0} + \gamma_{Q1}w_{1j} + \dots + \gamma_{Qs}w_{sj} + u_{Qj}, \quad (6)$$

where $e_{ij} \sim N(0, \sigma^2)$, and $u_j \sim N(0, T)$.

A common normal prior is specified for the item parameters of the normal ogive response model. A Gibbs sampling algorithm is used to simulate draws from the conditional distribution for binary response data. Each sampler produces a sequence of random variables that converge in distribution to the joint posterior distribution (Fox, 2007, 3-5).

Even though this methodology was developed in educational sciences, it has been used often in Political Science. Some examples of this are Rosas (2006), Bailey (2001), Bailey and Brady (1998), Clinton, Jackman and Rivers (2004), and Martin and Quinn (2002) among many others¹⁴.

5 Hypotheses

In this section I will describe the hypotheses of the paper and their source. In the appendix I will describe the operationalization of every variable and the source of the data¹⁵.

First, we would expect senators from states where a high proportion of their gross domestic product is due to manufacture to be **more likely** to have an ideal policy position favoring immigration. Manufacture is a labor-intensive sector, so it tends to locate in regions where labor is abundant. This is also consistent with the historical findings of Kim who finds that in the period between 1850 and 1920¹⁶ firms in counties with a higher share of foreign-born population were much more likely to be organized as factories and that firms in those counties were also more likely to pay higher average wages to their workers (Kim, 2007, 9).

Second, senators from states where a high proportion of the gross domestic product is due to trade, and particularly exports are expected to be **less likely** to favor immigration. Following Mundell and Rybczynski, we would expect that if trade and immigration policies are substitutes, then the effects on wages of trade liberalization would be diluted by immigration.

¹⁴In this paper, the IRT model was estimated using MCMCpack (<http://mcmcpack.wustl.edu>) and the R code used for this paper can be found in the Appendix 2., where the priors and the errors are assumed to have a normal distribution. The program for hierarchical IRT in MCMCpack was written by Michael Malecki (malecki.wustl.edu) and is in the process of joining MCMCpack officially.

¹⁵The data was entirely compiled by the author, so any suggestions of better sources or operationalization of the hypotheses are very welcome.

¹⁶Hatton and Williamson (2005b) call this the first wave of mass migration.

Third, senators from states abundant in high-skilled labor (manufacture) are **more likely** to have an ideal position favorable to immigration, according to the findings at the individual level of Hiscox and Hainmueller, Scheve and Slaughter, and the conclusions derived from the Roy model (Roy, 1951).

5.1 Political and demographic hypotheses

There are some other factors that might affect senators' policy decisions on immigration policy that should also be considered. It is predicted that a high unemployment rate in the state will make senators **less likely** to be pro-immigration. Also, Republican senators are expected to be **less likely** have a policy stand that favors immigration, since the proposals to restrict immigration came from members of that party. Finally, we would expect that the shorter the distance to the Mexico-US border, the **less likely** senators are to favor of immigration.

Some variables are predicted to have no significant effect. We would expect the proportion of foreign born population in the state has no significant effect. This contrasts with Goldin who finds that variable to be significant at the congressional level in the beginning of the XX Century. Also, the median income of the constituency of a senator is not predicted to have significant effect on her likelihood to vote for immigration reform. This is a control variable to show that the effect of education is still significant when including income.

I also expect senators from states that are heavily urban to be **more likely** to vote pro immigration because immigrants tend to establish in cities more than in rural areas as argued by Kim (2007) and Ottaviano and Peri (2006).

Finally, we should expect senators from states with high unemployment rates to be **less likely** to vote pro-immigration, following Bentolila, Dolado and Jimeno (2007) who argues that the flattening of the Philips curve¹⁷ in recent years in Spain was due to a larger immigration flow. Also, ? argue that one of the economic determinants of immigration preferences in the United States is unemployment.

¹⁷The Philips curve shows that there is an inverse relation between unemployment and inflation.

6 Empirical testing of the hypotheses

6.1 Statistical analysis

Table 1: Statistical Summary

<i>Variable</i>	<i>Minimum</i>	<i>1st quartile</i>	<i>Median</i>	<i>Mean</i>	<i>3rd quartile</i>	<i>Maximum</i>
Republican	0	0	1	0.55	1	1
Manufacture	0	9	11	11.96	16	28
College	16.90	23.30	25.65	26.58	29.30	36.90
Unemployment	2.4	3.5	4.3	4.356	5	6.9
Exports	1.008	4.25	5.443	6.245	7.202	18.383
Foreign	1.072	2.878	5.012	7.295	10.864	26.17
Income	36.484	43.654	48.625	49.025	53.457	65.521
Distance	258.11	1197.91	1616.63	1773.672	2418	4178
Urban	38.2	60.5	71.5	71.694	86.1	94.4

And the correlation between variables is:

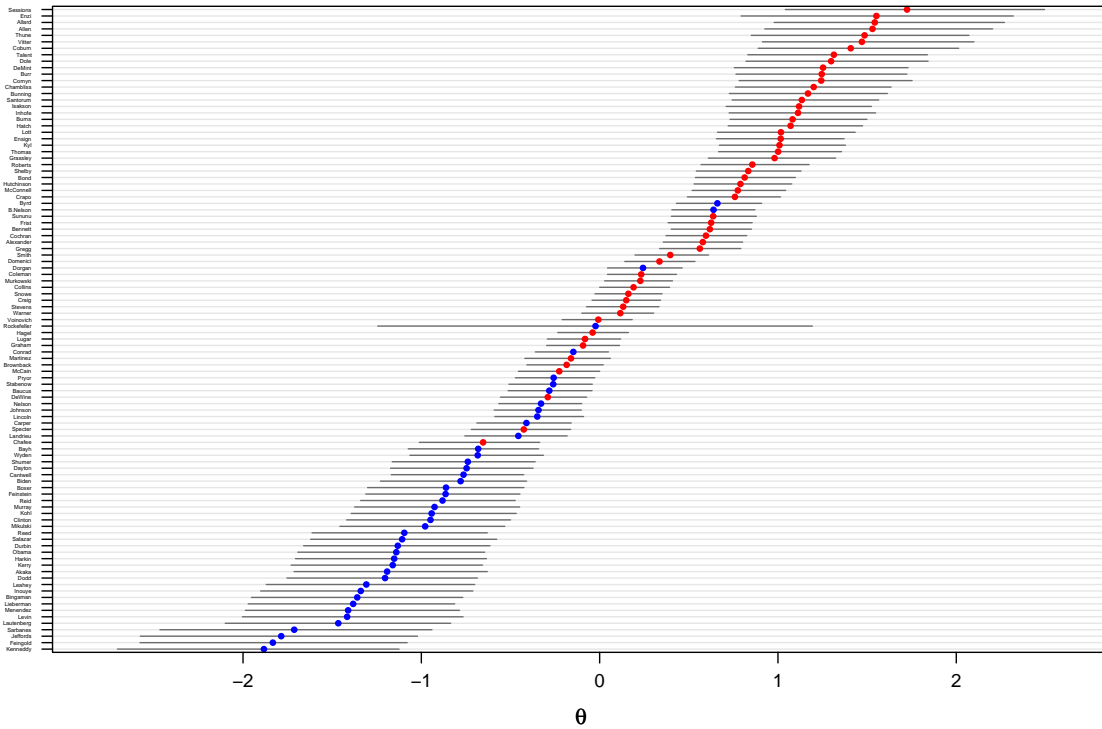
Table 2: Correlation table

	<i>Republican</i>	<i>Manufacture</i>	<i>Exports</i>	<i>Foreign</i>	<i>College</i>	<i>Income</i>	<i>Unemployment</i>	<i>Distance</i>	<i>Urban</i>
<i>Republican</i>	1.000								
<i>Manufacture</i>	0.2190	1.000							
<i>Exports</i>	-0.0385	0.4410	1.0000						
<i>Foreign</i>	-0.2812	-0.4802	-0.1126	1.0000					
<i>College</i>	-0.2440	-0.4869	-0.1301	0.4722	1.0000				
<i>Income</i>	-0.0326	0.1831	0.0892	-0.2213	-0.3222	1.0000			
<i>Unemployment</i>	0.0647	0.4052	0.3463	-0.0118	-0.3594	0.0692	1.0000		
<i>Distance</i>	-0.2619	-0.0894	-0.0449	0.1002	0.3840	-0.0818	0.0194	1.0000	
<i>Urban</i>	-0.1864	-0.2265	0.0280	0.4683	0.4261	-0.1926	0.0060	1.0000	

6.2 Ideal Point Estimates

Figure 1 presents the credible intervals for the ideal point estimates θ . The red represents Republicans and the blue Democrats. The lower the ideal point, the more pro-immigration is the ideal point.

Figure 1: Ideal points on Immigration Policy



As it is possible to see if figure 4, even though the party of the senator is an important determinant of a senator’s ideal point on immigration, it is certainly not the only important variable. There are Senators from both political parties that have anti and pro immigration ideal points.

The most anti-immigration Senator is a Republican junior senator from Alabama, Jeff Sessions, which happens also to be from one the states with the lowest proportion of population holding a college degree. The Senator with a less anti-immigration ideal point is Senator Tedd Kennedy, from Massachusetts, one of the states with the highest average education level.

The median Senator is a Democrat, Jay Rockefeller from West Virginia, who has a large credible interval. Close to him are Voinovich (R-OH) and Hagel (R-NE).

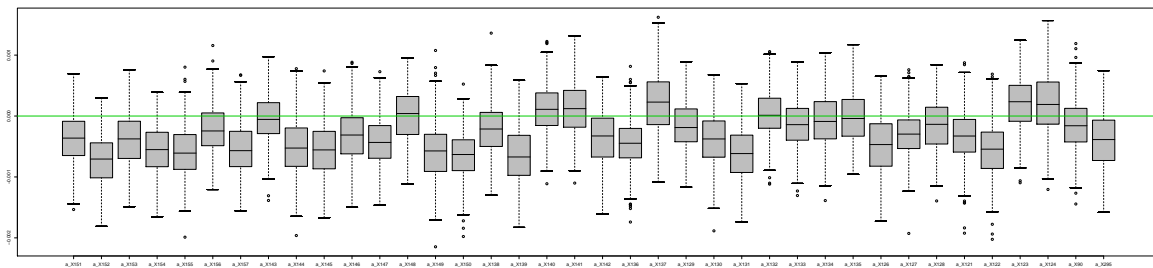
6.3 Bill parameters

The advantage of using an item response model is that we not only have parameters for the covariates, but also for the specific bills. In the 109th Congress (2005-2006) in the Senate there were 38 non-unanimous bills related to immigration. The bill specific results of the model are the

discrimination and difficulty parameters.

6.3.1 Discrimination Parameters

Figure 2:

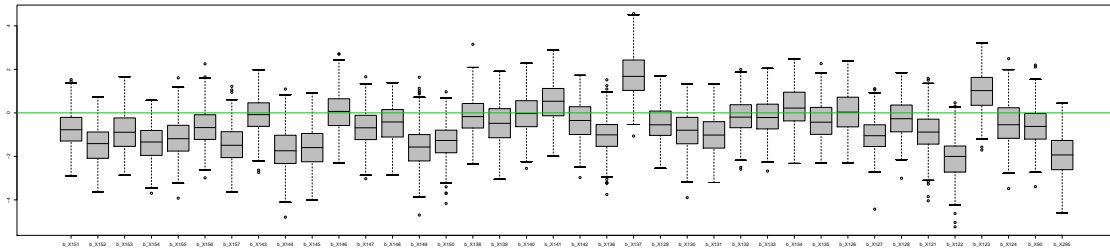


The gray boxes represent 95% credible intervals of the discrimination parameters, and the green horizontal line is $y = 0$. All of the 95% credible intervals cross zero. That means substantively that the senators are almost randomizing when determining their vote. However, in their absolute value, not all votes seem to matter the same for the estimation of senators' ideal points. It could be the case that there is a second dimension in this space, and it might be interesting to test that in the future. However, the discrimination parameters still provide us with very relevant information in this case:

1. The weight of all the bills on the ideal points is not the same. This is why a methodology such as the one utilized Hix and Noury, where an average is used to build an index, might lead to biased results.
2. The direction of the effect a bill has on the ideal point of the senators is not the same in all cases.

6.3.2 Difficulty Parameters

Figure 3:

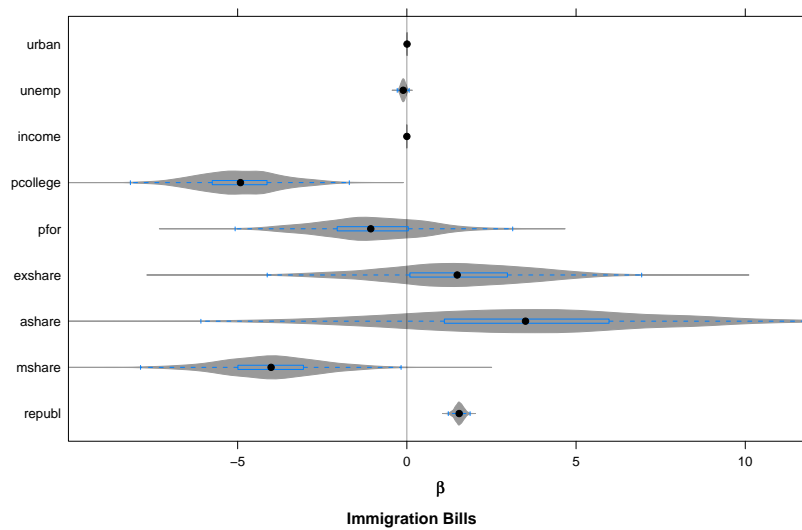


Again, the credible intervals of the difficulty parameters' posterior distribution all cross zero, indicating a potential second dimension. Also, since all the votes are on the same topic, the senators know what the votes are about.

6.4 Results for explanatory variables

The results of the hierarchical IRT for the covariates are as follow¹⁸:

Figure 4:
Predictors of Senators' Voting Behavior



¹⁸Following the recommendations of Kastellec and Leoni (2006) they are presented in a graphical format, instead of reporting only the means of the posteriors. The key is that if the credibility intervals cross zero, the variable is not statistically significant.

6.5 Non-economic variables

Just as in the case of the European Parliament shown by Hix and Noury (2007) immigration policy is highly political, and partisan. Being a member of the Republican Party makes a senator significantly less likely to be pro-immigration. Contrary to Gimpel and Edwards (1999) conclusions for the 1990's, immigration seems to be an issue as divisive as abortion or gun possession in the United States. Being a Republican makes a senator more likely to have a less favorable policy position on immigration. An interesting result is the contrast with Jeong (2007), who finds Republicans significantly more likely to have a pro trade liberalization ideal point.

The percentage of Foreign population is clearly not a significant variable. The 95% credible interval of the posterior distribution crosses around zero¹⁹. The inclusion of this variable does not take out the statistical significance of the economic variables, this contrasts with what Goldin found for the first immigration wave in the United States. It might be the case that Senators from states with a high proportion of foreign born dwellers worry about their reelection. And it could be the case that the families of those people can vote and would punish anti-immigrant policies being enacted by their Senators.²⁰

6.6 Economic variables

However, the most important and consistent results are that factor endowment models (particularly Stolper and Samuelson (1941)) seem to explain why Senators vote for certain immigration policies. Consistent with what Scheve and Slaughter (2001) and Hiscox and Hainmueller (2007) find at the individual level, senators from states where low-skill labor is abundant (and thus the percentage of adults with college degrees is low) tend to be more prone to choose restrictive migration policies than their counterparts elected in states abundant in high skill.

The proportion of the gross domestic product in the state that is due to manufacturing activities is a significant factor that influences the ideal point of senators on immigration. The more manufacture there is in the state, the more likely is that a senator from that state will have a pro-immigration ideal point. This goes in line to what we would infer from the Stolper-Samuelson

¹⁹The same analysis was made using the proportion of population of Hispanic origin in the state, and the results were the same

²⁰It is important to mention that the same variables that were significant using hierarchical IRT, were significant using the same research design of Hix and Noury (2007) and using a panel probit, with the exception of "exports".

theorem. States where manufacture is large are relatively abundant in labor, hence a shock of immigration will increase the returns to labor in that area. This results also go in concordance to the findings of Kim (2007).

A very interesting result is that states whose economy relies heavily on exports are not necessarily more likely to have senators whose ideal policy point is anti-immigration. This seems to imply that immigration and trade are not policy substitutes, but policy complements. If we assume that the leader of a country is motivated to achieve a certain goal, there might be several different policies that will help her attain that goal. If there are multiple paths to success we can say the policies are substitutable since they all help the leader and can substituted for one another (Bennett and Nordstrom, 2000, 34). If instead, these policies attain different goals, they are complements.

In short, as O'Rourke and Williamson find, the Hecksher-Ohlin model makes the unambiguous statement that trade and factor mobility are substitutes. However, in the absence of factor mobility, trade can serve to equalize factor prices internationally. In the presence of factor mobility, trade might disappear altogether. If immigration disturbs egalitarian distributions creating labor abundance at the bottom of the distribution, immigration quotas will cause more trade and "unfair" competition from unskilled labor, making labor-intensive goods in distant lands of labor surplus from which they can no longer emigrate. If rich countries "protect" their workers with labor restrictions, they will attract more immigrants since opportunities for producing labor-intensive export goods at home will have dried up (O'Rourke and Williamson, 1999, 267).

Moreover, the model shows that senators from states where a higher proportion of the population has a college degree have a less anti-immigration policy position. That coincides with the findings at the individual level of Hiscox and Hainmueller (2007) and Scheve and Slaughter (2001). The latter paper attributes that to the wage effects of the Stolper-Samuelson model while the former does not. Whether the labor effects determine the significance of this covariate is hard to test since we are not working with survey data, like Hiscox and Hainmueller so we cannot separate the effects.

However, the level of unemployment is also a significant variable, just as in the case of Hix and Noury (2007). Senators from states with higher levels of unemployment are more likely to have a pro immigration ideal policy point. This goes against Hix and Noury (2007) findings for the European case using a different methodology. That means Scheve and Slaughter (2001) findings

about the attitudes towards immigration at the individual level are consistent with those of their legislators.

7 Conclusions

As predicted, immigration restrictions are not a racial phenomenon, but a political economy one. The proportion of foreign-born population in the state is not statistically significant, nor is it the distance from the border, however, both the factor endowment of the population of the state of origin and the skill level significantly change the probability of voting in favor of immigration restrictions. Given the results of those that have studied individual attitudes towards immigration -Hiscox and Hainmueller (2007), Scheve and Slaughter (2001), Bilal, Grether and de Melo (2003), and others- who found evidence that the Stolper-Samuelson theorem explains individual attitudes towards immigration we can conclude that legislators' positions reflect the preferences of their constituents. Moreover, the fact that the effect of skill in the direction of the senatorial votes is so dramatic gives support to the Roy model (Roy, 1951), that is not used very frequently in Political Science. It seems that immigration policy, at least in the models that predict it, is indeed trade by other means. This paper also proves the usefulness of importing models utilized in the trade literature to other similar phenomena in International Political Economy.

This work contributes to the literature by bringing policy to the discussion along with individual preferences, along with the utilization of trade models to explain immigration policy.

The research agenda in immigration policy studies in International Political Economy is wide. As Goldin (1993) states, proposals of immigration reform in the United States seem to come when there are either foreign crises or economic stagnation. However, it would be relevant to ask, if it is only a diversionary tactic, why there seems to be a clear pattern of vote determinants? Also, it would be germane to study other cases of labor-scarce countries. As Hiscox and Hainmueller (2007) shows, the European Union is a particularly fertile ground to study immigration.

Finally, this work contributes marginally to the understanding of immigration policy decisions in an immigrant *receiver* country, but it would be useful also to analyze immigrant *sender* countries and their policy decisions regarding this topic. Since their factor endowment is different, as in trade, we would expect different political coalitions to form.

In methodological terms, the next step would be certainly to model more than one dimension and increase the time span of the database. However, the improvement from using a model that pools the data is important, and using item response theory models is a step in the right direction.

8 Appendix 1

Variables	Operationalization	Source
Republican	0: Democrat, 1: Republican	Lexis-Nexus Congress
Manufacture	Percentage of GDP due to manufacture 2005	US Economic Census
Agriculture	Percentage of GDP due to agriculture 2005	US Economic Census
Exports	Percentage of GDP due to exports 2005	US Economic Census
Foreign	Percentage of Foreign born population 2000	US Census 2000
College	Percentage of population 25 + with a BA	US Census 2000
Income	Median family income in 1999 divided by 1000	US Census 2000
Unemployment	Average unemployment rate 2005	Bureau of Labor Statistics
Distance	Distance from the capital of the state to one of the 5 main border stations in the U.S.-Mexico border	Google Earth
Urban	Percentage of the state population that lives in cities	American Community Survey 2006

References

- Bailey, Michael. 2001. "Quiet Influence: The Representation of Diffuse Interests on Trade Policy, 1983-94." *Legislative Studies Quarterly* XXVI (February):45-80.
- Bailey, Michael, and David W. Brady. 1998. "Heterogeneity and Representation: The Senate and Free Trade." *American Journal of Political Science* 42 (April):524-544.
- Bennett, Scott D., and Timothy Nordstrom. 2000. "Foreign Policy Substitutability and Internal Economic Problems in Enduring Rivalries." *Journal of Conflict Resolution* 44 (February):33-61.
- Bentolila, Samuel, Juan J. Dolado, and Juan F. Jimeno. 2007. Does Immigration Affect the Phillips Curve? Some Evidence for Spain. Discussion Paper 3249 Institute for the Study of Labor (IZA) Bonn, Germany: .
- Bilal, Sanoussi, Jean-Marie Grether, and Jaime de Melo. 2003. "Attitudes Towards Immigration: A Trade Theoretic Approach." *Review of International Economics* 11 (2):253-267.
- Borjas, George J. 1999. *Heaven's Door. Immigration Policy and the American Economy*. Princeton University Press.
- Broz, Lawrence, and Michael Brewster Hawes. 2006. "Congressional Politics of Financing the International Monetary Fund." *International Organization* 60 (Spring):367-399.
- Camarota, Steven A. 1998. "Immigration: Trade by Other Means?" *Immigration Review* 31.
- Carruba, Clifford J., Mathew Gabel, Lacey Murrah, Ryan Clough, Elizabeth Montgomery, and Rebecca Schambach. 2006. "Off the Record: Unrecorded Legislative Votes, Selection Bias and Roll-Call Vote Analysis." *British Journal of Political Science* 36:691-704.
- Citrin, Jack, Donald P. Green, Christopher Muste, and Cara Wong. 1997. "Public Opinion Toward Immigration Reform: The Role of Economic Motivations." *Journal of Politics* 59 (August):858-81.
- Clark, Ximena, Timothy J. Hatton, and Jeffrey G. Williamson. 2002. Where Do U.S. Immigrants Come From, and Why? Working Paper 8998 NBER.
- Clinton, Joshua, Simon Jackman, and Douglas Rivers. 2004. "The Statistical Analysis of Roll Call Data." *American Political Science Review* 98 (May):355-370.
- Faini, Riccardo, Jaime de Melo, and Klaus F. Zimmermann, eds. 1999. *Migration. Controversies and Evidence*. Cambridge University Press.
- Fetzer, Joel S. 2006. "Why Did House Members Vote for H.R. 4437?" *International Migration Review* 40 (3):698-706.
- Fox, Jean-Paul. 2005. "Multilevel IRT using Dichotomous and Polytomous Items." *British Journal of Mathematical and Statistical Psychology* 58:145-172.
- Fox, Jean-Paul. 2007. "Multilevel IRT Modelling in Practice with the Package mlirt." *Journal of Statistical Software* 20 (May):1-16.
- Gelman, Andrew, and Jennifer Hill. 2007. *Data Analysis Using Regression and Multi-level/Hierarchical Models*. Analytical Methods for Social Research Cambridge University Press.

- Gimpel, James G., and James R. Edwards. 1999. *The Congressional Politics of Immigration Reform*. Allyn and Bacon.
- Goldin, Claudia. 1993. "The Political Economy of Immigration Restriction in the United States, 1890 to 1921." *National Bureau of Economic Research* 4345.
- Hanson, Gordon H., Kenneth Scheve, and Matthew J. Slaughter. 2005. Individual Preferences over High-Skilled Immigration in the United States. In *Conference on Skilled Migration*.
- Hatton, Timothy J., and Jeffrey G. Williamson. 2005a. "A Dual Policy Paradox: Why have trade and immigration policies always differed in labor-scarce economies?" *NBER* .
- Hatton, Timothy J., and Jeffrey G. Williamson. 2005b. *Global Migration and the World Economy. Two Centuries of Policy and Performance*. The MIT Press.
- Head, Keith, and John Ries. 1998. "Immigration and trade creation: econometric evidence from Canada." *Canadian Journal of Economics* XXXI (February):47-62.
- Heckscher, Eli. 1919. "The Effect of Foreign Trade on the Distribution of Income." *Ekonomisk Tidskrift* .
- Hiscox, Michael J. 2006. "Through a Glass and Darkly: Attitudes Toward International Trade and the Curious Effects of Issue Framing." *International Organization* 60:755-780.
- Hiscox, Michael J., and Jens Hainmueller. 2007. "Educated Preferences: Explaining Attitudes Toward Immigration in Europe." *International Organization* 61:399-442.
- Hix, Simon, and Abdul Noury. 2007. "Politics, Not Economic Interests: Determinants of Migration Policies in the European Union." *International Migration Review* 41:182-205.
- Jeong, Gyung-Ho. 2007. "Constituent Influence on International Trade Policy in the United States, 1987 to 2006." Washington University in Saint Louis.
- Kastellec, Jonathan P., and Eduardo Leoni. 2006. Using Graphs Instead of Tables to Improve the Presentation of Empirical Results in Political Science. Technical report Columbia University and Society of Political Methodology.
- Kim, Sukkoo. 2007. "Immigration, Industrial Revolution and Urban Growth in the United States, 1820-1920: Factor Endowments, Technology and Geography." Washington University in Saint Louis and NBER.
- Luke, Douglas A. 2004. *Multilevel Modeling*. Number 143 in "Quantitative Applications in Social Sciences" Sage Publications.
- Martin, Andrew D., and Kevin M. Quinn. 2002. "Dynamic Ideal Point Estimation via Markov Chain Monte Carlo for the U.S. Supreme Court, 1953-1999." *Political Analysis* 10:134-153.
- Medina, Mariana, and Andrew Sobel. 2008. "Trade, Migration and Outsourcing: Using Economic Policy Substitutes to Demonstrate the Existence of a Non-Economic Dimension." Paper presented at the Annual Meeting of the American Political Science Association.
- Milner, Helen V., and Dustin H. Tingley. 2007. "The Domestic Politics of Foreign Aid: American Legislators and the Internationalist Coalition." Princeton University.

- Mundell, Robert A. 1957. "International Trade and Factor Mobility." *American Economic Review* 47 (3):321–335.
- Ohlin, Bertil. 1967. *Interregional and International Trade*. Harvard University Press.
- O'Rourke, Kevin H., and Jeffrey G. Williamson. 1999. *Globalization and History. The Evolution of a Nineteenth-Century Atlantic Economy*. MIT Press.
- Ottaviano, Gianmarco I.P., and Giovanni Peri. 2006. "The economic value of cultural diversity: Evidence from US cities." *Journal of Economic Geography* 6 (January):9–44.
- Patz, Richard J., and Brian W. Junker. 1999. "A Straightforward Approach to Markov Chain Monte Carlo Methods for Item Response Models." *Journal of Educational and Behavioral Statistics* 24 (Summer):146–178.
- Rogowski, Ronald. 1989. *Commerce and Coalitions. How Trade Affects Domestic Political Alignments*. Princeton University Press.
- Rosas, Guillermo. 2006. "Bagehot or Bailout? An Analysis of Government Responses to Banking Crises." *American Journal of Political Science* 50:175–191.
- Roy, A.D. 1951. "Some Thoughts on the Distribution of Earnings." *Oxford Economic Papers* 3:135–146.
- Rybczynski, T. M. 1955. "Factor Endowment and Relative Commodity Prices." *Economica* 22:336–341.
- Scheve, Kenneth F., and Matthew J. Slaughter. 2001. "Labor Market Competition and Individual Preferences over Immigration Policy." *The Review of Economics and Statistics* 83:133–145.
- Stolper, Wolfgang F., and Paul Samuelson. 1941. "Protection and Real Wages." *The Review of Economic Studies* 9:58–73.
- Vandenbussche, Hylke. 2000. "Trade Policy versus Competition Policy: Substitutes or Complements?" *De Economist* 148 (December):625–642.
- Vandoren, Peter M. 1990. "Can We Learn the Causes of Congressional Decisions From Roll-Call Data?" *Legislative Studies Quarterly* XV:311–340.
- Wellisch, Dietmar, and Uwe Walz. 1998. "Why do rich countries prefer free trade over free migration? The role of the modern welfare state." *European Economic Review* 42:1595–1612.
- Williamson, Jeffrey G. 2004. *The Political Economy of World Mass Migration. Comparing Two Global Centuries*. American Enterprise Institute for Public Policy Research.