Do Interest Groups affect US Immigration Policy?*

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May 9, 2011

Abstract

While anecdotal evidence suggests that interest groups play a key role in shaping immigration policy, there is no systematic empirical analysis of this issue. In this paper, we construct an industry-level dataset for the United States, by combining information on the number of temporary work visas with data on lobbying activity associated with immigration. We find robust evidence that both pro- and anti-immigration interest groups play a statistically significant and economically relevant role in shaping migration policy across sectors. Barriers to migration are lower in sectors in which business interest groups incur larger lobbying expenditures and higher in sectors where labor unions are more important.

JEL classification: F22, J61.
Keywords: Immigration, Immigration Policy, Interest Groups, Political Economy.

*We would like to thank seminar participants at the AEA Meetings in New Orleans, CEPR IZA Conference on Labor Economics, CEPR Conference on "Transnationality of Migrants" (Riga), University of Colorado at Boulder, Erasmus University Rotterdam, University of Essex, University of Geneva, Georgetown University, Hong Kong University of Science and Technology, Institut d'Analisi Economica, IMF, IZA–World Bank Conference on Employment and Development, London School of Economics, Luca D'Agliano Spring Conference, Midwest International Trade Meetings (Ann Arbor, MI), Midwest Political Science Meetings, PET 2009 Galway Conference, University College London (CREAM), Università degli Studi di Milano, Università degli Studi di Milano–Bicocca, University of Nottingham, Universitat Pompeu Fabra, Università di Roma Tor Vergata, University of Sussex, World Bank Research Department, and Yale University for useful comments. Jose Manuel Romero provided excellent research assistance. We would also like to thank James Fitzsimmons at the USCIS for kindly providing data on visas and Julia Massimino who works for the House Judiciary Committee for sharing with us details on the working of US immigration policy. We especially thank the editor and two anonymous referees for suggestions that substantially improved the paper. A supplemental appendix to this article is available at http://www.prachimishra.net.

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"Immigration policy today is driven by businesses that need more workers — skilled and unskilled, legal and illegal." Goldsborough (2000)

1 Introduction

On May 1, 2006, over a million demonstrators filled US TV screens. They were mainly Latinos, who marched peacefully through America's cities in the hope that Congress would finally introduce legislation to overhaul the country's immigration policy. A year later, a bipartisan legislation was proposed by Senators Kennedy and Kyl but, since it was unveiled, "it has been stoned from all sides "(The Economist, May 24, 2007). Even though many observers have deemed the status quo unacceptable, no measures have been voted yet.

What determines US immigration policy today? In particular, are political-economy factors important in shaping immigration to the United States? What is the role played by industry-specific interest groups? In this paper, we address these issues by analyzing the impact of political organization by business lobbies and workers' associations on the structure of U.S. migration policy across sectors between 2001 and 2005. This paper represents, to the best of our knowledge, the first study to provide systematic *empirical* evidence on the political-economy determinants of today's immigration policy in the U.S. and, in particular, on the role played by interest groups.

Trade and migration represent two of the main facets of international economic integration. A vast theoretical and empirical literature considers the political-economy determinants of *trade* policy trying to understand the forces that work against free trade.[1] In contrast, the literature on the political economy of migration policy is very thin and mainly theoretical.[2] This is in spite of the fact that, as trade restrictions have been drastically reduced, the benefits from the elimination of existing trade barriers are much smaller than the gains

[1] See Rodrik (1995), Helpman (1997), and Gawande and Krishna (2003) for excellent surveys of the trade literature.

[2] As Borjas (1994) has pointed out "the literature does not yet provide a systematic analysis of the factors that generate the host country demand function for immigrants." (page 1693.) After Borjas' survey, a few papers have analyzed the political economy of migration policy. Benhabib (1996) and Ortega (2005) develop models in which immigration policy is the outcome of majority voting, while Facchini and Willmann (2005) focus on the role played by pressure groups. The only paper that provides *indirect* empirical evidence on the political-economy determinants of current migration policy is Hanson and Spilimbergo (2001). The authors focus on U.S. border enforcement, showing that it softens when sectors using illegal immigrants expand. They suggest that "sectors that benefit greatly from lower border enforcement, such as apparel and agriculture, lobby heavily on the issue, while remaining sectors that benefit modestly or not at all are politically inactive." (page 636)

that could be achieved by freeing international migration.[3] This gap in the literature is very surprising and can be partly explained by unavailability of data. The purpose of this paper is to offer a contribution towards filling this gap.

There exists abundant anecdotal evidence which suggests that political-economy factors and, in particular, interest groups play a key role in shaping U.S. immigration policy (Hanson 2009 and Hatton and Williamson 2005). Starting from the very birth of organized labor and for most of their history, unions have been actively engaged in efforts to limit inflows of foreign workers. The enactment of the first legislative measure to systematically limit immigration from a specific country — the Chinese Exclusion Act of 1882 — was the result of the efforts of the newly founded Federation of Organized Trade and Labor Unions. One hundred years later, the AFL-CIO supported measures to reduce illegal immigration, that culminated in the 1986 Immigration Reform and Control Act.[4] Finally, during the recent debate on the shortage of nurses, the American Nurses Association has strongly opposed a measure to increase the number of H1-C visas, pointing out that "...the provision would lead to a flood of nurse immigrants and would damage the domestic work force" (New York Times, May 24 2006).

At the same time, complementarities among production factors are fundamental in understanding the behavior of pressure groups (Facchini and Willmann 2005). For instance, in the aftermath of the 2006 midterm elections, the vice-president of Technet, a lobbying group for technology companies, stressed that the main goal of the reforms proposed by her group is the relaxation of migration policy constraints (CIO, December 19 2006. Available at http://www.cio.com/article/27581/.)

In addition, new visa categories have been introduced as the result of lobbying activities. An interesting example is the case of H2R visas. In 2005, the quota for H2B visas was filled with none of them going to the seafood industry in Maryland.[5] This industry started heavy lobbying of the Maryland senator Barbara A. Mikulski, who was able to add a last-minute amendment to the Tsunami Relief Act (Cox News May 4, 2006). As a result, a new visa category was introduced – the H2R – whose requirements are the same as for H2B

[3] A recent World Bank study estimates that the benefits to poor countries of rich countries allowing only a 3 percent rise in their labor force by relaxing migration restrictions is US$300 billion per year (Pritchett 2006).

[4] Since the end of the nineties, the official position of US labor unions on migration has become more complex. For more on this issue, see Briggs (2001).

[5] H2B visas are for temporary workers in unskilled, seasonal, non-agricultural occupations (for example in the planting-pine-trees industry; the resort industry, the seafood industry, the gardening industry in the North of the United States etc.).

visas, but there is no quota. This has substantially expanded the number of temporary, non–agricultural workers allowed to enter the country.

To carry out our analysis, we use a new, U.S. industry–level dataset that we create by combining information on the number of temporary work visas across sectors with data on the political activities of organized groups, both in favor and against migration. The data set covers the period between 2001 and 2005. To capture the role played by organized labor, we use data on workers' union membership rates across sectors, from the Current Population Survey. In addition, and most importantly, we take advantage of a novel dataset developed by the Center for Responsive Politics, that allows us to identify firms' lobbying expenditures by targeted policy area. We are thus able to use information on expenditures that are specifically channeled towards shaping immigration policy. This represents a significant improvement in the quality of the data compared to the existing international economics literature which has used, instead, political action committees (PAC) contributions.[6] In fact, the latter represent only a small fraction (10%) of targeted political activity, the remainder being made up by lobbying expenditures. Furthermore, PAC contributions cannot be disaggregated by issue and, thus, cannot be easily linked to a particular policy.

Our empirical findings suggest that interest groups play a statistically significant and economically relevant role in shaping migration across sectors. Barriers to migration are – *ceteris paribus* – higher in sectors where labor unions are more important and lower in those sectors in which business lobbies are more active. Our preferred estimates suggest that a 10% increase in the size of lobbying expenditures per native worker by business groups is associated with a 3.1% larger number of visas per native worker, while a one-percentage-point increase in union density – for example, moving from 10 to 11 percentage points, which amounts to a 10% increase in union membership rate – reduces it by 3.1%. The results are robust to endogeneity issues which we address by introducing a number of industry-level control variables (e.g. output, prices, origin country effects, etc.), by performing a falsification exercise and, finally, by using an instrumental-variable estimation strategy.

The effects we estimate are the result of the use of a variety of policy tools. First, "visible" restrictions – like quotas – clearly have a fundamental impact. In particular, the existence (or lack) of quantitative restrictions applied to sector-specific visas (such as H1A and H1C for nurses, H2A for temporary agriculture workers etc.) affects the allocation of visas across sectors. Next, the government can use a number of other instruments, such as sector-specific regulations, to manage access to the labor market in an industry – what we call "invisible"

[6] See for example Goldberg and Maggi (1999) and Gawande and Bandyopadhyay (2000).

barriers.[7]

The remainder of the paper is organized as follows. Section 2 describes migration policy in the United States and provides the motivation for focusing on industry-specific aspects of U.S. migration policy. Section 3 presents the theoretical background and the empirical specification. Section 4 describes the data, while the results of our empirical analysis are reported in section 5. Finally, Section 6 concludes the paper.

2 Migration Policy in the United States

Two main channels are available for non–citizens to enter the United States legally: permanent (immigrant) and temporary (non–immigrant) admission. Individuals entering under the first category are classified as "lawful permanent residents" (LPR) and receive a "green card". They are allowed to work in the United States and may apply for citizenship. Foreigners entering the country as non immigrants are instead not allowed to work, with an exception made for those admitted under specific categories. Non immigrants cannot directly apply for naturalization as they first need to be granted LPR status.

Current policies identify an annual flexible quota of 416,000 to 675,000 "green cards" for individuals admitted through family–sponsored preferences, employment preferences and the diversity program.[8] More than 5.5 million non immigrant visas were instead issued on average per year between 2001-2005,[9] which can be broadly classified as "work and related visas" and "other admissions". The latter represent approximately eighty–five percent of the total, whereas 835,294 work and related visas were approved on average every year. Of these, 315,372 were issued to "Temporary workers", under well known visa categories like the H1B (workers of distinguished merit and ability), H1A & H1C (registered nurses and nurses in shortage area), H2A (workers in agricultural services), H2B (workers in other services), H3 (trainees) and H4 (spouses and children of temporary workers). The other work and related visas were assigned to, for example, "workers with extraordinary ability in the sciences, arts, education, business, or athletics " (O1, O2), "internationally recognized athletes or entertainers" (P1, P2, P3), "religious workers" (R1) and "exchange visitors" (J1). Table 1

[7] An example of an "invisible" barrier that acts as a form of protectionism is the set of rules that regulate the entry of foreign medical doctors in the US healthcare system (Bhagwati 2009). Another example of an "invisible barrier" is represented by the complex procedures that have to be followed by an employer to hire a temporary (often seasonal) agricultural worker under the H2A program.

[8] Immediate relatives (spouses and children of US citizens and parents of adult US citizens) are exempt from the annual numeric limits set for preferences. The same applies to refugees and asylum seekers.

[9] Notice that this number does not include individuals admitted under the visa waiver program.

reports the numbers of visas issued under each category.

Many work visa categories are subject to an explicit quota set by Congress,[10] as in the case of H1A, H1B and, up to 2005, H2B visas, and lobbying seems to play an important role in determining whether a program is covered or not by a quota. For instance, universities and government research laboratories were able to obtain a permanent exemption from the overall H1B quota starting in 2000. Analogously, the introduction in 2005 of the H2R visa category has in practice eliminated the quota for non- agricultural temporary workers (H2B).

In this paper we will focus on temporary non–immigrant visas and, in particular, on work visas. In other words, we will not use the number of employment–based green cards, because on the one hand they represent only a very small fraction of the overall number of LPR admitted every year[11] and on the other, the Department of Homeland Security does not make data available on employment–based green cards *by sector*, which is the level at which we carry out our analysis.

Looking at the wide variety of existing non–immigrant work visas, we can immediately notice that some categories are occupation/sector specific. For instance, H1A and H1C visas are for nurses, H2A visas are for temporary agricultural workers, R1 visas are for religious workers, P visas are for performing artists and outstanding sportsmen, etc. At the same time, other important categories cannot be immediately linked to a specific sector. This is true for instance for H1B, L1 and H2B visas. Anecdotal evidence suggests that the existence of a visa specific to a sector is often the result of the lobbying activities carried out by that particular sector. For example, H1C visas for nurses were introduced in 1999 as the result of fierce lobbying by hospitals and nursing homes. Similarly, the H-2 program was created in 1943 when the Florida sugar cane industry obtained permission to hire Caribbean workers to cut sugar cane.[12] On the other hand, many other sectors have been less successful in obtaining a program specifically targeted to their needs. Still, the intensive lobbying activity carried out by firms active in these sectors suggests that the policymaker's final allocation of visas issued under the H1B or H2B programs across sectors might be influenced by lobbying activities.

In addition, whether sector-specific quotas exist or not, the data suggest that lobbying on immigration takes place at the sectoral level, since the top contributors are often associations

[10] By quotas we mean the number of visas that policymakers set *ex ante*.

[11] In 2001, out of 1,064,318 individuals who were granted permanent resident status, only 179,195 (16.8% of the total) were admitted under the employment-preference category and this number even includes their spouses and children.

[12] Recently Congressman Anthony Weiner (NY) has proposed a bill to create a new visa category especially for models interested in working in the United States to benefit the New York fashion industry. See *The Economist* June 21, 2008 "Beauty and the geek".

representing specific industries, such as the American Hospital Association, the American Nursery and Landscape Association, the National Association of Homebuilders and National Association of Computer Consultant Businesses, etc. (See http://www.opensecrets.org.)

3 Empirical framework

The abundant anecdotal evidence discussed in the previous section shows that lobbying efforts are likely to have an impact on policy outcomes. In particular, it suggests that greater lobbying by organized labor increases the level of protection in an industry while increased lobbying efforts by organized business owners make migration policy in a sector less restrictive. However, the predictions of the existing theoretical models in the literature are less conclusive.

Two frameworks are particularly worth discussing. The first is the workhorse of the endogenous trade policy literature, i.e. the "protection for sale" model by Grossman and Helpman (1994). In this setting, organized sectors represented by a pressure group lobby the government for trade protection. The game takes the form of a menu auction a la Bernheim and Whinston (1986) and, importantly, what matters for the equilibrium policy is the *existence* of a lobby – in other words, the fact that the interests of some sectors are represented in the political process, whereas the interests of some others are not. In this framework, there is instead no general, straightforward relationship between the level of contributions paid by the organized groups and the policy outcome, as this relationship depends on the bargaining power of the players and on their outside options (Goldberg and Maggi 1999, Eicher and Osang 2002).[13, 14]

The second model worth mentioning is the "protection formation function" framework, which has been proposed by Findlay and Wellisz (1982) and has more recently been brought to the data by Eicher and Osang (2002). The goal of this model is to explain the trade policy formation process but, differently from the protection for sale setting, it postulates the existence of a direct link between a lobby's efforts and actual policy outcomes through a

[13] In general, some counterintuitive results might emerge. Consider for instance a trading economy made up by two sectors, A and B, in each of which a lobby representing the local producers is active. A is characterized by underlying parameters that make the welfare cost of a tariff low compared to B. As a result, the model predicts that sector A might enjoy a higher tariff than sector B, even if the total contributions paid by A are lower than those paid by B.

[14] Furthermore, the Grossman and Helpman (1994) model does not incorporate the important informational channel through which lobbies can influence policy. For models of informational lobbying, see Austen–Smith and Wright (1994) and Ludema, Mayda, and Mishra (2010) among others.

protection formation function. In each sector, two opposite interests compete: a protectionist lobby and a pro–trade lobby and both offer the politician contributions to sway policy in their favor. As very clearly shown by Helpman (1997), in this context it is possible to explicitly characterize the link between contributions and policy outcomes. In particular, in Eicher and Osang (2002) analysis, the protection formation function is assumed to be convex, implying that in equilibrium we have the intuitive result that higher contributions by the protectionist lobby lead to more protection, and higher contributions by the pro–trade group result instead in lower tariffs. However, also in this setting, as argued by Young (1982) and Helpman (1997),[15] the sign of the relationship between contributions and policy outcomes crucially depends on the specific functional form taken by the protection formation function, and no general conclusion can be reached.

These two standard models – and many others in the literature – thus suggest that assessing the link between lobbying efforts and policy outcomes is essentially an empirical question. Several contributions have looked at the direct impact of pressure groups' activities in several important policy areas (other than migration). In the context of the recent mortgage crisis, Mian, Sufi, and Trebbi (2010) have found that the financial industry's political action committee contributions have had an important positive effect on US Congressmen's support for the Emergency Economic Stabilization Act of 2008.[16] Looking at tax policy, Richter, Samphantharak, and Timmons (2009) have instead shown that, in the United States, publicly traded firms that spend more on lobbying in a given year pay substantially less taxes the following year. Focusing on trade in services, Gawande, Maloney, and Montes-Rojas (2009) have argued that lobbying by Caribbean countries in the United States has a positive effect on U.S. tourist flows towards these countries.

In this paper, we are interested in assessing the effect of lobbying efforts in shaping US immigration policy and, in order to carry out our analysis, we adopt a framework similar to the one developed by this recent literature. In particular, we estimate the following equation:

$$M_i = \beta_K E_{K,i} + \beta_L E_{L,i} + \gamma \mathbf{X}_i + \eta_i \tag{1}$$

where M_i is the number of work and related visas allocated to sector i, $E_{K,i}$ and $E_{L,i}$ are respectively a measure of the intensity of the lobbying activities carried out by firms and unions, and $\mathbf{X}_i$ is a vector of sector specific controls. The existing theoretical literature

[15] We would like to thank one of the referees for highlighting this point.

[16] For another interesting study on the effects of lobbying during the financial crisis, see Igan, Mishra, and Tressel (2011).

discussed above suggests that lobbying expenditures might be endogenous and, as a result, we will implement an instrumental variable strategy in section 5.2.

4 Data

In this section we first provide background information on lobbying expenditures. Next, we describe the sources of the other data we use in the empirical analysis. Finally, we present summary statistics for the main variables used in the regressions.

4.1 Lobbying expenditures

In the United States, special interest groups can legally influence the policy formation process by offering campaign finance contributions or by carrying out lobbying activities.[17]Campaign finance contributions and, in particular, contributions by political action committees (PAC) have been the focus of the literature (see for example Snyder 1990, Goldberg and Maggi 1999, Gawande and Bandyopadhyay 2000). Yet PAC contributions are not the only route by which interest groups can influence policy makers and, given the existing limits on the size of PAC contributions, it is likely that they are not the most important one. In particular, it has been pointed out that lobbying expenditures are of "... an order of magnitude greater than total PAC expenditure" (Milyo, Primo, and Groseclose 2000). Hence, it is surprising that so few empirical papers have looked at the effectiveness of lobbying activities in shaping policy outcomes.[18]One important reason for this relative lack of interest is that, while PAC contributions data has been available for a long time, only with the introduction of the Lobbying Disclosure Act of 1995, individuals and organizations have been required to provide a substantial amount of information on their lobbying activities. Starting from 1996, all lobbyists must file semi–annual reports to the Secretary of the Senate's Office of Public Records (SOPR), listing the name of each client (firm) and the total income they have received from each of them.[19] At the same time, all firms with in-house lobbying departments

[17]According to the Lobbying Disclosure Act of 1995, the term "lobbying activities" refers to "lobbying contacts and efforts in support of such contacts, including preparation and planning activities, research and other background work that is intended, at the time it is performed, for use in contacts, and coordination with the lobbying activities of others."

[18]See for example Igan, Mishra, and Tressel (2011), Richter, Samphantharak, and Timmons (2009), Gawande, Maloney, and Montes-Rojas (2009) and de Figueiredo and Silverman (2006). In the latter paper, the authors find that for a university with representation in the House or Senate appropriations committees, a 10% increase in lobbying yields a 3 to 4% increase in earmark grants obtained by the university.

[19]The Lobbying Disclosure Act has been subsequently modified by the Honest Leadership and Open Government Act of 2007. See Bombardini and Trebbi (2009).

are required to file similar reports stating the *total* dollar amount they have spent.

Importantly, legislation requires the disclosure not only of the dollar amounts actually received/spent, but also of the issues for which lobbying is carried out. SOPR provides a list of 76 general issues at least one of which has to be entered by the filer. For example, a lobbying firm, Morrison Public Affairs Group, lobbying on behalf of O'Grady Peyton Intl (a subsidiary of AMN Health Care Services) for the period January-June 2004 lists only one issue, i.e. immigration. Another example is a report filed by a client, i.e. Microsoft corporation, for its lobbying expenditures between January-June 2005. Besides immigration, Microsoft lists other six issues in this report. Thus, the new legislation provides access to a wealth of information, and the purpose of this paper is to use it to assess how lobbying influences migration policy.[20]

The data on lobbying expenditures is compiled by the Center for Responsive Politics (CRP) in Washington D.C., using the semi-annual lobbying disclosure reports, which are posted on its website. We focus on reports covering lobbying activity that took place from 1998 through 2005. Due to unavailability of data on other variables, in particular visas, we restrict the analysis in this paper to the period 2001-2005. Annual lobbying expenditures and incomes (of lobbying firms) are calculated by adding mid-year totals and year-end totals. CRP also matches each firm to an industry using its own classification, which is similar to the SIC classification.[21] We define "overall" or "total" lobbying expenditures in an industry as the sum of lobbying expenditures by all firms in that industry *on any issue*. The lobbying expenditures for immigration in an industry are calculated instead using a three-step procedure. First, only those firms are considered which list "immigration" as an issue in their lobbying report.[22] Second, the total expenditure of these firms is split *equally* between the issues they lobbied for. Finally, these firm-level expenditures on immigration are aggregated for all firms within a given industry.

As shown in Table 2, between 1999 and 2004,[23] interest groups have spent on average about 3.8 billion U.S. dollars per political cycle on targeted political activity, which includes PAC campaign contributions and lobbying expenditures. Lobbying expenditures represent by far the bulk of all interest groups money (close to ninety percent). Therefore, there are

[20]The reports are shown in the supplemental appendix.

[21]For details on matching of firms to sectors by CRP, see a description of their methodology at http://www.opensecrets.org/lobby/methodology.php.

[22]The lobbying dataset from 2001-2005 comprises an unbalanced panel of a total of 12,376 firms/associations of firms, out of which 481 list immigration as an issue in at least one year.

[23]Table 2 and Figure 1 include data for the political cycle 1999-2000, which we cannot use in the empirical analysis since visa data are not available for those years.

two advantages in using lobbying expenditures rather than PAC contributions to capture the intensity of the activity of pressure groups. First, the latter represent only a small fraction of interest groups' targeted political activity (10 percent), and any analysis of the role of lobbies in shaping policy based on only these figures could be misleading. Second, linking campaign contributions to particular policy issues is very difficult and often requires some ad-hoc assumptions, as no direct information is available on the purpose of the PAC contribution.

The importance of doing so is shown in Figure 1 – which is based on averages over three election cycles – where in the left panel we have a scatter plot of overall lobbying expenditures and PAC contributions, while in the right panel we have a scatter plot of lobbying expenditures associated with immigration policy and PAC contributions. In the left panel, we find a very high correlation between total lobbying expenditures and PAC contributions across sectors. This result is consistent with the political science literature and may suggest that PAC contributions are integral to groups' lobbying efforts and that they allow them to gain access to policymakers (Tripathi, Ansolabehere, and Snyder 2002). In contrast, the very low correlation between PAC contributions and lobbying expenditures for migration policy, in the right panel, is striking. It suggests that, if we were to use the data on PAC contributions, we could obtain misleading results. Hence the use of our new dataset is fundamental in order to study how lobbying affects migration policy.

4.2 Other Data

The information on lobbying expenditures is merged with data on visas and on a number of additional variables. Data on visas covers the following letter categories: H1A, H1B, H1C, H2A, J1, O1, O2, P1, P2, P3, R1 (see Table 1). The other two potentially relevant work visa categories are L1 (intracompany transferees) and H2B–H2R (non–agricultural temporary workers) but, unfortunately, data on these visas is not available *by sector*. We obtain information on the number of H1B visas approved by NAICS sector from the USCIS. Finally, the figures for the other types of work visas come from the yearly "Report of the Visa Office", available online at http://travel.state.gov.

We also use data from March Annual Demographic File and Income Supplement to the Current Population Survey (CPS) for the years 2001 – 2005. We restrict the data to individuals aged 18-64 in the civilian labor force and use the variable *ind1950* in the CPS to obtain information on the industry in which the worker performs or performed – in his most recent job, if unemployed at the time of the survey – his or her primary occupation. This

variable is coded according to the 1950 Census Bureau industrial classification system. We aggregate the individual-level information available in the CPS dataset to the industry level to construct the following variables: total number of natives, fraction of union members, fraction of unemployed, and mean weekly earnings. To construct the latter three variables, we restrict the sample to natives, who are defined as native-born respondents, regardless of whether their parents are native-born or foreign-born. The weekly earnings are deflated using the U.S. GDP deflator from the IMF. All the variables are constructed using sampling weights as recommended by the CPS.

While we have direct information on the lobbying expenditures by capital owners (i.e. firms), our measure for workers is only indirect as CRP provides information on lobbying expenditures by unions mostly at the aggregate level.[24] Therefore, we use the fraction of *natives* who are union members in each industry as our measure of political organization of labor in that sector.[25] The rationale for this choice is that, in sectors where the union membership rate is higher, the free-rider problem associated with lobbying is likely to be less pronounced. That is, in those sectors there exist fewer non-union members (free-riders) who benefit from policies brought about by the lobbying activity and, therefore, the contributions by unions tend to be higher. Although our measure is indirect, using data on lobbying expenditures by unions which can be clearly identified with a sector, we find that the correlation between union density rates and lobbying expenditures is positive and significant (see Figure 2). Finally, our measure of lobbying activity of organized labor is relevant for all visa types, including the H1B category, since it covers both membership in unions and in professional workers associations.

We also gather data on other control variables at the industry level. The data on output, price and (inward) foreign direct investment (FDI) is from the Bureau of Economic Analysis. The data on the stock domestic capital (in millions of current dollars) is from the Annual Capital Expenditures Survey (ACES). Finally, we also obtain data on end-of-the-year stock prices at the firm level from Standard and Poor's Compustat North America and aggregate it to compute measures of stock returns at the industry-level. In order to measure push

[24]There are 25 worker unions which lobbied for immigration during the period 2001-2005, some of which are national and spread across many sectors (e.g. AFL-CIO and United Food and Commercial Workers), while others are sector-specific (e.g. Machinists/Aerospace Workers Union) and cover very few sectors. Thus, it is not possible to construct a complete industry-level dataset of lobbying expenditures by unions. However, in one of our robustness checks, we use lobbying expenditures of the sector-specific unions to confirm the evidence based on union membership rates (Table 5b).

[25]Notice that we focus only on native workers to construct our measure of unionization to avoid the mechanical endogeneity which would arise by including a function of the number of immigrants both on the left and on the right hand side of our regression.

factors for migrants in source countries, we develop a sector–specific measure of shocks. In particular, we use information on years in which there was a shock in a developing country as captured by a war, earthquake, wind storm or drought. The data on wars is from a database compiled by the Heidelberg Institute for International Conflict Research and the World Bank; the data on other shocks is from Ramcharan (2007). The industry-specific measure of shocks is given by a weighted average of the shocks in each origin country, with weights equal to the share of immigrants in that industry from each origin country.[26]

In order to match the CPS data with that on visas, lobbying expenditures and the additional controls and create an industry-level dataset, we construct separate concordances of (i) NAICS (ii) CRP and (iii) BEA input-output classifications to the 1950 Census Bureau industrial classification.[27] As a result, we obtain a dataset that covers 120 3-digit industries that follow the 1950 Census Bureau industrial classification (CPS classification).

4.3 Summary statistics

Table A1 shows the summary statistics for the variables used in the regression analysis. On average between 2001-2005 an industry spends about $100,000 per year on immigration–related lobbying activities (when we split equally among the various issues). If we consider instead the *total* expenditures by firms in a sector which lobby for immigration, on average an industry spends about $1.1 mn per year. These values hide substantial cross–sectoral heterogeneity as illustrated in Figure 3, which shows the top 10 industries in terms of lobbying expenditures on immigration in the period 2001–2005. Engineering and computer services, and Educational services are the top spenders on lobbying for immigration. In this group we also find Hospitals, Food and related products, Office machines and computer manufacturing and Agriculture. Figure 4 shows instead the top 10 sectors receiving the highest number of visas. Educational services and Engineering and computer services are, not surprisingly, at the top of this list. Agriculture, Medical and other health services also appear in this list. Thus, three industries with very high expenditures on immigration are also among those

[26] We use data on immigrants by sector and origin country from the CPS. Immigrants are defined as foreign-born individuals.

[27] There is not always a one-to-one correspondence between two sectors in any two classifications. In the case where there are, for example, multiple CPS industries corresponding to a given CRP industry, the lobbying expenditures are divided among CPS industries according to the share of natives in each CPS industry. Next, in order to take into account the cases where one CPS industry is matched to many CRP industries (which is often the case), the data is summed at the CPS industry level. Similar procedures are adopted for matching the data on output, price, FDI, domestic capital and the number of visas to the CPS dataset.

receiving the highest number of visas.

Before proceeding to the regression analysis, it is instructive to document bivariate relationships between key variables using simple scatter plots. Figure 5 suggests that there exists a positive correlation between lobbying expenditures for immigration and the number of visas across sectors (both variables are, in this graph, averaged over the years 2001-2005 and scaled by the number of natives in each sector). Thus, these basic scatter plots suggest that sectors with larger lobbying expenditures on immigration are characterized by a higher number of visas. The relationship between union membership rates and the number of visas (divided by the number of natives) is instead negative, that is sectors with higher union densities have fewer immigrants on average over the period (Figure 6).[28]

5 Empirical analysis

We focus in this paper on sector-specific aspects of U.S. migration policy and, as a result, we analyze the variation in the number of visas *across sectors*. We use data which is averaged over the five years between 2001 and 2005, that is we only exploit the cross-sectional variation. Indeed, most of the variation in the data is across sectors, rather than over time. Based on the decomposition of the variance into between and within components, we find that 97.4% of the variation in log(visas) is across industries.

The dependent variable of the empirical analysis is the number of visas, divided by the number of native workers in the same sector ($\log(visas/native\ workers)$). The two key explanatory variables are the log of the industry's lobbying expenditures on migration, divided by the number of native workers in the same sector ($\log(lobbying\ exp/native\ workers)$) – which measures the extent of political organization of capital – and the *union membership rate*, which equals ($native\ union\ members/native\ workers$) and measures the extent of political organization of labor.

Notice that our key variables are scaled by the number of native workers in the same sector.[29] This is to control for differences in the sizes of industries, which could bias the estimated coefficients. For example, larger sectors which employ a higher number of native workers, also tend to hire more immigrants and can spend larger sums on lobbying activity as well. Thus, without accounting for the size of the sector, the estimate of the impact

[28] This pattern continues to hold also when we consider individual visa categories.

[29] To make sure that our regression results are not driven by the scaling factor, each full specification includes the log ($number\ of\ native\ workers$) as an additional control.

of business lobbying expenditures would be biased upwards. The remainder of the section presents our results.

5.1 Main results

Table 3 presents the main results of the empirical analysis using OLS estimation. In all tables, standard errors are *robust,* to account for heteroscedasticity. In regressions (1)-(2), we find a positive and significant (at the 1% level) coefficient on log(*lobbying exp/native workers*), and a negative and significant (at least at the 10% level) coefficient on native worker's *union membership rate*.[30] These results suggest that barriers to migration are lower in those sectors in which business lobbies are more active, and higher in sectors where labor unions are more important. The two key variables of the empirical analysis explain 13% of the variation in the number of visas per native worker across sectors (regression (2)). In fact, log(*lobbying exp/native workers*) alone explains 11% of the variation. The magnitude of the coefficients (0.367 for log(*lobbying exp/native workers*) and -2.576 for *union membership rate*) in regression (2) implies that a 10% increase in the size of the industry's lobbying expenditures on migration per native worker raises the number of visas to that industry, per native worker, by 3.7%. In addition, a one-percentage-point increase in union density – for example, moving from 10 to 11 percentage points, which amounts to a 10% increase in the union membership rate – reduces it by 2.6%. We assess the robustness of these results in column (3) where we introduce a number of industry-level control variables.

Although our key variables are already scaled by the number of native workers, we are still concerned that our estimates might be driven by differences in the size of sectors. Therefore, in regression (3), we control for the value of output produced in each industry. Output is a more comprehensive measure of the size of a sector because it takes into account the impact of factors other than labor. In column (3), we also introduce the industry-specific unemployment rate,[31] which is likely to be correlated with both the demand for foreign workers in that sector and the union membership rate. The sign of the correlation between union density and the industry-specific unemployment rate is a priori ambiguous. On the one hand, in sectors with higher unemployment rates, workers feel a bigger threat of being fired, which increases their incentive to join unions. On the other, in sectors with higher

[30] The sign and significance level of the coefficient on *union membership rate* is unchanged if we drop sectors 506 (railroads and railway express service) and 906 (postal service), which appear as outliers in Figure 6.

[31] The CPS provides information on the last job of a currently unemployed person, and the weights provided by the CPS are used to construct the sector specific unemployment rate.

unemployment rates, the bargaining power of unions is lower, which implies that union densities are lower as well. Finally, the correlation between the unemployment rate and the number of visas is also a priori ambiguous.

Regression (3) also controls for the price of the good produced in a sector. To the extent that a positive price shock in an industry affects the marginal revenue product of labor differently for immigrant vs. native workers, there will be an effect on the labor demand for foreign workers relative to natives. We also control for the stock of capital (both domestic and foreign) used in each industry. To the extent that the degree of complementarity between capital and labor is higher (lower) for immigrant vs. native workers, sectors which use more capital should also be characterized by higher (lower) demand for foreign workers. The results in regression (3) suggest that output, the unemployment rate, prices, domestic and foreign capital all have an insignificant effect on the number of visas per native worker. Most importantly, our main findings on the key explanatory variables (log(*lobbying exp/native workers*) and *union membership rate*) survive all the robustness checks in column (3). The magnitude of the estimated coefficients on lobbying expenditure and union membership rates are only marginally affected by the introduction of the control variables: they remain of the same sign and the same (or higher) significance level.

As mentioned above, as a measure of migration restrictions, we use the number of visas *issued*. This is an *ex post* measure of quotas, which might be affected by the supply side of international migration flows. In other words, the number of visas issued is an equilibrium outcome that results from the interaction of migration policy and of those factors that affect the willingness of migrants to move. The rationale for using the ex post measure is that migration quotas are likely to be binding, for the most part, in the United States, which implies that changes in the number of visas coincide with policy changes. However, to address the possibility that the assumption of binding quotas does not hold, we assess the robustness of our results by including variables that affect the willingness of migrants to relocate and, therefore, the number of visas if migration quotas are not binding. In column (3), we control for negative shocks – such as wars, earthquakes, windstorms or droughts – taking place in the origin countries of immigrants working in any given industry (*shocks*). The negative and significant coefficient on *shocks* can be interpreted as being driven by the ability of migrants to leave their origin countries. Although their willingness to migrate may increase following a shock, their ability is likely to decrease because credit constraints become more binding following the event. Another interpretation which is consistent with our political-economy framework is that immigrants from countries affected by a shock might be entitled

to enter the US as asylum seekers or political refugees and, in that case, the number of *work* visas in the sectors where those immigrants are employed will decrease. In column (3), we also account for pull factors by including the (log) U.S. lagged wages. As expected from a supply point of view, they have a positive and significant impact on the number of visas issued in a given sector. In other words, sectors with higher wages attract more immigrants. Alternatively, an interpretation related to policy is that authorities might be more willing and better able to accommodate the requests of pro-migration lobbyists that represent booming sectors. To conclude, as regression (3) shows, our results on the key variables are robust to the introduction of these additional regressors.

In the remainder of Table 3, we break down our dependent variable, log(*visas/native workers*), and consider its numerator and denominator as separate dependent variables. First, in columns (4), (5), (6), we investigate whether our main results continue to hold if we do not scale the number of visas: we show that our estimates are unaffected. Second, and most importantly, we carry out a falsification exercise and consider the impact of the regressors on the number of *native* workers. If our two key explanatory variables had the same effect on the number of native workers as we find for the number of visas, our previous results could be driven by omitted variables that explain labor demand in general. Instead, columns (7), (8), (9) show that neither lobbying expenditures nor union membership rates are significant drivers of the number of native workers employed in an industry.

5.2 Instrumental Variables Estimation

Although we have checked the robustness of our findings to the introduction of a number of controls, we are concerned that our estimates might be affected by endogeneity bias. It is especially important to address this concern as the existing theoretical models suggest that lobbying expenditures are endogenous. In particular, it is not clear *ex ante* how reverse causality might affect the estimates. On the one hand, sectors with more migrants may already be close to their optimal levels, which would decrease their incentive to invest in lobbying expenditures. In this case, our estimates would be biased towards zero. On the other, sectors which receive a higher number of visas might find it necessary to increase their lobbying activity in order to solve problems related to the large pool of immigrants they hire (such problems might include access of immigrant workers and their children to education, health, etc.). In this case, the estimate on lobbying expenditures would be biased upwards, i.e. the true effect would be lower than the estimated effect. Similarly, it is possible that sectors which receive a higher number of visas have either higher or lower union densities.

The first case might arise if a higher number of immigrants in a sector increases the threat felt by native workers in labor markets and, therefore, their incentive to join unions. On the other hand, in sectors with larger pools of immigrants, the bargaining power of unions might be lower, which means that union densities will be lower as well.

We address reverse causality and other sources of endogeneity by using an instrumental–variable estimation strategy. As a benchmark instrument for $\log(lobbying\ exp/native\ workers)$, we construct a measure of lobbying expenditures per native worker by firms in each sector which do *not* list migration as an issue in their lobbying reports.[32] Out of a total of 12,376 firms in the lobbying dataset, the majority (96 percent) does not list immigration as an issue for which they do carry out lobbying activities. We assume that these firms' lobbying expenditures on issues other than immigration do not affect migration directly (exclusion restriction).[33] At the same time, it is likely that industry-level factors affect lobbying expenditures of all firms in a given sector, no matter what policy issues firms are interested in. For example, according to the literature on the political economy of trade policy, lobbying activity is in general determined by factors like the number of firms, their size distribution, geographic concentration, etc. within a sector (Trefler 1993). Therefore, we expect our instrument to be correlated with the lobbying expenditures on migration (first stage).

Next, our benchmark instrument for the *union membership rate* uses data from the United Kingdom on union densities across industries. According to the literature, sector-specific union membership rates are positively correlated across a wide set of industrialized countries (see Riley 1997, Blanchflower 2007) (first stage). Industries which exhibit a high level of work standardization and a clear distinction between managerial and operative tasks are more likely to be unionized, the reason being that these working conditions lead to intra-group homogeneity as well as distinct group boundaries. In addition, it is plausible to assume that UK union membership rates do not directly affect the number of visas in the U.S. (exclusion restriction).[34] A similar identification strategy has been used by Ellison, Glaeser, and Kerr (2008), who exploit variation across sectors in the UK to identify the

[32] As an additional robustness check, we construct also an alternative instrument by considering those firms which lobby only on a more restricted set of issues, which are completely orthogonal to migration. See section 5.3.

[33] It might be the case that the exclusion restriction is not satisfied. In particular, it could be that lobbying expenditures on policy issues other than immigration draw resources and policymakers' attention away from migration policy and, thus, directly influence (reduce) the number of visas in a given sector. However, in that case, the IV estimate would be biased towards zero and, hence, represent a lower bound of the true effect.

[34] Furthermore, notice also that the cross sectional distribution of immigrants in the UK and in the US are not systematically correlated – and this is not surprising, given the different characteristics of the immigrant populations in the two countries (Boeri, Hanson, and McCormick 2002).

determinants of conglomeration between industries in the United States.

We use the above two instruments in regressions (1) and (2) in Table 4. The high values of the two first-stage F statistics for the excluded instruments at the end of Table 4 suggest that the instruments are strong. In regression (1), in the first stage of log(*lobbying exp/native workers*), the F value of the excluded instruments is equal to 90.73; in the first stage of *union membership rate*, the F value of the excluded instruments is equal to 55.83.[35] The first stage regressions suggest that lobbying expenditures on immigration are positively and significantly correlated with lobbying expenditures on other issues. In addition, union membership rates in the US are positively and significantly correlated with the corresponding rates in the UK.[36] Most importantly, the results in Table 4 from the IV regressions, with and without controls, confirm that the number of visas per native worker is higher in sectors where business lobbies are more active, and lower in sectors where labor unions are more important.[37]

In regressions (3) and (4), we retain our benchmark instruments for log(*lobbying exp/native workers*) and *union membership rate* and add an additional instrument for each variable, which allows us to perform tests of overidentifying restrictions. The first additional instrument – for log(*lobbying exp/native workers*) – is based on a measure of *senior* membership of senators and House representatives of each state in Senate and House committees overlooking immigration policy.[38] To construct our measure of senior membership, we use data on the fraction of committee-Congress pairs (over the period 2001-2005) in which a state had a chairman, vice–chairman or ranking member (most senior member of the opposition party).

[35]The Kleibergen-Paap rk Wald F statistic is 49.259. We reject the null that the excluded instruments are weakly correlated with the endogenous regressors (the 10% Stock-Yogo critical value for weak identification test is 7.03).

[36]First stage regressions are shown in the supplemental appendix.

[37]Since we split lobbying expenditures equally across policy issues to construct log(*lobbying exp/native workers*), it might be the case that the first stage is driven by common variation – across firms which do and do not lobby for migration – in lobbying expenditures on other issues, and not by intrinsic sector-level factors. To address this issue, we use an alternative measure of lobbying activity by pro–migration business groups as the explanatory variable, i.e. the number of firms in each sector that list migration as an issue. Using the same instruments as above, we obtain qualitatively similar results, which are available upon request.

[38]In particular, we consider the following committees: Senate Subcommittee on Immigration of the Judiciary Committee (107th Congress, 2001-2002; 108th Congress, 2003-2004; 109th Congress, 2005-2006); Senate Subcommittee on Homeland Security of the Appropriations Committee (108th and 109th Congress); Senate Subcommittee on Terrorism, Technology and Homeland Security of the Judiciary Committee (108th Congress); Senate Committee on Homeland Security and Government Affairs (109th); House Subcommittee on Immigration and Claims of the Judiciary Committee (107th Congress); House Subcommittee on Homeland Security of the Appropriations Committee (108th and 109th Congress); House Subcommittee on Crime, Terrorism and Homeland Security of the Judiciary Committee (108th Congress); House Subcommittee on Immigration, Border Security, and Claims of the Judiciary Committee (108th and 109th Congress); House Committee on Homeland Security (109th Congress).

To obtain a *sector–varying* instrument, we construct a weighted average of state-level senior membership, where the weights are each state's employment share in an industry in 1960. We expect this instrument to be correlated with lobbying expenditures as the effectiveness of the lobbying activity of an interest group from a given state is likely to be enhanced by its representative being in a senior position on an immigration policy-relevant committee (first stage). In addition, the relative position of the senator or House representative in the committee is likely to be exogenous with respect to immigration policy, as it is driven by seniority in Congress. Finally, the weights used date back to 1960, i.e. before the immigration surge following the introduction of the 1965 immigration policy reform, and are therefore likely to be exogenous with respect to current immigration policy (exclusion restriction).

The second additional instrument – for *union membership rate* – is the US union membership rate lagged back to 1994, which is before many of the changes in the temporary work visa programs took place in the United States. Therefore, this instrument is likely to pass the exclusion restriction. We also expect it to be highly correlated with the 2001-2005 union membership rates (first stage).

The first-stage F-stats for the excluded instruments in regressions (3) and (4) are remarkably high. [39] In addition, the test for overidentifying restrictions passes by a large margin (the p-value for the Hansen J-statistic ranges between 0.75-0.99). Finally, and most importantly, the results shown in columns (3) and (4), based on this larger set of instruments, are not significantly different from our main results in Table 3. The coefficients on log(*lobbying exp/native workers*) and *union membership rate* are still positive and negative, respectively, and statistically significant.[40]

Notice that, in all the IV regressions in Table 4, the magnitude of the coefficients on both log(*lobbying exp/native workers*) and *union membership rate* increases relative to Table 3. The difference in the magnitudes might be driven by a negative correlation between lobbying

[39] The signs of the coefficients in the first stage regressions (reported in the supplemental appendix) are also consistent with our expectations.While the coefficient on immigration committee membership is not highly significant in the first stage-regressions for lobbying expenditures (columns [3] and [4]), note that the first stage F-stat is very high, which justifies the inclusion of the additional instrument. The specific advantage is that the additional instrument allows us to perform the test of overidentifying restrictions (Staiger and Stock (1997) and Stock and Yogo (2005)).

[40] Following the literature on the political economy of trade policy, we also use geographical concentration, four-firms concentration ratio, minimum efficient scale and number of firms in an industry as alternative instruments for log(*lobbying exp/native workers*) (Goldberg and Maggi (1999) and Gawande and Bandyopadhyay (2000)). We update the data in Trefler (1993) to 2001-2005, using the Economic Census 2002 and the Annual Survey of Manufactures 2005. While the first-stage F-stats for the excluded instruments are not very high, our results based on these instruments are qualitatively similar if we use Limited Information Maximum Likelihood estimation to address the weak first stage.

expenditures on migration and the unobserved component of the number of visas[41] and by a positive correlation between union membership rates and the unobserved component of the number of visas.[42] However, the difference between the magnitudes of the IV and OLS estimates could also be explained by measurement error in the key explanatory variables leading to attenuation bias in the OLS estimates.

To summarize, our OLS and IV estimates suggest that a 10% increase in the size of lobbying expenditures by business groups, per native worker, is associated with a 3.1 – 5.0 percent larger number of visas per native worker, while a one-percentage point increase in the union membership rate is associated with a 2.6 – 5.6 percent lower number of visas per native worker. The results are robust to introducing a number of industry-level control variables, to performing a falsification exercise and, most importantly, to addressing endogeneity issues with several instrumental variables. To the extent that we do not have a clean natural experiment to identify the effects of lobbying activity on migration restrictions, the instrumental variables' estimates should be interpreted with due caution. However, our results using alternative identification strategies show a very consistent picture.

5.3 Additional results

We next investigate how our previous results change when we consider alternative dependent variables and different data samples (Table 5a). All specifications include the additional controls used in Table 3, column (3). We start by looking at alternative measures of immigration restrictions. In column (1), we exclude the number of J1 visas from the definition of the dependent variable, as it might be argued that students should not be part of the analysis (J1 visas are given to both temporary lecturers/visiting professors and students). In regression (2), we further restrict the definition of the dependent variable by considering only visas with quotas. Finally, in regression (3), the dependent variable we use is the (log) number of H1B visas approved. Our estimates in regressions (1)-(3) are indeed remarkably similar to what we previously found in Table 3.

In the remainder of the table, we study whether changes in the sample affect our results. In particular, in columns (4) and (5), we are concerned that immigration policy might have been affected by the September 11 terrorist attacks. For this reason, we first drop

[41] I.e., sectors with a higher number of visas contribute less, possibly because they are closer to their ideal number of immigrants.

[42] I.e., in sectors with a higher number of visas, natives feel a stronger threat, which increases their incentive to join unions.

2001 from our sample (column 4) and next we exclude security-sensitive sectors[43] (column 5). In column (6) we drop sectors which use intensively unskilled immigrants: agriculture, construction, meat production, apparel (Hanson and Spilimbergo, 2001). In column (7) we use pooled – as opposed to averaged – data (including year fixed effects), while in column (8) we include observations corresponding to sectors with zero lobbying expenditures.[44] Finally, in regression (9), we drop sectors which – based on Tables 3 and 4 – might be outliers and in particular computer services and education services. Our results from these robustness checks are very similar to what we found in our preferred specification, i.e. column (3) of Table 3.

Next, in Table 5b we turn to evaluate the robustness of our main findings to different definitions of our key explanatory variables and to adding additional controls. We start by introducing changes in the definition of our key explanatory variables (columns (1)-(3)). As discussed above, in Table 3 log(*lobbying exp/native workers*) is calculated by dividing the total expenditure of a firm – that lists migration as an issue – by the total number of issues listed in the lobbying report; finally, firm expenditures are summed for each sector. In column (1) we consider firms which list "immigration" as an issue in their reports and take their *total* lobbying expenditures (as opposed to splitting them). This variable thus represents an upper bound of the true lobbying expenditures on immigration. Using this alternative measure, we find that the estimated impact of lobbying expenditures is very similar and not statistically different from the basic estimates in Table 3. In column (2), instead, we replace log(*lobbying exp/native workers*) with log(*lobbying exp*), i.e. we do not scale the main regressor, and find similar results. Finally, in column (3), we restrict the sample to those sectors for which we could clearly identify lobbying expenditures *by unions* in the CRP dataset. Thus, in this specification, we use a *direct* measure of labor lobbying expenditures instead of the union membership rate. While this substantially reduces the sample size, the results are remarkably consistent with Table 3.

In regression (4), we address the possibility that more visas as well as larger lobbying expenditures might be driven by positive expectations about *future* labor demand. For example, a firm is likely to sponsor an H1-B visa application only if it anticipates being able to employ the actual worker for an extended period of time. Hence, in column (4), we include

[43]The security-sensitive sectors are as follows: (i) Aircraft and parts (377) (ii) Miscellaneous chemicals and allied products (469) (iii) Drugs, chemicals, and allied products (607) (iv) Engineering and architectural services (898).

[44]The log specification in Table 3 drops the sectors with zero contributions. In Table 5a, the zero lobbying expenditures are replaced by the minimum positive value of lobbying expenditures in the sample.

a measure of expected industry profitability, namely the stock price return ($log(1 + stock\ market\ return)$).[45] Similarly, our results on unionization could simply mean that firms in declining industries, which tend to have higher unionization rates, are less likely to apply for employment visas. Therefore, in column (5), as a proxy for whether an industry is declining, we control for sectoral output growth. Once again, in both regressions, we find that our main results are robust.

A large literature has suggested that network effects play an important role in driving immigration (see, for example, Munshi (2003)). Industries which employ a large stock of immigrants are likely to lobby for more visas. Therefore, in column (6), we control for the lagged stock of immigrants using the 2000 Census. We find results which are qualitatively similar to Table 3. In columns (7) and (8), we also control for the capital/labor ratio and skilled/unskilled labor ratio in each sector, to account for the factor intensity in a sector, and the results are not affected.

An additional potential source of bias is the potential presence of "excess demand" in a sector. For example, the difference between openings for nurses and graduates of US nursing schools contributes to excess demand in the hospitals sector. Excess demand is potentially an omitted variable that could drive both lobbying expenditures and the number of visas. To check the robustness of our results, we run a regression in which we control for the (log) number of vacancies in each sector. We use data on the number of vacancies from the Job Openings and Labor Turnover Survey (JOLTS) of the Bureau of Labor Statistics. In order to match the vacancies to our dataset, we construct a concordance between the JOLTS and the CPS classifications. Regression 9, Table 5b, confirms that our main findings are robust to addressing this potential omitted variable bias. The impact on the number of visas of migration lobbying expenditures and union membership rates remains, respectively, positive and negative. The coefficient on the (log) number of vacancies is positive but statistically insignificant.[46]

Last, we carry out a series or robustness checks concerning our IV strategy. In particular, we are concerned that the exclusion restriction for our benchmark instrument for lobbying expenditure might be violated. For example, a firm who is not lobbying directly for migration, might lobby to affect labor laws or the legislation for opening up a new business,

[45] The results are robust to using alternative measures of stock market returns (abnormal, mean and market adjusted). Notice that the coefficients on *union membership rate* in column (4), Table 5b, is significant at approximately 15%: this is due to the fact that, while the coefficients are not different from Table 3, the estimates are less precise.

[46] We also run IV regressions with the same regressors as in Tables 5a and 5b. We get similar results.

and this might have a direct effect on immigration in the sector, which would render our instrument invalid. To deal with this possibility, we have constructed an alternative instrument for log(*lobbying exp/native workers*), which includes only contributions by firms that do not lobby on migration, but do lobby on a set of issues which is completely orthogonal to migration.[47] The sign and significance of our results are once again not affected.

5.4 PAC vs lobbying contributions

In Table 6, we use an alternative measure of lobbying expenditures on immigration, namely campaign contributions from Political Action Committees (PAC). Data on PAC campaign contributions has been used extensively in the international economics literature, but does not allow researchers to disentangle the different purposes for which a contribution is made (see for example, Goldberg and Maggi 1999, and Gawande and Bandyopadhyay 2000). When we use this proxy for the political organization of capital, we find the estimates of the coefficient on log(*campaign contributions/native workers*) to be not significant at conventional levels (see first two columns in Table 6). The data on PAC campaign contributions is compiled by two-year election cycles. In particular, we average PAC campaign contributions data over the 2001-02 and 2003-04 election cycles. In regressions (3)-(4), for comparison purposes, we look at the impact of log(*lobbying exp/native workers*) using data on lobbying expenditures which is averaged over the same years (2001-2004). The coefficient on log(*lobbying exp/native workers*) is very similar to what we found in Table 3. In addition, the last two columns in Table 6 – where we introduce both measures of political organization of capital – clearly show that it is lobbying expenditures on migration, rather than PAC campaign contributions, that positively affect the number of visas. The results are striking and cast doubt on the use of PAC campaign contributions data as an appropriate indicator to examine the effect of lobbying on policy outcomes.

6 Conclusions

To the best of our knowledge, this paper represents the first study that attempts to provide systematic empirical evidence on the political-economy determinants of current US immigration policy, focusing in particular on the role played by interest groups. To this end, we have constructed an industry-level dataset on lobbying expenditures by organized groups,

[47] E.g. accounting standards, advertising etc. See footnote to the table for a complete list.

combining it with information on the number of visas issued and on union membership rates. The analysis provides strong evidence that interest groups play a statistically significant and economically relevant role in shaping migration across sectors. Barriers to migration are higher in sectors where labor unions are more important and lower in those sectors in which business lobbies are more active. The main estimates suggest that a 10% increase in the size of lobbying expenditures per native worker by business groups, is associated with a 3.1 – 5.0 percent larger number of visas per native worker, while a one-percentage point increase in the union membership rate (assumed to be a proxy for lobbying expenditures by labor groups) is associated with a 2.6 – 5.6 percent lower number of visas per native worker. The results are robust to introducing a number of industry-level control variables, to performing a falsification exercise and, more importantly, to using several instrumental variables to address the endogeneity of lobbying expenditures and union membership rates.

It is difficult to provide a precise account of all the channels through which U.S. immigration policy affects the allocation of visas across sectors. The effects we estimate can be the result of the use of a variety of policy tools. Besides the quantitative restrictions applied to sector-specific visas ("visible" restrictions such as quotas), several regulations substantially affect the number of visas issued across sectors (what we call "invisible" barriers). Interest groups can carry out their lobbying activity on both "visible" and "invisible" restrictions by approaching officials at different levels of policy making, depending on the nature of the measure they want to affect. For instance, for a "statutory change" like changing the cap on H1C visas for nurses, interest groups will lobby the Congress. For a "regulatory change" instead, like the H2A specific wage rate, interest groups lobby an agency in the executive branch such as the Department of Labor.

To conclude, the empirical results suggest that, independently from the channels through which these effects work, policymakers target a given allocation of immigrants across sectors. Moreover, political-economy forces play a quantitatively important role in determining the cross-sectoral allocation of immigrants. Further empirical work could explore other sources of data to analyze the variation in alternative measures of immigration policy – legal vs illegal, temporary vs permanent, etc. In addition, the paper could also be extended to examine the variation in immigration policy outcomes along occupation and geographical dimensions (for example, across U.S. districts). Finally, firm-level data on lobbying expenditures can be exploited to study the importance of political-economy forces in the determination of policies other than immigration – e.g. trade, environment, taxes etc.

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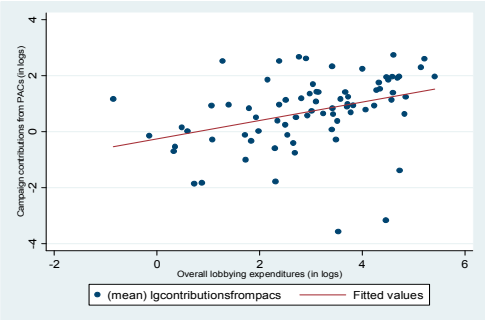
Figure 1. Scatter Plots between Lobbying Expenditures and Campaign Contributions from Political Action Committees (PACs), 2001-2005

Campaign contributions from PACs and overall lobbying expenditures
(in millions of US$)



Campaign contributions from PACs and lobbying expenditures on immigration
(in millions of US$)

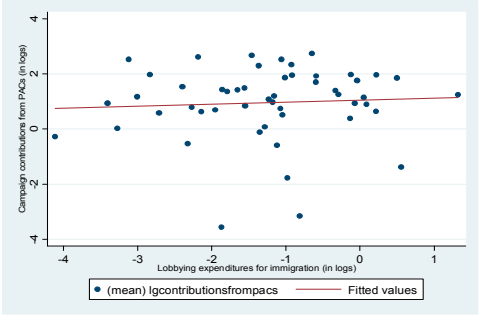
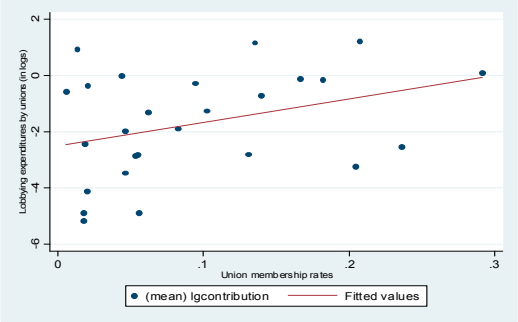
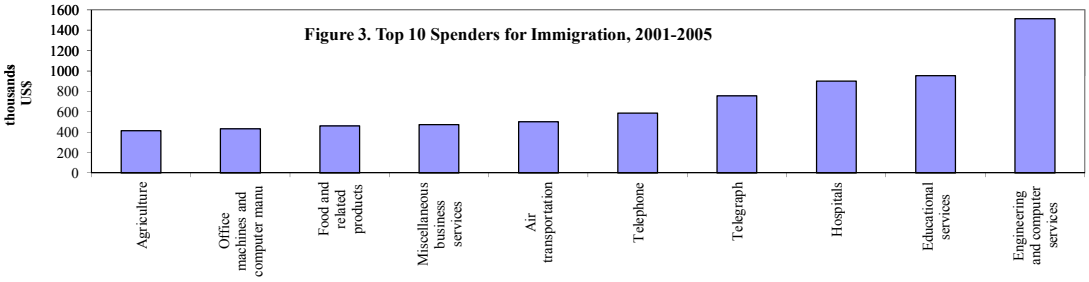
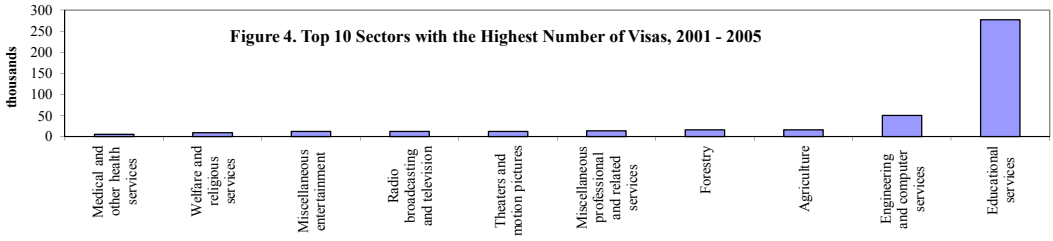


Figure 2. Scatter Plot between Lobbying Expenditures by Unions/Professional Ass. and Union/Prof. Ass. Membership Rates, 2001-2005







Notes to Figure 1. The data on campaign contributions and lobbying expenditures are averaged over three election cycles -- 1999-2000, 2001-02 and 2003-04. The regression coefficient between (log) contributions from PACs and (log) overall lobbying expendit

Figure 5. Lobbying Expenditures for Immigration and Visas

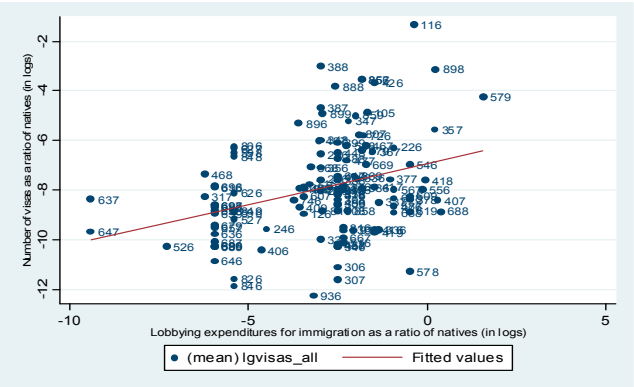
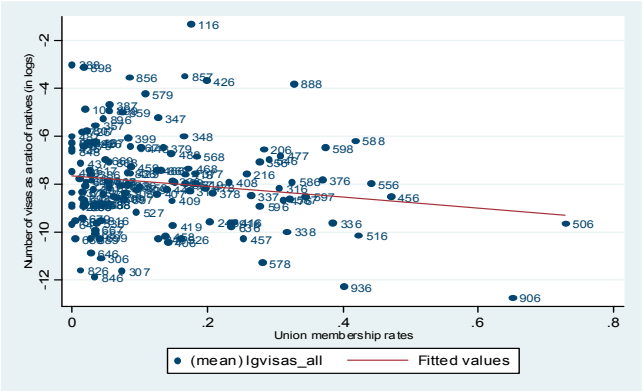


Figure 6. Union/Prof. Ass. Membership Rates and Visas



Notes. All data are averaged over 2001-2005. The correlation between (log) lobbying expenditures for immigration and (log) number of visas (top panel) is 0.327 (robust standard error=0.077; p-value=0.000); the correlation between union membership rates and (log) number of visas is -2.250 (robust standard error=1.252; p-value=0.074).

Table 1. Number and Types of Non-Immigrant Visa Isuuances, 2001-2005

Type of temporary admission	*Visa Category*	*Average 2001-2005*
Work and related visas		**835,294**
Exchange visitors and spouses/children	J1, J2	291,241
Workers with extraordinary ability	O1, O2	8,865
Internationally recognized athletes or entertainers	P1, P2, P3	32,762
Cultural Exchange and Religious Workers	Q1, Q2, R1	10,414
Treaty traders/investors and their children	E	35,282
Spouses/children of certain foreign workers	O3, P4, Q3, R2, I	21,469
NAFTA Professionals and spouses/children	TN, TD	2,124
Intracompany transferees and spouses/children	L1, L2	117,765
Temporary workers of which:		
Workers of distinguished merit and ability	H1B	130,051
Registered nurses and nurses in shortage area	H1A, H1C	122
Workers in agricultural services	H2A	31,322
Workers in other services	H2B	72,684
Trainees	H3	1,518
Spouses and children of temporary workers	H4	79,675
Other admissions		**4,900,283**
Temporary Visitors	B1, B2, B1/B2, B1/B2/BCC	4,154,485
Official representatives and transitional family members	A, G, K	165,141
Students and spouses/children	F1, F2, M1, M2	266,099
Other non work visas		314,558
Total non immigrant visa issuances		**5,735,577**

Notes: Data are based on the "Report of the Visa Office" (http://travel.state.gov), 2001-2005.
Notice that aliens issued a visa do not necessarily enter the United States in the year of issuance.

Table 2. Targeted Political Activity
(in millions of US dollars)

Election cycle	1999-2000	2001-02	2003-04
Contributions from PACs	326	348	461
Overall lobbying exp	2949	3330	4048
Of which exp for immigration	32	24	33
Total targeted political activity	3275	3678	4509

Source: Center for Responsive Politics

Table 3. Estimated Effect of Lobbying on Allocation of Visas, OLS

Dependent variable →	**log (visas/native workers)**			**log (visas)**			**log (native workers)**		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
log (lobbying exp/native workers)	0.327***	0.367***	0.312***	0.301***	0.346***	0.315***	-0.033	-0.027	-0.058
	[0.077]	[0.081]	[0.087]	[0.084]	[0.091]	[0.087]	[0.069]	[0.073]	[0.046]
union membership rate		-2.576*	-3.129**		-2.908*	-3.146**		-0.366	-0.448
		[1.477]	[1.546]		[1.688]	[1.529]		[1.336]	[0.787]
lg (output)			-0.047			-0.042			0.450***
			[0.226]			[0.225]			[0.114]
unemployment rate			7.609			7.734			-0.56
			[5.856]			[5.667]			[3.084]
log (price)			2.061			1.901			-2.722**
			[2.519]			[2.482]			[1.084]
log (capital)			-0.232			-0.214			0.469***
			[0.229]			[0.224]			[0.104]
log (FDI)			0.045			0.042			-0.019
			[0.096]			[0.093]			[0.044]
shocks			-7.532**			-7.576***			3.554*
			[2.948]			[2.871]			[1.861]
log (lag US wages)			10.186***			10.610***			-5.994***
			[3.423]			[3.329]			[2.248]
log (number of native workers)			0.145			1.133***			
			[0.258]			[0.254]			
N	126	126	120	126	126	120	126	126	120
R-squared	0.11	0.13	0.26	0.07	0.09	0.52	0.00	0.00	0.76

All data are averaged over 2001-2005. Standard errors are corrected for heteroskedasticity, and denoted in parentheses. ***, ** and * denote significance at 1, 5 and 10 percent respectively.

Table 4. Estimated Effect of Lobbying on Allocation of Visas, Instrumental Variables

Dependent variable →	**log (visas/native workers)**			
	[1]	[2]	[3]	[4]
log (lobbying exp/native workers)	0.481***	0.358***	0.506***	0.401***
	[0.133]	[0.133]	[0.136]	[0.136]
union membership rate	-3.76*	-5.594**	-3.881*	-4.971**
	[2.276]	[2.198]	[2.084]	[2.243]
lg (output)		-0.098		-0.362
		[0.257]		[0.260]
unemployment rate		8.231		8.907
		[6.021]		[6.015]
log (price)		4.653*		5.076*
		[2.772]		[2.747]
log (capital)		-0.196		-0.15
		[0.253]		[0.256]
log (FDI)		0.015		0.013
		[0.098]		[0.100]
shocks		-7.467**		-7.759**
		[3.345]		[3.786]
log (lag US wages)		10.354**		11.079**
		[4.324]		[5.368]
log (number of native workers)		0.183		0.445
		[0.295]		[0.296]
Instruments for log (lobbying exp/native workers)	log(lobbying exp other issues)		log(lobbying exp other issues)	
Additional instruments			immigration committee	
Instruments for union membership rate	union rate UK		union rate UK	
Additional instruments			Lag union membership rate	
First-stage F for log(lobbying exp/nat workers)	90.73	71.51	54.95	34.05
p-value	0.00	0.00	0.00	0.00
First-stage F for union membership	55.83	19.34	48.51	15.15
p-value	0.00	0.00	0.00	0.00
Hansen's J-statistic (p-value)			0.75	0.99
N	111	106	107	102
R-squared	0.11	0.24	0.12	0.28

All data are averaged over 2001-2005. Standard errors are corrected for heteroskedasticity and denoted in parentheses. ***, ** and * denote significance at 1, 5 and 10 percent respectively.

Table 5a. Estimated Effect of Lobbying on Allocation of Visas, OLS
Robustness checks

Dependent variable →	log (visas/native workers)								
	ALTERNATIVE DEPENDENT VARIABLES			ALTERNATIVE SAMPLES					
	Visas w/o J1 [1]	Visas with quota [2]	H1B visas [3]	Drop 2001 [4]	Drop security-sensitive sectors [5]	Drop illegal migrant int sectors [6]	Pooled OLS [7]	Include zero lobby exp. [8]	Drop computer and education [9]
log (lobbying exp/native workers)	0.302***	0.253***	0.182***	0.305***	0.286***	0.277***	0.296***	0.149**	0.264***
	[0.085]	[0.080]	[0.065]	[0.088]	[0.086]	[0.086]	[0.055]	[0.057]	[0.082]
union membership rate	-3.562**	-3.299**	-3.623***	-2.663*	-2.841*	-2.896*	-1.843**	-2.875**	-3.577**
	[1.376]	[1.376]	[1.292]	[1.546]	[1.518]	[1.539]	[0.922]	[1.261]	[1.270]
N	120	120	120	119	116	116	334	134	118
R-squared	0.29	0.31	0.34	0.24	0.26	0.27	0.17	0.21	0.29

Table 5b. Estimated Effect of Lobbying on Allocation of Visas, OLS
Additional Robustness checks

Dependent variable →	log (visas/native workers)								
	ALTERNATIVE EXPLANATORY VARIABLES			ADDITIONAL CONTROLS					
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
log (lobbying exp/native workers)			0.661***	0.289***	0.310***	0.259***	0.312***	0.270***	0.320***
			[0.194]	[0.088]	[0.087]	[0.092]	[0.087]	[0.084]	[0.086]
log (lobbying exp_upper bound/native workers)	0.268***								
	[0.088]								
log (lobbying exp)		0.315***							
		[0.088]							
union membership rate	-2.976*	-3.085*		-2.722†	-3.118**	-2.469†	-3.129**	-2.474†	-3.254**
	[1.550]	[1.557]		[1.812]	[1.557]	[1.578]	[1.546]	[1.606]	[1.608]
log (lobbying expenditures by unions)			-1.028***						
			[0.224]						
log (1+stock market return)				1.848*					
				[0.940]					
output growth					0.121				
					[0.788]				
log (immigrants/natives) in 2000						0.285			
						[0.287]			
log (capital-labor intensity)							-0.232		
							[0.229]		
log (skilled-unskilled labor intensity)								0.453	
								[0.285]	
log (number of vacancies)									0.075
									[0.211]
N	120	120	20	108	120	112	120	118	120
R-squared	0.24	0.27	0.87	0.29	0.26	0.25	0.26	0.24	0.27

Notes to Tables 5a and 5b: All data are averaged over 2001-2005. Standard errors are corrected for heteroskedasticity and denoted in parentheses. ***, **, * and † denote significance at 1, 5, 10 and 15 percent respectively. All regressions include the same controls as in Table 3, column [3]. Table 5a: In column [5], we drop the following security-intensive sectors: (i) Aircraft and parts (377) (ii) Miscellaneous chemicals and allied products (469) (iii) Drugs, chemicals, and allied products (607) (iv) Engineering and architectural services (898). In column [6], we drop the following sectors which use illegal immigrants intensively: (i) agriculture (105) (ii) construction (246) (iii) meat products (406) (iv) apparel (448). Year fixed effects are included in columns [7]. In column [8], industries with zero lobbying expenditures are included replacing log (0) with log of the minimum values. In column [9], we drop the following sectors: (i) Educational services (888) and (ii) 898 (Engineering and computer services).

Table 6. Estimated Effect of Lobbying on Allocation of Visas, Campaign Contributions from PAC vs Lobbying Expenditures

Dependent variable →	**log (number of visas/native workers)**					
	[1]	[2]	[3]	[4]	[5]	[6]
log (PAC contribution / native workers)	0.191	-0.133			0.14	-0.322
	[0.129]	[0.164]			[0.139]	[0.275]
log (lobbying exp/native workers)			0.330***	0.252***	0.313***	0.247***
			[0.068]	[0.083]	[0.070]	[0.083]
union membership rate	-1.755	-3.000**	-3.463**	-3.887**	-3.135**	-3.964**
	[1.102]	[1.395]	[1.478]	[1.607]	[1.403]	[1.559]
lg (output)		-0.141		-0.092		-0.16
		[0.190]		[0.237]		[0.236]
unemployment rate		6.779		8.689		8.096
		[5.277]		[5.603]		[5.681]
log (price)		-0.902		1.163		0.025
		[2.661]		[2.694]		[2.596]
log (capital)		-0.087		-0.133		-0.113
		[0.209]		[0.216]		[0.224]
log (FDI)		0.180**		0.08		0.154*
		[0.081]		[0.092]		[0.078]
shocks		-4.578**		-6.010**		-5.135**
		[2.155]		[2.479]		[2.458]
log (lag US wages)		10.063***		8.966***		8.579***
		[3.188]		[3.332]		[3.264]
log (number of native workers)		-0.156		0.09		-0.237
		[0.236]		[0.264]		[0.311]
N	133	127	119	113	118	112
R-squared	0.05	0.21	0.15	0.26	0.17	0.30

Standard errors are are corrected for heteroskedasticity and denoted in parentheses. ***, ** and * denote significance at 1, 5 and 10 percent respectively. PACs stand for political action committees. The contributions by PACs are averaged over election cycles 2001-02 and 2003-04. For comparison, data on lobbying expenditures is averaged over the same period.

Table A1a -- Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Log (Number of visas as a ratio of native workforce)	120	-7.82	1.92	-11.87	-1.34
Log (Number of H1B visas as a ratio of native workforce)	120	-8.06	1.63	-11.87	-3.00
Log (Total number of visas subject to quota as a ratio of native workforce)	120	-7.97	1.76	-11.87	-1.34
Log (Total number of visas excluding J1 as a ratio of native workforce)	120	-7.84	1.89	-11.87	-1.34
Log (Lobbying expenditures for immigration as a ratio of native workforce)	120	-3.03	2.05	-9.41	1.56
Log (Total lobbying expenditures by all firms which lobby for immigration as a ratio of native workforce)	120	-0.65	2.03	-6.01	4.20
Union membership rate in the US	120	0.12	0.12	0.00	0.47
Log (Gross uutput)	120	10.77	1.56	6.00	14.45
Unemployment rate	120	0.06	0.04	0.00	0.28
Log (Price Index)	120	4.66	0.07	4.34	4.87
Log (Capital expenditures)	120	7.67	1.76	2.21	11.51
log (FDI)	120	7.20	2.67	-1.12	11.73
Shocks	120	0.22	0.06	0.00	0.35
Log (US wages)	120	1.83	0.05	1.69	1.93
Log (Number of native workers)	120	12.38	1.68	7.83	16.34
Log (Ratio of skilled to unskilled workers)	120	-0.63	0.69	-2.48	1.12
Log (Contributions by PACs as a ratio of native workforce)	127	2.27	1.66	-3.80	6.59
Log (Lobbying expenditures by firms which do not lobby for immigration as a ratio of native workforce)	106	2.09	1.67	-0.41	5.35
Union membership rate in the UK	106	0.24	0.16	0.03	0.70

Table A1b -- Summary Statistics (in levels)

Number of visas	120	3,790	25,726	2	276,899
Number of H1B visas	120	955	4,807	2	48,824
Number of visas subject to quota	120	1,217	5,172	2	48,824
Total number of visas excluding J1	120	1,625	5,640	2	50,091
Lobbying expenditures for immigration (in US$)	120	99,811	215,278	0	1,513,108
Total lobbying expenditures by all firms which lobby for immigration (in US$)	120	1,084,469	2,363,724	14	17,800,000
Total lobbying expenditures by all firms for all issues (including immigration) (in US$)	120	11,700,000	20,400,000	2,069	91,400,000
Contributions by PACs (in US$)	127	6,741,956	4,856,364	174,543	28,700,000
Lobbying expenditures by firms which do not lobby for immigration (in US$)	106	11,500,000	20,000,000	2,996	91,200,000
Number of native workers	120	837,067	1,697,717	1,414	12,400,000

All variables are averaged between 2001 and 2005 with the exception of capital, which is averaged between 2001 and 2004. The contributions by PACs are averaged over two election cycles -- 2001-2002, 2003-2004. The summary statistics are based on observations corresponding to regression [3], Table [3] and other regression specifications with controls.