

# Labor Market Laws and Intra-European Migration

## The Role of the State in Shaping Destination Choices

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**Abstract** This article investigates the relationship between migrants' destination choices and the formal labor market access afforded by multiple potential host countries in the context of the EU's eastward enlargement. We use an index of labor market access laws combined with data on migration from new EU member states into the existing states of the EU and EFTA from 2004 through 2010 to test whether (1) migrants are attracted to destinations that give them greater formal labor market access, (2) migration flows to any given destination are influenced by the labor market policies of competing destinations, and (3) the influence of labor market laws on migrant flows is mediated by social networks, language ability, and education level. Our data support the first two propositions and partly support the third: Migration between origin/destination pairs was positively associated with the loosening of destination labor market restrictions while negatively associated with the loosening of competing destinations' labor market restrictions. In addition, the influence of destination labor market access appears to be weaker for destinations in which migrants have larger existing co-national networks, and for migrants from countries with languages that are more similar to the destination language, although we do not discern a clear mediating effect of education level. Our models also include variables for a set of economic indicators, social

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welfare spending, geographic distance, and historical relationships, and the estimated coefficients on these variables are largely in line with theoretical predictions. By combining rich EU data with a unique approach to evaluating competing legal regimes, the analysis helps us better understand how law shapes migration in a multi-destination world.

**Keywords** Migration · Migrant Preferences · European Expansion

## 1 Introduction

Of all the social processes that governments seek to regulate, immigration is in many ways unique. On one hand, immigration is defined by the state and can exist only in a world with states and borders (Zolberg 1989). On the other hand, immigration is a process over which states are often unable to exert significant control (Cornelius et al 1994). As with other areas of human behavior, immigration is driven by strong social and economic forces that are bound to compete with state regulation. Unlike most other areas of government regulation, however, governing immigration means influencing people who are often outside of the state's territory, who may have few ties to the state, and who normally have little or no voice in the creation of the laws aimed at them. Moreover, potential immigrants come into contact with a given state's laws only to the extent that they choose to enter that state's territory; they may choose instead to subject themselves to a different state's laws, or simply to stay at home.

These unique qualities make it important for policymakers to look beyond their own borders when formulating immigration laws. Not only must they anticipate the effects of these laws on immigrants generally, they must also anticipate the consequences of other states' simultaneous attempts to regulate immigration (Shachar 2006; Cobb-Clark and Connolly 1997). Unfortunately, there are gaps in our understanding of both of these issues, and particularly the second one.

Although there exist well-developed theories and a large body of empirical research on the social and economic determinants of migration, less is known about the role of the state, let alone the role of multiple states acting at the same time with varying policies (Massey et al 2002; Portes 1997). The connection between states and migration remains an under-explored research area and the present article makes an important contribution to the literature by shedding some light on it.

The article exploits the particular circumstances surrounding the eastward enlargement of the European Union (EU) in order to investigate the influence of labor market laws on migrants' destination choices. Specifically, the EU expansion makes it possible to separate, to some extent, the influence of labor market laws from that of admissions and residence restrictions: Citizens of the new member states were given the right to travel and reside in any of the old member states of the EU or European Free Trade Association (EFTA) with few restrictions; their employment, however, was subject to potentially significant restrictions that each of the old member states had the option of imposing for up to seven years. Some of the old members imposed no restrictions, some imposed but later lifted restrictions, and some continued to maintain restrictions during the entire period. This article examines the relationship between these varying labor market regulations and the destinations chosen by immigrants from the new member states. Because of the relative absence of admissions and residence restrictions, the expansion of the EU provides a setting in which the effects of labor market policies may be isolated more fully than would otherwise be the case.

The article primarily addresses the hypotheses that (1) immigrants are attracted to destinations that give them greater formal labor market access, (2) that increasing labor market

access in one country can draw migrants away from other potential destinations, and (3) that the influence of labor market laws on migrant flows is mediated by social networks, language ability, and education level. These are hypotheses with important implications for policymakers. If accurate, they suggest (1) that law matters for migration, (2) that the influence of law on migration is polycentric<sup>1</sup> and the alignment of rules on formal labor market access that emerges from the multiple centers of decision-making influences the magnitude and direction of migrant flows, and (3) that the flows themselves consist of heterogeneous populations that respond in different ways to destination state laws.

The first hypothesis assumes that most migrants prefer open formal labor markets to formally restricted markets, and that they act on these preferences. Although these might seem like obvious propositions, our empirical knowledge of the world does not provide a clear basis for their acceptance. Formal labor market laws are capable of operating on migration decisions only through social and economic mediators: What matters are questions like how the laws are perceived, whether they are enforced and obeyed, and how they affect markets and social networks (Schuck 2000). Even assuming that formal rights to access labor markets translate in practice to better access and thus higher expected earnings, it is not clear that simple wage expectations are as influential to migration decisions as factors like local market failures, relative deprivation, or social capital accumulation (Massey and Espinosa 1997; Stark and Taylor 1991; Stark and Bloom 1985).

The second hypothesis requires that migrants have some degree of choice among multiple potential destinations, that they have information about the law in these states, and that they consider this information in reaching their migration decisions. This hypothesis draws on Ayelet Shachar's 2006 work on inter-jurisdictional competition for immigrants, but extends her idea beyond the realm of highly skilled migrants to encompass all types of migration, and shifts the focus from policymakers to the migrants themselves. Whereas Shachar examines the motives and actions of policymakers trying to attract workers who will benefit their economies, we explore the reactions of the migrants to the legal playing fields placed before them, irrespective of whether or not those playing fields are designed with an eye to competition. We ask simply whether a given state's immigration flow is influenced by other states' laws.

The third hypothesis assumes that the heterogeneous characteristics of migrant flows matter in terms of their attraction to destinations with greater formal labor market access. It offers a number of channels through which the effect of labor market access claimed by the first hypothesis operates. Specifically, we hypothesize that the importance of formal labor market access is lower for migrants with larger existing co-national social networks in their destination country because these networks lower migration costs and make it easier to navigate work permit requirements or, alternatively, to subsist through non-formal work arrangements in the absence of a required permit. We hypothesize, in addition, that the importance of formal labor market access is greater for migrants with greater ability to communicate in the destination country language and with higher levels of education because these migrants are better placed to understand the significance of the law and more likely to demand stable, formal work arrangements.

To address these hypotheses we combine (1) annual data on intra-European migration flows and stocks from 2004 through 2010 compiled by Mariola Pytlikova (Adsera and Pytliková forthcoming), (2) an index of labor market rights based on an analysis of EU and

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<sup>1</sup> We use this term in the sense of Ostrom et al (1961) to connote multiple centers of decision-making that are formally independent but may end up in competitive or cooperative relationships. This is related to the notion of polycentric problems, discussed in the context of adjudication by Fuller (1978), Henderson (1975), and others.

member state law (Palmer 2014), (3) an index of linguistic proximity between origin and destination state languages (Adsera and Pytliková forthcoming), (4) data on origin state enrollment rates in tertiary education, and (5) a set of control variables drawn from the World Bank, the European Commission's Statistical Office (EuroStat), the Organization for Economic Cooperation and Development (OECD), and the *Centre d'Etudes Prospectives et d'Informations Internationales* (CEPII) (Mayer and Zignago 2011). Although the linguistic proximity index and enrollment rate data are only rough proxies for the individual language and educational abilities on which the third hypothesis depends, they allow us to test this hypothesis, at least indirectly, using large-N aggregate flow and stock data. We fit a series of regression models relating migration rates to each destination country's labor market index value and the weighted mean labor market index value of all other destinations (weighted by GDP), while controlling for country, country-pair, and year effects and a set of origin and destination economic, social, geographic, cultural, and historical characteristics. We also explore interactions between labor market access and the migrant stock, linguistic proximity, and educational enrollment rate variables.

The results support our first two hypotheses and partly support the third. When controls are included in the models, increases in destination state index scores are generally associated with increasing migration rates, while increases in the mean index score of competing destinations are associated with decreasing migration rates. The observed destination state index score effect appears to decrease with increasing stocks of origin state immigrants in the destination state and with increasing origin-destination language proximity. Both factors, thus, appear to mediate the effect of labor market access, although the direction of the linguistic proximity mediation is the opposite of what we hypothesized and we are not able to discern a relationship between origin country education levels and the index score effect. Finally, the relationship between migration rates and the control variables in these models is largely consistent with the predictions of existing migration theories and the findings of other studies.

## 2 Untangling the determinants of migration in a multi-destination world

There is an extensive theoretical literature that aims to explain why, when, and where people migrate. In some circumstances, migrants may act as economically rational individuals seeking to maximize their material utility in light of differences in wage expectations between sending and receiving countries (Hicks 1932; Borjas 1989; Todaro 1969) adjusted for costs of migration (Sjaastad 1962) and the probability of finding a job (Harris and Todaro 1970). In other circumstances, however, the migration decision is more likely made at the level of the family and absolute expected wages may be less important than considerations of relative deprivation or the need to manage risk or make up for temporary market failures in the home country (Massey et al 2002; Stark and Bloom 1985; Stark and Taylor 1991). Social networks, social capital, and cultural changes may also play important roles (Waldinger and Lichter 2003; Munshi 2003), and they can help explain the cumulative nature of migration, which often seems to act as its own catalyst (Massey 1990; Fussell and Massey 2004). At a macro level, migration has been explained in terms of segmented labor markets (Piore 1979), and at the broadest scale in terms of the historical-structural notion of world systems (Wallerstein 1974; Portes and Walton 1981).<sup>2</sup>

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<sup>2</sup> All of these theories are discussed in detail in (Massey et al 2002).

Empirically, much of what we know about the determinants of migration comes from studies of migrants moving from one sending country to one receiving country (Massey and Espinosa 1997; Fussell and Massey 2004; Palloni et al 2001).<sup>3</sup> These studies have the advantage of focusing in depth on the particular qualities of the countries involved, and they are often able to utilize detailed data at the level of individual migrants or households. Expanding the scope to multiple pairs of sending and receiving countries, however, increases the quantity of data (albeit, often with a loss in quality), allows for more generalizable results, and leads to models that may better reflect the choices migrants face.

A number of recent studies have taken this approach, some using gross migration flows as the dependent variable (Pedersen et al 2006, 2008; Mayda 2010; Kim and Cohen 2010; Adsera and Pytliková forthcoming; DeWaard et al 2012; Ortega and Peri 2013; Giulietti et al 2013; McKenzie et al 2014) and others using differences in foreign-population stocks as proxies for flows (Grogger and Hanson 2011; Belot and Hatton 2008; Beine et al 2011; Bertoli and Fernández-Huertas Moraga 2013). Most of this work with multiple origin-destination pairs has found a robust positive relationship between destination income per capita and migration, whereas the effect of income in origin countries is less clear.

The literature also confirms the role of unemployment in reducing the attractiveness of destinations and acting as a push factor in origins. The effect on migration decisions of an increase in destination unemployment can be mitigated by the existence of unemployment benefits, which can also act as a so-called “welfare magnet” (Borjas 1987) although the evidence here is ambiguous (Pedersen et al 2006, 2008; Giulietti et al 2013). The empirical literature additionally suggests a strong positive relationship between migration rates and immigrants’ networks (Pedersen et al 2006, 2008; Beine et al 2011) and country pairs’ cultural and linguistic distances (Pedersen et al 2006, 2008; Belot and Ederveen 2012; Adsera and Pytliková forthcoming). This last relationship may be best understood in economic terms in that co-national immigrant diasporas and cultural and linguistic similarity reduce migration costs by facilitating adaptation and labor market integration in host countries (Massey et al 1993; Munshi 2003; Hatton and Leigh 2011).

Work on multiple origin-destination pairs has also considered the role of immigration policy. Mayda (2010) uses multiple country pairs to examine the relationship between origin country emigration rates and neoclassical economic factors, as well as the interaction between these factors and destination country laws on the admission of immigrants. She finds a strong positive relationship between destination country GDP and emigration rates, a more complicated one with origin country GDP, and a strengthening of the influence of both factors when destination country immigration laws become less restrictive. Similarly, Ortega and Peri (2013) find a strong relationship between migrant flows and both wage differentials and destination country laws on immigrant admissions.

Recent works by Bertoli and Fernández-Huertas Moraga (2013) and Pedersen and Pytlikova (2008) are particularly relevant to the present study. Bertoli and Fernández-Huertas Moraga (2013) find that bilateral migration rates are influenced by the attractiveness of alternative destinations, a phenomenon they call multilateral resistance to migration. They find that the migration effects of origin state economic conditions are overestimated when the influence of alternative destinations is ignored.

Pedersen and Pytlikova (2008) examine the relationship between labor market access and migrant flows in the context of EU expansion. They focus specifically on migration from new member states to the Nordic countries between 1985 and 2007. Using a difference-

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<sup>3</sup> Theoretical models are also often simplified in this respect to avoid the mathematical complications introduced by multiple origins and destinations (Borjas 1989).

in-differences approach, they find no significant effect of the opening of labor markets on migration from the states that entered the EU in 2004, but a positive effect when it comes to migration from the 2007 entrants.

The present study builds on Pedersen and Pytlikova (2008) but makes a unique contribution by including eighteen of the nineteen pre-2004 EU and EFTA member states as destinations in the analysis, by relying on an index of labor market access rights to capture greater variation in destination state laws, and by relying on a new analytical approach to explore the ways in which migration patterns are shaped by simultaneous changes in multiple legal regimes.

### 3 Hypotheses

Our first hypothesis is that, all else equal, destinations that give migrants greater formal labor market access will receive larger flows of migrants. This hypothesis draws on the human capital theoretical framework (Sjaastad 1962; Harris and Todaro 1970), assuming that migration decisions are influenced by the perceived availability of employment in the destination state. This could be the case for migrants who themselves wish to be employed or for those moving as part of a family unit in which at least one member wishes to be employed. The assumption does not rule out the possibility of non-economic motivations, but it does require that employment availability be the decisive factor for some migrants, either because they rank it higher in importance or because their choice sets are such that other higher ranked factors are non-limiting.

The hypothesis also assumes that migrants believe greater formal labor market access will mean better employment options and lower costs associated with paperwork related to applying for a job. This depends, in part, on whether migrants intend to comply with employment laws—or, at the least, whether they prefer destinations in which they will be able to work in compliance with such laws. It also depends on whether migrants are able to obtain employment authorization even under restrictive regimes. Our assumption is that most migrants prefer to work in compliance with the law if they can, and that, even if they could obtain employment authorization under a more restrictive regime, they prefer to avoid the costs and possible instability of having to seek and maintain authorization in the first place. In addition, employers may be less willing to hire workers with restricted labor market rights when doing so requires additional costs or efforts<sup>4</sup>, and many restrictive labor market regimes link work authorization with proof of a job offer.

The second hypothesis is that the flow of migrants to a given destination is influenced by the immigrants' rights laws of other destinations that these migrants might choose instead. This hypothesis draws again on the human capital theoretical framework (Sjaastad 1962; Harris and Todaro 1970), and on recent applications of this framework by Adsera and Pytliková (forthcoming), Grogger and Hanson (2011), and others. The framework assumes migrants have the ability to choose among multiple potential destinations, and that they choose to relocate to the one in which their utility is the highest. Here we hypothesize that potential migrants have information about the law in these destinations and that they consider this information and form preferences about different laws that influence their migration decisions. These assumptions appear increasingly plausible in today's highly mobile and interconnected world, and they appear to be shared by at least some policy-makers devising strategies for luring highly skilled migrants to their countries (Shachar 2006). There

<sup>4</sup> For instance, the employer may need to prove that there is no native or unrestricted EU-national worker available on the labor market for the position.

is also some empirical support for the hypothesis. Cobb-Clark and Connolly (1997), for instance, find that increases in skilled migrants arriving in the United States are associated with decreases in the number of skilled migrants applying for Australian visas. A recent contribution by Bertoli and Fernández-Huertas Moraga (2013) adds evidence of the importance of controlling for conditions in alternative destinations.

The third hypothesis is that the effects of each destination state's labor market laws on its immigrant flows are mediated by a number of mechanisms. In particular we hypothesize that the effects of granting immigrants employment rights are smaller for migrants with larger existing co-national social networks because these networks make it easier to navigate work permit requirements or, alternatively, to subsist through non-formal work arrangements in the absence of a required permit. In contrast, we propose that the effects are larger for people with greater ability to communicate in the destination country language and with higher levels of education because these migrants are better placed to understand the significance of the law and more likely to demand stable, formal work arrangements and profit from them. The ability to communicate in the destination country language, in particular, opens up an information channel that makes it easier for highly skilled migrants to transfer their human capital to the destination country, provided that labor market laws do not get in the way.

#### **4 Evolving rights of migrants within the EU and EFTA**

Contemporary Europe presents a favorable context in which to study migrants' choices among multiple destinations and, in particular, the role of the state in influencing these choices through policies related to immigrants' economic and social rights. This is due to the dismantling of most barriers to entry and residence for EU and EFTA citizens within the EU and EFTA states combined with the temporary maintenance of restrictions on labor market access that vary by state and over time. Whereas admissions and residence laws often obscure the influence of immigrants' rights laws on migration flows, intra-European migration offers the chance to view the latter in isolation from the former.

The idea of giving people the right to move freely between states has been one of the cornerstones of the project of European integration since its inception. The starting point was labor mobility, with the guarantee of "free movement of workers" enshrined in article 48 of the 1957 Treaty Establishing the European Economic Community (Treaty of Rome). Through a combination of EU legislation and court decisions, this concept evolved over time to form the basis of what is now considered to be EU citizenship. The citizens of each member state now have the right to move and reside throughout the EU with few restrictions, and to enjoy key social, economic and political rights on an equal basis with the citizens of whatever member state they choose to make home (Hailbronner 2007; Joppke 2001; European Commission 2008, 2002).

The precise nature of these rights has changed over time, as has the territory in which they are applicable. Of most relevance to this article are the EU's latest rounds of expansion, in which the European zone of free movement (which encompasses the EU states along with Iceland, Liechtenstein, Norway, and Switzerland), was extended to Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia in May 2004, and to Bulgaria and Romania in January 2007. The treaties of accession with Cyprus and Malta provide that these countries' citizens must be treated essentially the same as any of the existing EU citizens immediately upon accession with respect to freedom of movement. The treaties with the remaining countries, however, give each existing member

state the option of imposing its own transitional arrangements restricting new member state citizens' access to their labor markets for up to seven years. The restrictions may not be greater than those already in place for these citizens and they must ensure that new member state citizens receive more favorable treatment than that accorded to citizens of countries outside of the EU and EFTA. In addition, once new member state citizens are given access to a member state's labor market for an uninterrupted period of at least a year, they must then be given access to that market for as long as they remain in it either employed or involuntarily unemployed.<sup>5</sup> Most importantly, the possible restrictions are related specifically to labor market access, not freedom of residence, which is guaranteed to all EU and EFTA citizens equally—at least formally<sup>6</sup>. At the same time, this formal guarantee of equal treatment with regard to freedom of residence is not always respected in practice. Moreover, the freedom is not without conditions: EU and EFTA citizens may be expelled from other member states for certain crimes, on grounds of public order or security, or in certain situations for becoming dependent on social welfare.

For the countries joining the EU in 2004, open access was immediately granted by Ireland, Sweden, and the UK,<sup>7</sup> but restrictions were imposed (except in the case of citizens of Cyprus and Malta) by the other existing members of both the EU and the EFTA. Finland, Greece, Iceland, Italy, Portugal, and Spain all lifted their restrictions in 2006, Luxembourg and the Netherlands in 2007, France in 2008 (after first loosening them in 2006), and Belgium, Denmark, and Norway in May 2009. By contrast, Austria, Germany, Lichtenstein, and Switzerland maintained their restrictions during the full transitional period—until May 2011.

For the countries joining in 2007 (Bulgaria and Romania), open access was immediately granted by Finland and Sweden, but restrictions were placed by the other existing EU and EFTA members. Greece, Spain, Portugal, and Denmark lifted their restrictions in 2009 (although Spain partly reimposed them on Romania in July 2011), France partly loosened them in 2007, and Iceland, Ireland, Italy, and Norway lifted them in 2012. Austria, Belgium, France, Germany, Lichtenstein, Luxembourg, the Netherlands, Switzerland and the UK all continued to maintain their restrictions until January 2014 (the maximum length allowed under the accession treaties).

## 5 Data

This article relies on data about migration from the eight states that joined the EU in 2004 subject to labor market restrictions to eighteen of the states that were already members of the EU or EFTA in that year, and from the two states that joined the EU in 2007 (also subject to labor market restrictions) to those same eighteen existing member states (see Figure 1). The data fall into three categories: (1) annual flows and stocks of migrants and total population sizes of the origin states; (2) an annual index of private sector labor market access enjoyed by sending state citizens in each destination state; and (3) a set of destination and sending state economic, social, cultural, and geographic variables.

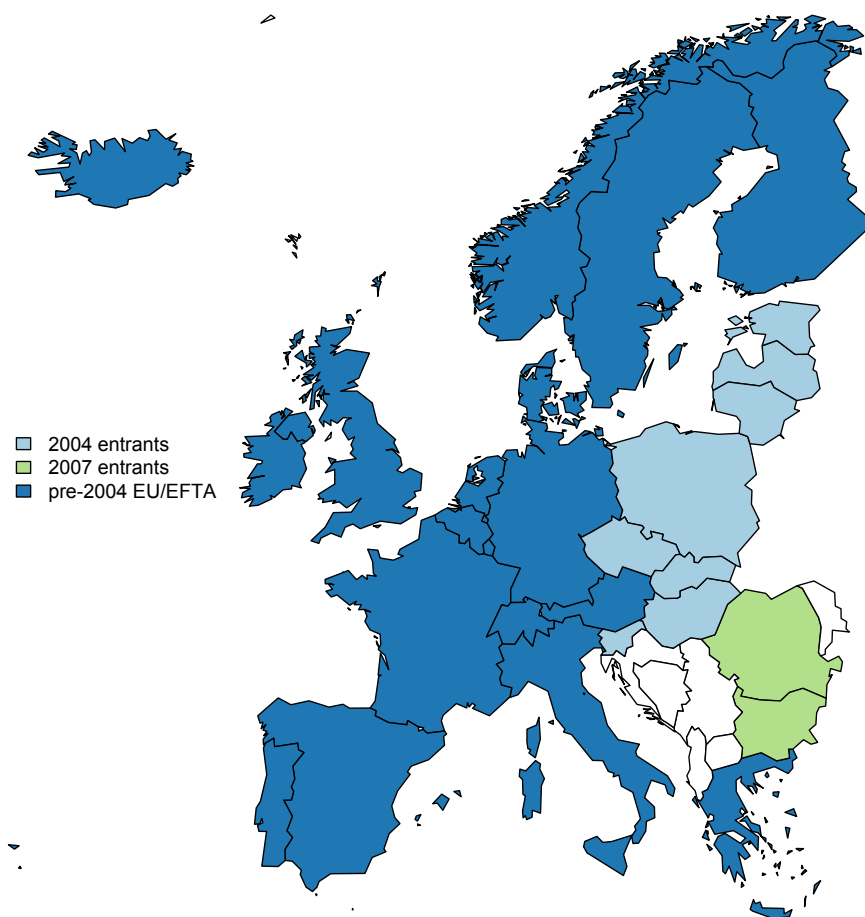
The migration data are drawn from a large dataset on migrant flows and stocks, which covers migration to 42 destination countries from every country in the world for the years

<sup>5</sup> Treaty of Accession to the European Union 2003, Annexes V-XIV, O.J. L 236 (Sept. 23, 2003).

<sup>6</sup> European Parliament and Council Directive 2004/38/EC of 29 April 2004, O.J. L 158 (Apr. 30, 2004).

<sup>7</sup> The UK put in place a mandatory workers registration scheme for monitoring purposes, but did not restrict access in substantive ways (European Commission 2009).





**Fig. 1** EU/EFTA Enlargement. © EuroGeographics for the administrative boundaries.

1980–2010. This dataset was compiled by Mariola Pytlikova based on information on immigration flows and foreign population stocks she collected from the national statistical offices of 27 OECD countries (Adsera and Pytliková forthcoming)<sup>8</sup>, and for 15 destinations from the OECD International Migration Database and Eurostat.<sup>9</sup> It is currently the most comprehensive dataset of its type. For the analyses in this paper, we chose to use only EU/EFTA destinations and Central and Eastern European (CEE) origins for years 2004–2010.

One limitation of this type of cross-national migration data is that there are differences in how the destination countries register and define (and thus count) their immigrants. Some states use data from their general population registers, while others rely on special registers of foreigners, surveys or administrative data on residence permits. We provide a detailed

<sup>8</sup> This dataset is an updated and expanded version of that used in Pedersen and Pytlikova (2008) and Pedersen et al (2008).

<sup>9</sup> The OECD International Migration Database is the source for data on migration to Chile, Israel, Korea, Mexico, the Russian Federation, and Turkey, and Eurostat is the source for migration to Bulgaria, Croatia, Cyprus, Estonia, Latvia, Lithuania, Malta, Romania, and Slovenia.

overview of the definitions and data sources used in the migration migration flow and stock data in the on-line appendix.<sup>10</sup>

The data are organized by origin-destination pairs and years. Our basic approach is to analyze only migration from new EU/EFTA member states into old ones during the years following expansion in order to capitalize on this unique situation in which we can observe migration from multiple origins to multiple destinations within a relatively homogeneous law and policy environment in which the main variation is in labor market rights. Although it might be tempting to add data from years prior to each state's accession or to add states outside of the EU/EFTA, doing so would add a great deal of complexity and make it harder to disentangle the role of labor market rights. In addition, we exclude Liechtenstein as a destination state because of its small size, and Malta and Cyprus as origin states because of the small sizes of their migrant flows and their special treatment under the enlargement treaty.

The data on each destination country's laws on immigrants' employment rights come from an index constructed by Palmer (2014) based on an analysis of available legal texts and commentary. The index attempts to quantify, for each year in question, the employment rights accorded in each destination state to immigrants who are citizens of each new member state. The index values range between 0 and 1, with 0 indicating that immigrants are given no rights at all, and 1 indicating that they are given the same rights as citizens. Since rights may depend on the nature of an immigrant's entry and residence, the index takes immigrants who are eligible to naturalize as the standard category across which comparisons are made. As a practical matter, this generally means immigrants with long-term resident status.

The primary sources of variation in the index are (1) the different dates on which each existing member state lifted labor market restrictions with respect to the citizens of each new member state, and (2) the nature and extent of the restrictions that were in place prior to this date. Even before lifting their labor market restrictions, all of the states in question allowed new member state citizens to work prior to naturalization. The main restrictions were in how this right could be exercised. For instance, many states required new member state citizens to apply for work permits prior to employment, and these permits often needed to be renewed on a regular basis. Permits were often rationed based on labor market needs, and a permit's holder could be restricted to working in particular sectors, occupations, jobs, or places of work.

The third group of data is the set of destination and origin country characteristics used as control variables. These include annual per capita GDP, adjusted for purchasing power parity and measured in international dollars, percentage of GDP spent on welfare, unemployment rate, tertiary education enrollment ratio, geographic distance between origin and destination states and indicators of whether these states are contiguous and whether they have ever had a colonial link.<sup>11</sup> The set of control variables also includes an index, taken from Adsera and Pytliková (forthcoming), of linguistic proximity between the official languages of each origin-destination pair.

<sup>10</sup> As with other existing datasets of this type, we measure only migration events that have been recorded in official documents. This is a drawback in that increases in documented migration may be related to simultaneous decreases in clandestine migration. We are not able to disentangle such dynamics due to the difficulty of measuring clandestine migration.

<sup>11</sup> See <http://www.cepii.fr/anglaisgraph/bdd/distances.htm>. The distance measurements are from the *dist* variable, which is constructed as the geodesic distance between each state's most populous city (Mayer and Zignago 2011)

## 6 Variable selection and descriptive statistics

The outcome of interest is the annual migration flow from each origin state to each destination state. We focus specifically on migration rates, estimated as the gross number of people migrating from origin  $i$  to destination  $j$  divided by the total population of origin  $i$ . This is a traditional occurrence-exposure rate, and it has been used in prior cross-country studies of migration patterns (Hatton and Williamson 2002; Clark et al 2007; Pedersen and Pytlikova 2008; Hanson and McIntosh 2010; Mayda 2010; Adsera and Pytliková forthcoming). We use gross migration flows, rather than net flows, in calculating this rate because data on gross flows are typically more accurate and also relate more directly to the underlying questions and social processes suggested by theoretical work (Bijak 2010). Expressed as migrants per thousand, the rate variable (RATE) ranges from 0 (e.g., Bulgaria-Iceland-2009), to 12 (Romania-Italy-2007), with a standard deviation of .8 and median and mean of .1 and .3, respectively (Table 1).

Variable	n	Min	q <sub>1</sub>	$\tilde{x}$	$\bar{x}$	q <sub>3</sub>	Max	s
RATE <sub>ijt</sub> (permil)	994	0.00	0.02	0.07	0.31	0.21	12.07	0.80
LMI <sub>ijt-1</sub> (index units)	994	0.25	0.70	0.80	0.81	1.00	1.00	0.20
WMCI <sub>ijt-1</sub> (index units)	994	0.65	0.76	0.81	0.81	0.88	0.96	0.08
GDP <sub>it-1</sub> (mil per cap)	994	4.31	7.96	11.16	11.74	14.61	27.02	4.91
GDP <sub>jt-1</sub> (mil per cap)	994	15.46	33.91	41.26	45.75	52.73	118.22	19.02
UNEMPL <sub>it-1</sub> (percent)	994	4.30	6.03	7.50	8.99	10.47	19.70	3.97
UNEMPL <sub>jt-1</sub> (percent)	994	2.30	4.20	6.20	6.43	8.40	18.00	2.69
WELF <sub>it-1</sub> (percent)	994	11.30	13.60	17.20	17.38	20.30	24.30	3.68
WELF <sub>jt-1</sub> (percent)	994	18.30	24.30	26.80	26.53	29.20	34.70	3.49
SET <sub>it</sub> (percent)	994	33.91	53.02	64.68	62.71	70.68	86.93	12.37
DIST <sub>ij</sub> (km)	994	59.62	884.61	1332.48	1436.24	1790.14	3709.10	748.39
NEIGHBOR <sub>ij</sub> (binary)	994	0.00	0.00	0.00	0.05	0.00	1.00	0.22
COLONY <sub>ij</sub> (binary)	994	0.00	0.00	0.00	0.03	0.00	1.00	0.17
LP <sub>ij</sub> (index units)	994	0.00	0.00	0.10	0.08	0.10	0.45	0.06
STOCK <sub>ijt-1</sub> (permil)	955	0.00	0.10	0.38	1.60	1.17	41.22	3.84
STOCK <sub>ijt-1</sub> imputed (permil)	994	0.00	0.11	0.39	1.60	1.20	41.32	3.80

**Table 1** Summary statistics of variables used in the primary analysis.

The labor market index (LMI) variable includes the index score for each destination state with respect to migrants from each origin state in each year. If the first hypothesis is correct, we would expect LMI to be positively associated with migration rate. The variable ranges from .3 (e.g., Bulgaria-Austria-2007) to 1 (e.g., Bulgaria-Sweden-2009), with standard deviation of .2 and median and mean both close to .8 (Table 1).

In addition to LMI, we also calculate the mean score of all other destinations within the dataset with respect to the same origin in the same year, weighted by destination state GDP. This variable, which we refer to as the weighted mean competing index score (WMCI), provides a simple and rough measure of the formal labor market access in competing destinations, taking into account the sizes of these destinations' economies. If the second hypothesis is correct, we would expect WMCI to be negatively associated with migration rate. It ranges from .7 to 1, with standard deviation of .1 and median and mean close to .8 (Table 1).

We also include variables for per capita gross domestic product (GDP), unemployment (UNEMPL), and welfare expenditure (WELF), measured for both origin and destination states. These variables serve as proxies for absolute expected income. Neoclassical eco-

nomic theories of migration predict that the gap between origin and destination state expected income should be a significant determinant of migration, with migrants moving out of individual, material self-interest (Borjas 1989; Todaro 1969). Although these theories focus on the gap in expected income, we use origin and destination state GDP, UNEMPL, and WELFARE as separate variables in the models reported here because they are only very rough proxies for expected income, and measuring their gaps may make their relationships to wages only rougher. The expectation according to neoclassical theory is that origin state GDP and welfare, and destination state unemployment will be negatively associated with migration rates, while destination state GDP and welfare and origin state unemployment will be positively associated with migration rates.

Expressed in thousands of current U.S. dollars per capita, origin GDP ranges from 4 (Bulgaria-2007) to 27 (Slovenia-2009), with standard deviation of 4.9 and median and mean of 11 and 12 respectively. Destination GDP ranges from 15 (Portugal) to 118 (Luxembourg), with standard deviation of 19 and median and mean of 41 and 46, respectively. Origin UNEMPL ranges from 4% (Lithuania-2008) to 20% (Poland-2004), with standard deviation of 4% and median and mean of 8% and 9% respectively. Destination UNEMPL ranges from 2% (Iceland-2008) to 18% (Spain-2010), with standard deviation of 3% and median and mean each close to 6%. Origin welfare expenditure ranges from 11% (Latvia-2008) to 24% (Slovenia-2010), with standard deviation of 4% and median and mean each close to 17%. Destination welfare expenditure ranges from 18% (Ireland-2008) to 33% (Denmark-2010), with standard deviation of 4% and median and mean each close to 27% (Table 1).

We include each origin state's tertiary enrollment ratio as a proxy for the level of education of any given migrant. Although individual-level education data would clearly be preferable, tertiary enrollment provides a rough method of capturing some of the educational heterogeneity among migrants in the aggregate data. Country education levels often serve as reasonable proxies for individual attainment, and while there is evidence of migrant self-selection by skill level (Beine et al 2011), the selection appears to be positive for more highly skilled workers, suggesting that, if anything, the true effects of skill level may be even stronger than those observed in our proxy variable models.

The variable (SET), expresses the total number of people enrolled in tertiary education as a percentage of the population falling within the 5-year age group starting at the age when students generally complete their secondary education. The expectation is that the interaction of SET with the labor market index will be positively associated with migration rates because the ability to find stable, regular employment will matter more to people with higher education. The variable ranges from 34% (Slovakia-2004) to 87% (Slovenia-2010), with standard deviation of 12 and median and mean of 65% and 63%, respectively (Table 1).

We include the geographic distance (DIST) between each origin state and destination state's most populous city and an indicator of whether the two states are neighbors (NEIGHBOR), as proxies for migration costs. The distance variable ranges from 60 km (Slovakia-Austria) to 3,709 km (Bulgaria-Iceland), with standard deviation of 748 km and median and mean of 1,332 km and 1,436 km, respectively. The neighbor variable indicates that 5% of the available country-pair-years involve neighboring countries (Table 1).

We include an indicator of whether each country pair has a past colonial relationship (COLONY) in order to capture information about historical ties that could drive present migration without necessarily appearing in other variables. The expectation is that social, cultural, and political ties between countries with a past colonial relationship may facilitate greater migration, for example by making it more likely that potential migrants would have information about the destination country or would be able to rely on existing co-ethnic

networks in that country (networks that might not be captured in the stock variable discussed below). Of the available country-pair-years, 3% involve countries that have a past colonial tie (Czech Republic-Austria, Estonia-Sweden, Poland-Germany, Slovenia-Austria) (Table 1).

The index of linguistic proximity (LP) constructed by Adsera and Pytliková (forthcoming) serves as a measure of the ease with which migrants from a given origin are likely to be able to learn a given destination's language. Our assumption is that language acquisition opens up a key channel by which migrants are able to obtain information about destination labor market laws and to convert their human capital into material gains in the destination economy. We use the linguistic proximity between each country's first official language, and we expect that this variable will be positively associated with migration rates. We also expect that the interaction between LP and the labor market index will be positively associated with migration rates, suggesting that formal labor market access is more important the more accessible is the destination language. This variable ranges from close to 0 (e.g., Bulgaria-Finland-2010) to .5 (e.g., Romania-Italy 2007), with standard deviation of .1 and median and mean each close to .1 (Table 1).

We include the normalized stock (STOCK) of migrants from each origin state residing in each destination in order to capture information about social networks and social capital accumulation. Pedersen et al (2008) and Beine et al (2011) use aggregated data to show that co-national migrant stocks significantly increase migration and account for most of the variation in migrant flows. Individual-level studies of migration behavior have likewise found that people are more likely to migrate to a given destination if they know someone who has already migrated there (Massey et al 2002; Massey and Espinosa 1997; Massey 1990; Fussell and Massey 2004). Such an acquaintance can provide vital information and social connections to help with travel, settlement, and jobs, all of which lowers the costs of migration and increases potential benefits (Waldinger and Lichter 2003). Since a larger stock of co-national migrants in a given destination state suggests possibilities for stronger or larger social networks, the expectation is that migrant stocks will be positively associated with migration rates.

As in Pedersen et al (2008, 2006), we normalize the stock variable by dividing it by the origin country population in order to better isolate network effects from the absolute population size of the origin state. Expressed in persons per thousand, STOCK ranges from close to 0 (e.g., Slovenia-Iceland-2005) to 41 (Romania-Italy-2010), with standard deviation of 4 and median and mean of .4 and 1.6, respectively (Table 1).<sup>12</sup>

## 7 Models of migration rates

To test our two hypotheses, we analyze the relationship between migration rates and labor market access, as quantified in the index scores, while controlling for the economic, social, and geographic variables described above. The first hypothesis implies a positive association between migration rates and index scores, while the second implies a negative association between migration rates and the mean index score of the competing destinations. The third hypothesis implies significant interactions between the index and migrant stock, linguistic proximity, and tertiary education enrollment. If the specific propositions of the third hypothesis are true, we would expect a negative association between migration rates and the

<sup>12</sup> We lack data on stocks for 39 (4%) of the total of 994 country-pair-years, but we have tested the robustness of our results by fitting all models using imputed data in addition to dropping records with missing stocks. Our imputation technique and the results of these models are presented in the online appendix.

LMI-STOCK interaction and a positive association between migration rates and the LMI-LP and LMI-SET interactions.

We rely on several sets of econometric models to analyze these relationships. First, we use ordinary log-linear models that treat migration rate as a continuous response variable and include fixed effects for origin, destination, and year, or alternatively, origin-destination pair and year. The general specification of these models is:

$$\log(\text{RATE}_{ijt}) = \alpha_i + \alpha_j + \alpha_t + \beta \text{LMI}_{ijt-1} + \mathbf{X}^\top \lambda \quad (1)$$

and

$$\log(\text{RATE}_{ijt}) = \alpha_{ij} + \alpha_t + \beta \text{LMI}_{ijt-1} + \mathbf{X}^\top \lambda \quad (2)$$

where  $\text{RATE}_{ijt}$  is the migration rate between origin  $i$  and destination  $j$  in year  $t$ ,  $\alpha_i$ ,  $\alpha_j$ ,  $\alpha_{ij}$ , and  $\alpha_t$ , are the origin, destination, origin-destination pair, and year fixed effects,  $\text{LMI}_{ijt-1}$  is the labor market index value for destination  $j$  with respect to citizens of origin  $i$  in year  $t - 1$ , with  $\beta$  as its estimated coefficient, and  $\mathbf{X}$  is a vector of covariates with  $\lambda$  as their corresponding coefficients. The covariates include different combinations of the control variables discussed above, the mean index score of the competing destinations ( $\text{WMCI}_{ijt-1}$ ) at time  $t - 1$ , and the interaction terms.

In addition to these log-linear rate models, we also employ a set of negative binomial models to better capture the discrete, non-negative nature of gross migration data (Belot and Ederveen 2012). Although this might also be accomplished with a Poisson model (Simpson and Sparber 2012), the fact that people often migrate in groups—families—makes it likely that migration counts are over-dispersed (variance is greater than mean), and the level of over-dispersion may even vary across states. The negative binomial distribution is better able to capture these qualities, particularly if used in a multilevel framework. We therefore fit a set of negative binomial multilevel models with random intercepts for origin, destination, and year, and alternatively, origin-destination pair and year. The general specification is:

$$\log(f_{ijt}) = \log(n_{it}) + \alpha_i + \alpha_j + \alpha_t + \beta \text{LMI}_{ijt-1} + \mathbf{X}^\top \lambda \quad (3)$$

and

$$\log(f_{ijt}) = \log(n_{it}) + \alpha_{ij} + \alpha_t + \beta \text{LMI}_{ijt-1} + \mathbf{X}^\top \lambda \quad (4)$$

where  $f_{ijt}$  is the count of people who migrated from country  $i$  to country  $j$  in year  $t$ , and  $n_{it}$  is the origin state population in year  $t$ , which serves as an offset so that the results can be interpreted in terms of migration rates. All other variables are defined as in equations 1 and 2, except that the  $\alpha$  terms are now random intercepts, which the multilevel approach fits as a compromise between each group's mean and the pooled mean, based on the amount of data for each group (Gelman and Hill 2006). This last point is important because we have different numbers of observations for each origin, destination, and year because of missing data and because, for each origin, we include only the years after it was admitted to the EU (so we have many fewer observations for Bulgaria and Romania, admitted in 2007, than for the origins admitted in 2004). The multilevel approach makes it possible to maintain the hierarchical structure of the data without giving any group more weight than the others, relative to the number of observations.

We fit all multilevel negative binomial models using Markov chain Monte Carlo (MCMC) sampling implemented by Stan (Stan Development Team 2014b) and the RStan interface for R (Stan Development Team 2014a). We use the negative binomial parameterization described in Gelman et al (2013) and we assign uninformative prior distributions to all unknown parameters (using wide normal distributions centered on zero for the group intercepts and the slopes of all predictor variables, and using uniform distributions for the negative binomial shape and dispersion parameters). The approach fits naturally into a Bayesian framework and we use Bayesian terms to interpret the results from these models—samples from the posterior distributions of each parameter. Given our use of uninformative priors, however, the results can also be viewed from the same frequentist perspective that we take with our other models.

One of the main empirical concerns with these models is endogeneity: Migration flows may cause destination states to change the rights of migrants. Migration flows may also affect origin and destination state economies (a subject about which there is an entire body of research by Card, 2001 and 2005; Borjas, 2006, Peri and Sparber, 2009, and others). In addition, the accumulation of migrant stocks obviously depends on migrant flows.<sup>13</sup> The above models address this concern by using time-lagged variables for labor market rights, economic indicators, and migrant stocks, treating these variables as predetermined as has been done in previous studies (Mayda 2010; Pedersen et al 2008; Belot and Ederveen 2012; Beine et al 2011; Hatton 2005; Ortega and Peri 2013; Simpson and Sparber 2012). The logic is that current migration flows cannot affect past conditions.

Current migration flows, however, may well be correlated with past migration flows that affected those past conditions, so the endogeneity concern is not entirely eliminated by our approach. An alternative solution is to employ a generalized method of moments (GMM) instrumental variable estimator such as Arellano and Bond's (1991) difference GMM estimator, or Arellano and Bover's (1995) system GMM estimator. The system GMM procedure consists of a joint estimation of the equation in first-differences and in levels, where lagged levels and lagged first-differences of the regressors are used as instruments for the equations in first-differences and in levels, respectively. According to a number of studies, the system GMM estimator is more efficient than the first-differenced GMM estimator—particularly in dynamic panel data. In addition, the system GMM seems to have smaller bias and improved precision in comparison to the difference GMM in short panels (Blundell and Bond, 1998) like ours. We therefore use the system GMM estimator in our analyses.<sup>14</sup>

## 8 Discussion of results

Table 2 shows estimates from a series of log-linear models related to the first hypothesis—that migrants are attracted to destinations that give them greater formal labor market access. Models 1 and 2 are fit with OLS, Models 3 and 4 with system GMM in which we treat all

<sup>13</sup> Note, however, that stocks depend also on outmigration and death rates, which are likely to be uncorrelated with current inflows, making the potential existence of endogeneity not at all a straightforward issue.

<sup>14</sup> The consistency of the GMM estimator depends on the validity of the moment conditions being exploited and therefore we check the validity by the Sargan (1958) / Hansen (1982) test of over-identifying restrictions. Furthermore, Arellano and Bond (1991) propose two tests for first-order and second-order serial correlation for the disturbances of the first-differenced equation (A-B tests). In our models Sargan test is rejecting the null, whereas Hansen test is failing to reject. We suspect that given that in contrast to Hansen test Sargan test is not distributed as chi-square under heteroskedasticity, the existing heteroskedasticity could cause Sargan test to incorrectly reject the null. From our A-B tests we can see that we have no serial correlation in the first order errors, but second-order GMM residual serial correlation.

economic variables, co-national stock and employment rights as endogenous and the other variables as exogenous. Models 1 and 3 include origin, destination, and year fixed effects, while Models 2 and 4 include origin-destination pair and year fixed effects. Although not statistically significant in Model 1, the coefficient on the labor market index is positive and significant in the other three models, as predicted by our hypothesis. Not only does the coefficient remain positive when potential remaining endogeneity is accounted for by the GMM models, it becomes notably larger in the GMM model with country-pair fixed effects than in its OLS analog: the latter predicts a 12% increase in migration rate for each 0.1 unit increase in the migration index, while the former predicts a 7% increase. (The index score in these models has been rescaled by a factor of 10, so each 1-unit increase in the model corresponds to a .1 unit increase of the index.)

**Table 2** OLS and GMM models of LMI.

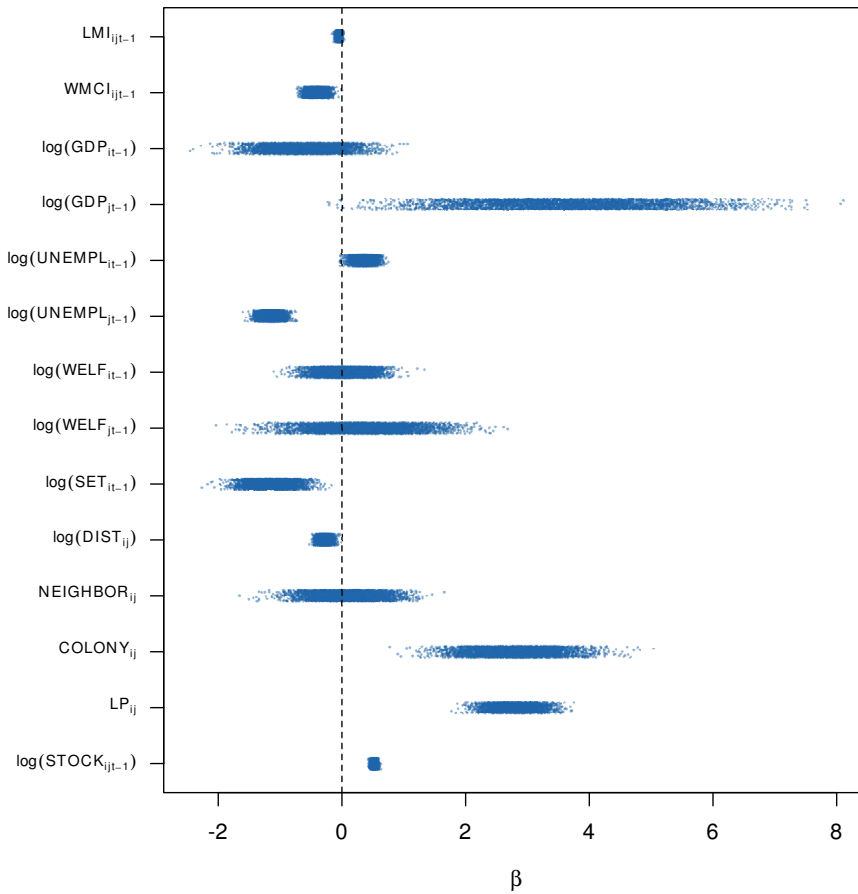
	M1 (OLS)	M2 (OLS)	M3 (GMM)	M4 (GMM)
LMI <sub>ijt-1</sub>	0.043 (0.031)	0.069 ** (0.026)	0.042 ** (0.009)	0.109 ** (0.013)
log(GDP <sub>it-1</sub> )	-1.404+ (0.731)	-0.895+ (0.539)	-1.299 ** (0.135)	-0.908 ** (0.235)
log(GDP <sub>jt-1</sub> )	1.61 (1.351)	2.838 ** (1)	2.621 ** (0.284)	4.326 ** (0.516)
log(UNEMPL <sub>it-1</sub> )	0.444 ** (0.158)	0.396 ** (0.116)	0.474 ** (0.034)	0.459 ** (0.048)
log(UNEMPL <sub>jt-1</sub> )	-1.054 ** (0.152)	-0.781 ** (0.113)	-1.136 ** (0.029)	-0.841 ** (0.044)
log(WELF <sub>it-1</sub> )	-0.787* (0.365)	-0.436 (0.273)	-0.727 ** (0.125)	-0.804 ** (0.165)
log(WELF <sub>jt-1</sub> )	-1.067 (0.778)	-1.323* (0.59)	-0.645 ** (0.180)	-0.485 (0.331)
log(SET <sub>it-1</sub> )	-0.552+ (0.295)	-0.508* (0.219)	-0.323 ** (0.116)	-0.412* (0.183)
log(DIST <sub>ij</sub> )	-0.327 ** (0.064)		-0.148* (0.060)	
NEIGHBOR <sub>ij</sub>	-0.077 (0.13)		0.168 (0.135)	
COLONY <sub>ij</sub>	-0.288* (0.144)		-0.239 (0.194)	
LP <sub>ij</sub>	1.956 ** (0.473)		1.868 ** (0.398)	
log(STOCK <sub>ijt-1</sub> )	0.707 ** (0.028)	0.212 ** (0.06)	0.778 ** (0.029)	0.280 ** (0.043)
adj. $R^2$	0.893	0.945		
N	955	955	955	955
FE	O, D, Y	P, Y	O, D, Y	P, Y

Standard errors in parentheses

+  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

In neither case is the predicted effect trivial, particularly if one considers that the lifting of labor market restrictions was captured in the index as a .2 unit increase for most countries, and as a larger increase for many. At the same time, when more variables are added to the models, we find that the effect becomes partly overshadowed by competing index scores, and that its magnitude depends on co-national stock and linguistic proximity.



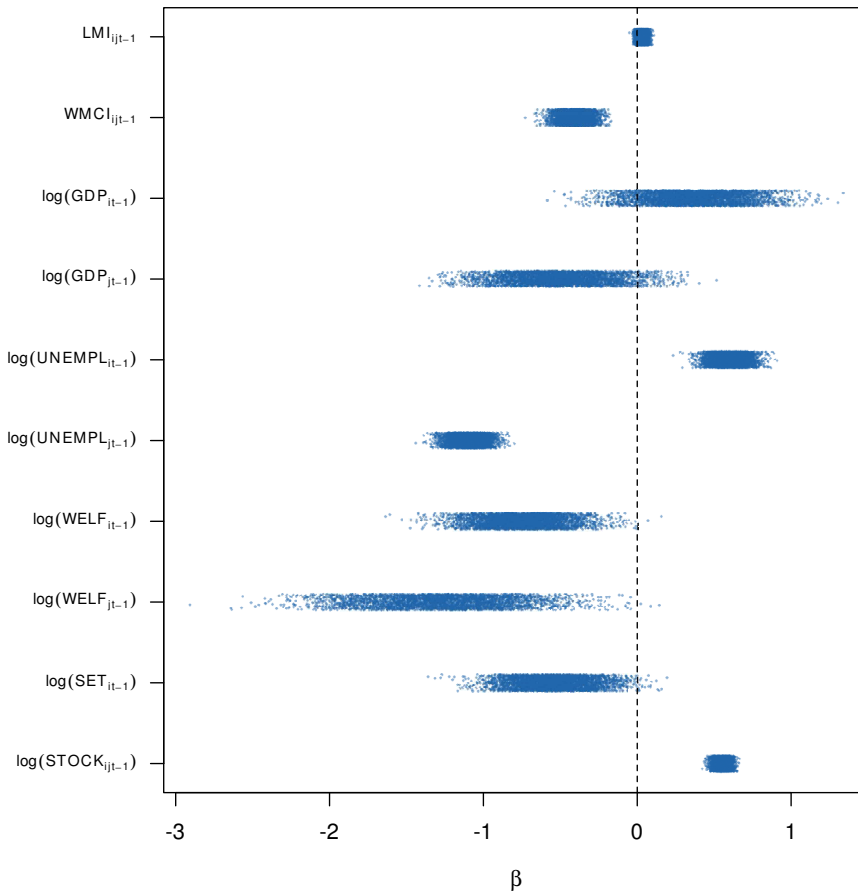


**Fig. 2** Model 5. Posterior distributions of multilevel negative binomial model coefficients. Random intercepts for origins, destinations, and years. Each sampled value is given a small amount of random noise along the y-axis so that the density of the distribution can be visualized based on the intensity of the color.

Figures 2 and 3 show estimates from the multilevel negative binomial models, Models 5 and 6, in which mean competing index score has been added. In Model 5 (Figure 2), random intercepts are given to origins, destinations, and years, while in Model 6 (Figure 3) they are given to origin-destination pairs and years. In each figure we plot the full samples from the posterior distributions of each parameter along the x-axis, with a small amount of random noise added to each along the y-axis so that its density can be better visualized.

The estimates for the labor market index coefficient in these models are similar to those in the log-linear models: close to zero, but more clearly positive when origin-destination pairs are given their own intercepts (in this case random ones). In Model 6 (Figure 3), the central 95% of the LMI coefficient's posterior lies between -0.01 and 0.07, with a mean of 0.03 and 94% of the distribution lying above zero.

In contrast, the estimate for the mean competing index scores coefficient is clearly negative and notably farther from zero, in line with our second hypothesis. In Model 6 (Figure 3), the central 95% of this distribution lies between -0.26 and -0.56, with a mean of -0.41.

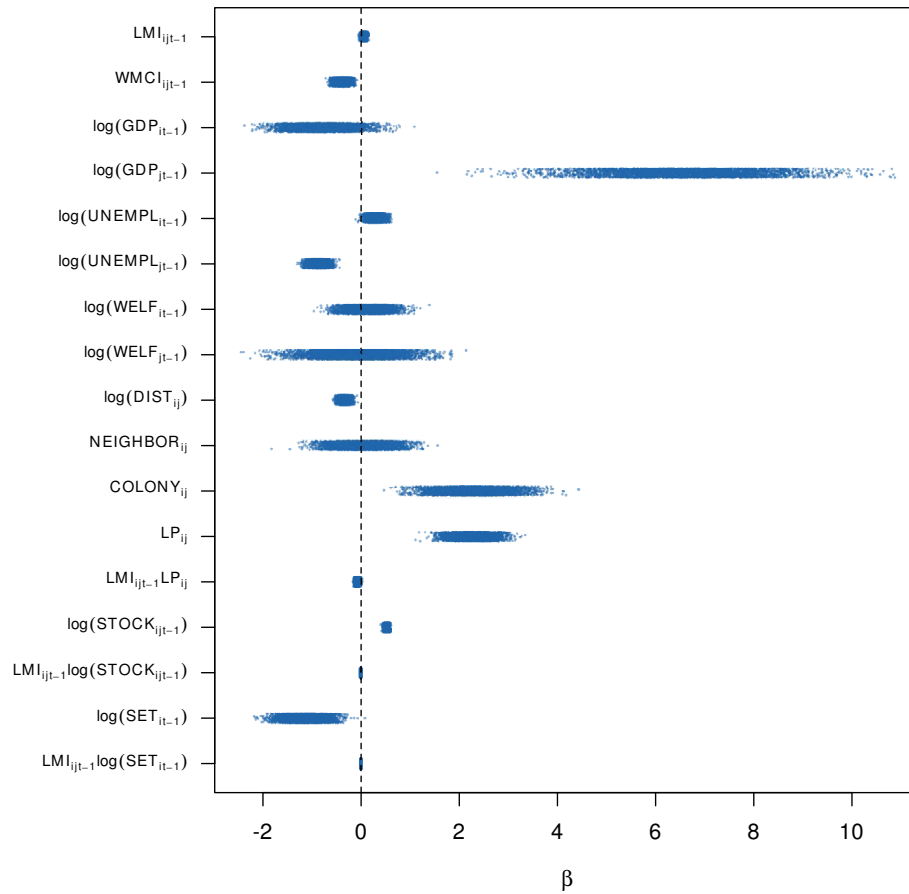


**Fig. 3** Model 6. Posterior distributions of multilevel negative binomial model coefficients. Random intercepts for origin-destination pair and year. Each sampled value is given a small amount of random noise along the y-axis so that the density of the distribution can be visualized based on the intensity of the color.

Whereas the mean of the LMI coefficient's distribution implies that each 0.1 unit increase in the index score is associated with a 3% increase in migration rate, the mean of the WMCI coefficient's distribution implies that each 0.1 unit increase in the index score for that variable is associated with a 34% decrease in migration rate.

Model 7 introduces the interaction terms of relevance to the third hypothesis, and we show the posterior draws for all coefficients in this model in Figure 4. The coefficients on the interactions between LMI and STOCK, and between LMI and LP are both clearly negative, which is consistent with the general statement of the third hypothesis that these variables mediate the effect of labor market access. On the other hand, only the STOCK coefficient is consistent with our specific prediction as to the direction of the mediation, and the SET coefficient, which is centered on zero, is consistent with neither.

To make it easier to interpret the interactions, Figure 5 plots the estimated multiplicative effect of a .1 unit increase in LMI as a function of each of the interaction variables individually, holding the others constant at their medians. The blue curves are calculated from 1000

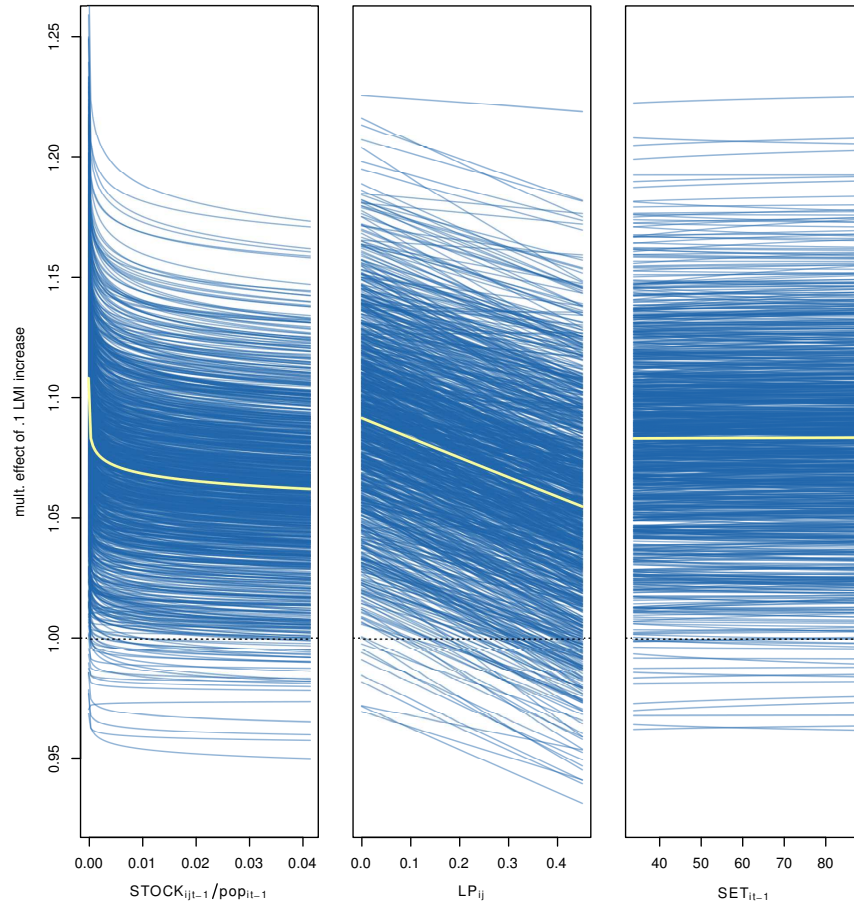


**Fig. 4** Model 7. Posterior distributions of multilevel negative binomial model coefficients in full interaction model. Random intercepts for origin, destination, and year

random draws from the posterior distribution of each parameter; the yellow central curve is drawn from the means. The range of the x-axis is the actual range of values of each variable in the data.

In Panel A, STOCK is shown on the x-axis, with the multiplicative LMI effect on the y-axis. The downward slope of the curve was already evident from the interaction coefficient, and its convex shape results from the fact that STOCK is logged in the model (and not in the chart). At the lowest values of STOCK (e.g., Slovenes in Finland in 2004) the effect of each 0.1 unit increase in LMI goes up to 11% when the other interaction variables are kept at their medians. In contrast, the predicted effect falls below 8% for the highest values of STOCK (e.g., Romanians in Italy in 2010).

Panel B places LP on the x-axis and again we find a downward slope. Here, the 0.1 LMI effect ranges from 12% at the lowest LP values (e.g., Bulgaria-Finland) to 8% at the highest (e.g. Romania-Italy). Finally, Panel C shows effectively no slope, hovering around 8% for all values.



**Fig. 5** Multiplicative effect in Model 7 of each 0.1 unit increase in labor market index as a function of (A) normalized population of origin  $i$  nationals residing in destination  $j$ , (B) linguistic proximity between origin  $i$  and destination  $j$ , and (C) tertiary education enrollment ratio in origin  $i$ . Blue curves are calculated from 1000 random draws from the posterior distribution of each parameter; the yellow central curve is drawn from the means. In each panel, the interaction terms that are not plotted on the  $x$ -axis are held at their medians.

The implication of this model is that labor market access is particularly important for workers who lack co-national social networks and face greater linguistic challenges in the destination state. This is partly consistent with the third hypothesis. Migrants with strong social networks in the destination state may care less about formal labor market access because they can more easily navigate work permit requirements. On the other hand, the model suggests the opposite effect than what we expected for language and it shows no mediating role of education.

We find similar results in our GMM models (not shown here), although some of the GMM specifications place a positive coefficient on the LMI-LP interaction, in line with our original hypothesis. It is not clear if this is the result of the GMM model better controlling for endogeneity or of its failure to adequately account for the multilevel nature of the data. Our suspicion is the latter, particularly given that LP is clearly not endogenous and that the

two countries with the fewest observations (Bulgaria and Romania) are at the extremes of the LP range (Bulgaria low and Romania high), creating a risk that they are unduly influencing the results when given fixed, rather than random, intercepts.

Regardless of the true value of the LMI-LP interaction, these results suggest that important information could be gained from modeling individual migrant characteristics instead of the aggregate characteristics employed here. To the extent that migrants from countries with low stocks and low linguistic proximity respond more to labor market access, our assumption is that this is because these migrants themselves tend have smaller social networks in the destination state, and to have greater barriers to learning the destination language. Measuring these characteristics directly would likely lead to more precise results.

## 9 Conclusions

What can we take from these results? We can conclude, at least provisionally, that the labor market restrictions imposed by the EU member states as part of the Union's 2004 and 2007 enlargement influenced the magnitude and composition of intra-European migrant flows, and that the influence of each state's policy was offset by the influence of all the other states' policies. All else equal, states that opened their labor markets ended up with larger migrant flows than those that did not, but these flows were reduced by other states also opening their markets.

In addition, the consequences of destination state labor market decisions appear to have varied by origin state migrant stock and, we suspect, by individual migrant characteristics. Although the results on this issue are less clear, it seems the decision to loosen restrictions attracted migrants from origins that did not already have large stocks in the destination state, and those from origins with official languages most different those of the destinations. It did have the same influence on migrants from other origins. We suspect that individual-level data would show that formal labor market access is most important to migrants with smaller social networks in the destination state and with lower destination-state language ability.

These are important conclusions and they are worth exploring further with additional data. A great deal of attention was paid to predicting, prior to Europe's enlargement, the migrant flows that would result. The decisions states made about the imposition and subsequent lifting of restrictions carried important costs. It is worthwhile, therefore, to examine what ultimately transpired, and to make our best guesses as to how each state's decision influenced its own immigrant flows and also those of other member states.

More broadly, our understanding of migration following the 2004 and 2007 enlargements can help European governments make better decisions about labor market rules in any subsequent rounds of enlargement. As Shachar (2006) suggests, states should recognize that in making immigration policy they are engaged in a multilevel game, looking inward toward their own electorates, but also outward toward the other potential destinations that are also setting rules. This game appears to hold even outside the context of highly skilled immigration, but it is not clear that policy-makers often realize this and take into account the effects of inter-state competition.

The observed data also may tell us hold lessons for migration policymaking beyond Europe. Our research contributes to the understanding of the determinants of the direction of migration flows across countries and highlights the importance of immigrant rights and migration costs in general as obstacles to greater international mobility. The overall picture coming out of our empirical analysis is relevant for policy makers interested in fostering the recruitment and mobility of international workers.

In particular, the role of the state has been a gap in much of the existing social science research and theory into the determinants of international migration. Here we have an example of the state playing a significant role, even if one that may not be entirely recognized. The formal rights of immigrants appear to constitute an important factor in their decision making. Among migrants from origins with low destination stocks and high linguistic proximity, changes in formal labor market rights approach and even surpass social and economic considerations as determinants of migration rates.

Of course, we do not yet know how far these findings may be extended beyond Europe or even beyond the specific situation of the 2004 and 2007 enlargements. Even if they cannot be extended, however, that would itself raise interesting questions about why labor market regulation had such an effect in this situation and not in others. Perhaps the absence of admissions controls changes the system to such an extent that the influence of labor regulation

is not just unmasked but actually changed. Or perhaps the level of information sharing within Europe and the promotion of labor mobility by European authorities played important roles.

Finally, exploring the situation in Europe as a problem of multiple sending and receiving states acting at the same time helps to illuminate the complexity of migration and point toward new ways of thinking about it. To view migration solely in terms of a single pair of states is to miss out on the variety of choices and incentives migrants face as they look out over the many destinations to which they may travel. While the migrant's view of the world is a complicated one, it is the view that policy makers and legal scholars must ultimately adopt if we wish to understand the consequences of our laws.

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