

DISCUSSION PAPER SERIES

No. 9986

**LOCAL QUALITY OF GOVERNMENT
AND MIGRATION. EVIDENCE FOR
EUROPEAN REGIONS**

Tobias Ketterer and Andrés Rodríguez-Pose

***INTERNATIONAL TRADE AND
REGIONAL ECONOMICS***



Centre for Economic Policy Research

www.cepr.org

Available online at:

www.cepr.org/pubs/dps/DP9986.php

LOCAL QUALITY OF GOVERNMENT AND MIGRATION. EVIDENCE FOR EUROPEAN REGIONS

Tobias Ketterer, London School of Economics
Andrés Rodríguez-Pose, London School of Economics and CEPR

Discussion Paper No. 9986
May 2014

Centre for Economic Policy Research
77 Bastwick Street, London EC1V 3PZ, UK
Tel: (44 20) 7183 8801, Fax: (44 20) 7183 8820
Email: cepr@cepr.org, Website: www.cepr.org

This Discussion Paper is issued under the auspices of the Centre's research programme in **INTERNATIONAL TRADE AND REGIONAL ECONOMICS**. Any opinions expressed here are those of the author(s) and not those of the Centre for Economic Policy Research. Research disseminated by CEPR may include views on policy, but the Centre itself takes no institutional policy positions.

The Centre for Economic Policy Research was established in 1983 as an educational charity, to promote independent analysis and public discussion of open economies and the relations among them. It is pluralist and non-partisan, bringing economic research to bear on the analysis of medium- and long-run policy questions.

These Discussion Papers often represent preliminary or incomplete work, circulated to encourage discussion and comment. Citation and use of such a paper should take account of its provisional character.

Copyright: Tobias Ketterer and Andrés Rodríguez-Pose

CEPR Discussion Paper No. 9986

May 2014

ABSTRACT

Local quality of government and migration. Evidence for European regions

In this paper we investigate the impact of local quality of government on the attractiveness of European regions to migrants. The analysis is based on panel data estimations of 254 regions for the period between 1995 and 2009. Different instrumental variable techniques have been employed in order to assess the extent to which differences in local quality of government affect migration decisions and to account for potential endogeneity concerns. The results point towards an important influence of specific factors related to the regional quality of government, such as the fight against corruption or government effectiveness, on the ability of European regions to attract future residents.

JEL Classification: O43, R23 and R50

Keywords: Europe, institutions, net migration, population change, quality of government and regions

Tobias Ketterer
Grantham Research Institute on
Climate Change and the Environment
London School of Economics and
Political Science (LSE)
Houghton Street
London WC2A 2AE

Andrés Rodríguez-Pose
Department of Geography and
Environment
London School of Economics
Houghton Street
London WC2A 2AE

Email: t.ketterer@lse.ac.uk

Email: a.rodriguez-pose@lse.ac.uk

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=175524

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=158972

Submitted 14 May 2014

1. Introduction

Migration theories have traditionally relied heavily on regional differences in expected income and living standards between the place of origin and that of destination, as the main motivation for population mobility (Hicks, 1932; Harris and Todaro, 1970). More recently – and despite the fact that money and jobs have remained at the heart of migration decisions – scholars have increasingly focused on differences in living standards (Haapanen, 2000; Faggian and McCann, 2009) and on non-pecuniary place-based attributes, and place-based natural or man-made amenities (Partridge and Rickman, 2003, 2006; Ferguson et al., 2007; Rodriguez-Pose and Ketterer, 2012), as key factors behind geographical mobility. In addition, migration networks have also featured prominently as potential explanations of migration decisions (Davis et al., 2002; McKenzie and Rapoport, 2007).

One factor which has been generally overlooked in migration studies has been that of the quality of the institutions, in general, and that of the quality of government of the areas of destination, in particular. The number of empirical studies covering the link between quality of government and migration is rare. There is much more on the impact of government institutions on economic development and growth than on migration. This is not surprising as the definition and role of government institutions has been and remains controversial and the measurement of government quality is fraught with problems. Moreover, the perception of the quality of government in areas of destination by potential migrants may be considered as much weaker than that of the availability of jobs or the wealth of the place.

In this paper we aim to overcome this gap in the literature by drawing attention to the influence of quality of government on migration decisions. In particular, we investigate the impact of a set of different government quality parameters – level of corruption, government effectiveness, government accountability, and rule of law – on net migration rates at a sub-national regional level in Europe.

Our approach aims to understand how the quality of the government of the regions of destination for migrants may shape migration decisions and the capacity of a territory to attract future residents. The analysis aims to contribute to the existing literature on the link between local government quality and sub-national urban or regional outcomes by arguing that migration decisions are not atomistic responses to economic or environmental aspects, but tend to be shaped and embedded in societal rules and norms. We use a novel dataset of institutional quality at a NUTS-2 – nomenclature of territorial statistical units, level 2 –level, in order to evaluate the relevance of local government aspects on a territory's attractiveness towards migrants. The analysis covers 254 European regions for the period between 1995 and 2009.

The remainder of the paper is structured as follows. We first review the relevant literature in section 2, before developing a simple conceptual framework of regional population change (section 3). Section 4 presents a discussion of the data, the empirical strategy chosen, and addresses potential endogeneity concerns. In section 5 we introduce and interpret the regression results using a variety of different estimators. Section 6 concludes.

2. Government institutions and migration

Institutions matter for economic development (e.g. Acemoglu and Johnson, 2005); and, as highlighted by a strand of recent literature, migration represents a basic transmission channel between institutions and economic development. Acemoglu and Johnson. (2005), for instance, consider colonial migration as essential for the design of the local institutions which shape economic performance. Beine and Sekkat (2013) and Docquier et al. (2010), also provide

country-level evidence about how migration leads to institutional change. The migration network effects may increase the home source country's exposure to different social and political norms (Spilimbergo, 2009) and the institutional changes linked to migration may be very long-term (Rodríguez-Pose and von Berlepsch, 2014). However, how local institutions directly affect the migration patterns and the attractiveness of potential destinations has been a question which has been largely overlooked by the literature.

In this paper we aim to fill in this gap and investigate the role of government quality in the migration decision-making process. We precisely want to assess how the quality of local government affects the ability of regions to attract future residents. As indicated, the empirical evidence of the role of government policy as a potential driver of decisions to migrate is very scarce. There are a few exceptions. Some studies have highlighted that migrants judge how institutional conditions of the area of destination may play a fundamental role in future lifetime earnings (Ghatak and Levine, 1993). This has been the case when analysing the dimension of discrepancies in terms of institutional quality in the context of the 19th century mass migration movements. Bertocchi and Strozzi (2008), for instance, conclude that 19th century institutions made an important difference in the attractiveness of destinations for a sample of selected Old and New World countries. Rotte and Vogler (2000), when considering the impact of political stability in the countries of origin on migration flows to Germany, also find empirical support for the fact that political instability and terror in the countries of origin act as significant push factors. From a more theoretical perspective, it has also been argued that the availability of a mix of public goods, including high quality institutions, public education, and 'law and order' aspects has been a determinant factor in making mainly rich economies attractive to migrants (Pritchett, 2006; De Voretz, 2006).

Similarly, from a more place-based regional perspective, the scholarly literature has tended to stress that institutional and historical factors can be regarded as important territorial assets enhancing the appeal of places and influencing the 'positioning' of regions vis-à-vis each other (Deas and Giordano, 2001; Malecki, 2004; Camagni and Capello, 2009). From this perspective, local institutional settings and government quality may amount to a crucial aspect which mobilizes a region's assets by creating the right incentives, promoting private sector development, as well as the participation of citizens' in society and decision-making processes. Empirical evidence supporting the role of government quality indicators in a place-based regional context tends to be however rather limited. Some of the literature has focused on the specific provision of public goods and services, such as social welfare spending in the areas of origin and destination. Day (1992), for example, uncovers that migration across Canadian provinces is affected by the varying levels of social expenditure by provincial governments and by the dimension of unemployment insurance and transfer payments directed to individuals. However, the majority of this type of research has tended to fundamentally look at the propensity of migration to areas with high levels of social expenditure (e.g. Bode and Zwing, 1998). Local political leadership has also been the object of attention. Greasley et al. (2011) look at whether the leadership capacity of local government plays a role in migration towards 56 urban areas in England. They find that more consolidated governance structures are weakly linked to greater population growth.

3. Conceptual Framework

However, the majority of the contributions presented in the previous section, while important, have either been tangential to, or only scratched the surface of the complex relationship between quality of government and migration. In this section we try to overcome this deficit by modelling the relationship between migration decisions and the institutional environment shaping the quality of local governments. Following Roback (1982) and Beeson and Eberts

(1989), we use a utility maximization approach. This means that we consider utility maximisation as the prime behavioural criterion and assume that individuals take the economic (i.e. income-related), as well as the non-economic benefits of migration into consideration. Potential migrants weigh the potential benefits against the potential costs of not moving and remaining in their home location. Migrants are further assumed to rank different locations according to their place-specific expected utility values and to compare the resulting net benefits across all possible locations i . We assume that location-specific utility is determined by both economic and non-economic attributes, leading us to define a vector Y_i , denoting expected economic and income-related factors, and a control vector Z_i , reflecting alternative characteristics determining an individual's location-specific utility. The alternative characteristics include the migration incentives shaped by regional factors such as network effects, human capital related-, and 'society or government embedded' institutional elements. We thus define a potential mover's migration decision as:

$$NU_i = U_i(Y_i, Z_i, C_i) - U_0(Y_0, Z_0, C_0), \quad \text{with } i=1, \dots, n \quad (1)$$

where NU_i denotes the expected net utility differential between residing in region i and remaining in the current region, C_i represents the costs associated with moving to region i , and C_0 the costs associated with staying in the current location. U_i and U_0 reflect the expected utility values of the destination (U_i) and the home region (U_0), respectively. According to equation (1) individuals are expected to move to region i , if $NU_i > 0$. By contrast, they will remain in the region of origin, if $NU_i < 0$. By means of defining net utility values for any location $i \in [1, \dots, n]$, we model regional migration as the outcome of an individual's revealed preference ranking based on the utility generated by an array of specific territorial attributes.

Our capacity to empirically examine the revealed place-specific preferences of potential migrants is, however, considerably limited as a consequence of data availability constraints. We therefore focus the empirical analysis at a macrolevel, by evaluating the effect of regional characteristics on regional population changes. We hypothesise that specific local features (such as income, unemployment, or demographic aspects) represent an adequate proxy measure for a representative individual's access to economic, as well as non-economic, location-specific characteristics.

In line with equation (1), we compare traditional economic migration drivers to alternative place-based 'territorially embedded' characteristics, placing the emphasis on local government quality, our independent variable of interest. We proxy location-specific expectations of future income and economic benefits with regional unemployment ratios (Puhani, 2001) and, following Todaro (1980) and Ferguson et al. (2007), we model traditional economic drivers in differences with respect to all other possible locations i . We assume the following model when analysing regional-level migration decisions:

$$\frac{Im_{it} - Em_{it}}{P_{it-1}} = A_{it}(\text{econ.}_{it}; \text{quality of government}_{it}; \text{further controls}_{it}) \quad (2)$$

where the left hand side denotes region i 's net migration rate. The migration rate is derived from a simple transformation of the difference in regional population stocks in period t and $t-1$.¹ Im_{it} and Em_{it} denote regional immigration and emigration at time t , and P_{it-1}

¹ Region i 's population stocks in period $t-1$ are defined $P_{it-1} = P_{it} + Em_{it} - Im_{it} + d_{it} - b_{it}$. Rearranging results in $P_{it-1} = P_{it} + Em_{it} - Im_{it} + d_{it} - b_{it}$, where Im_{it} and Em_{it} reflect im- and emigration of region i at time t , and where d_{it} and b_{it} denote a region's number of deaths and births in period t .

represents the population stock at time $t-1$. Equation 2 further models regional net migration movements as a function of a vector, taking into account economic incentives (proxied by local unemployment ratios), the level of local government quality, and a vector of control variables Z_{it} , which includes, demographic, network-, and amenity-related parameters.

The quality of local institutions is introduced in our model by means of four individual indicators of regional government quality. We assume that the quality of a territory's political and government institutions represents an important factor in shaping migration decisions. In particular, we focus on four elements: corruption, government efficiency, rule of law, and government accountability. The level of corruption in a territory has important financial and non-financial implications. Low levels of corruption and efficient government bureaucracies contribute not only to reduce uncertainty and the monetary costs of economic activity, but also to increase the predictability of business transactions and to enhance the residents' perception of a service-oriented local government and of equal treatment. The presence of a government which generally eschews graft and does not use public power for private gain may appeal to migrants from more corrupt areas. Similarly, the quality of officials and of the civil service, the credibility of a government and the effectiveness of its policies may influence re-location decisions. The presence of legally-embedded norms and rules in local societies and the confidence in the enforcement of legal rights can be regarded as another important pull factor for migrants. Migrants will be attracted by territories where contracts are enforced, property rights safeguarded, and where the police and the courts can be trusted – in sum, by areas characterised by a strong rule of law. A strong rule of law will be linked not only to increased pecuniary benefits for individuals, but also to improvements in the quality of life. Finally, the capacity to participate in decision-making, by either electing governments or by exercising basic democratic freedoms, such as the freedom of expression or association will affect the appeal of places towards migrants. A more democratic local environment, where residents have a voice and the ability to participate in the political process, in shaping and deciding local policies and taxation systems and where governments are accountable to their voters for their actions, may positively affect the territory's appeal towards future residents, and may even entail material benefits in the form of greater equality.

The control parameters can also be embedded in the conceptual framework by means of a vector which includes some of the key non-institutional factors which may shape the perception of how attractive a territory is for migrants. One of these is the share of labour employed in agriculture. More agricultural societies have traditionally been linked in the migration literature to backwardness and higher rates of emigration (Caselli and Coleman, 2001), although in a context of relative poverty, a large agricultural labour share may also act as a poverty constraint to out-migration, in particular in the early stages of development. The demographic composition of the population represents another component of the control vector. It has also been highlighted by the literature as a notable driver of migration decisions, since the propensity to migrate considerably decreases with age (Massey et al., 1993; Zimmermann, 2005). Given that young individuals are much more likely to take migration decisions, territories with a relative young population structure are bound to be associated with an outflow of people. In addition, tight local labour market conditions, especially for the young, could further enhance migration out-flows. Another potential determinant of migration is the presence of man-made or natural amenities. Urban amenities and quality of life aspects have featured increasingly prominently in migration studies in recent years (e.g. Partridge and Rickman, 2003; Ferguson et al., 2007; McGranahan, 2008; Partridge, 2010, for the US and Rodríguez-Pose and Ketterer, 2012, for the EU) and highlight the potential of the natural environment, pleasant climatic characteristics, or the vibrancy of a region's cultural context to attract future residents. In addition, the presence of previous migrants may also amount to an important aspect in re-location decisions. The presence of groups from the same geographical origin in any given region will facilitate integration by members of those communities and an

easier access to jobs, while lowering the assimilation costs in new cultural and socio-political structures (Massey et al., 1993; 1998). This network effect may trigger path dependence, whereby current migration flows may be substantially influenced by the magnitude and direction of past migration movements, reflecting potential chain migration effects at the ethnic group, village, or even family level. This will reduce the direct costs and risks of migrating. Finally, it may also be argued that regional net migration is affected by the potential of surrounding regions to attract people, with a stronger spatial dependence for regions located next to each other than for those at a greater distance. We take this possibility into account by specifying a weight matrix providing information on the connectivity between the considered NUTS-2 territories, and use this information to construct a spatially lagged net migration rate, which we include in some of our empirical specifications.²

4. Empirical analysis

4.1 Data

The exact definition and sources of the variables included in our empirical analysis are summarized in Annex Table 1. We use a dataset that covers 254 NUTS-2 regions in the European Union (EU) for the period from 1995 to 2009. Our dependent variable is regional net migration rates, and – as indicated in equation (2) – our independent variables of interest are different proxies for the local quality of government, complemented by a series of controls which reflect the traditional determinants of the attractiveness of a territory to migrants.

The data stem from different sources. Our quality of government variables at NUTS-2 level are extracted from the quality of government dataset developed by Charron et al. (2014). This dataset – sharing a similar base with the World Bank’s country-level ‘World Governance Indicators’ (WGI) (Kaufmann et al., 2009) – is built on an EU-wide regional survey of 34,000 individuals.³ The authors use 16 of the questions in the survey in order to elaborate regional-level indices of local (i) corruption, (ii) rule of law, (iii) regional bureaucratic (i.e. government) effectiveness, and (iv) strength of democracy and electoral institutions (i.e. voice and accountability). These four dimensions are also combined in a single composite index of government quality (see annex Figure 1) (see Charron et al. 2014 for an overview of the method). The results of the survey are then standardised and blended with the national level World Bank Worldwide Governance Indicators (WGI) in order to generate a dynamic panel covering the period between 1995 and 2009.

Most of the control variables stem from the Eurostat Regio database. These include unemployment rates, the ratio of people employed in agriculture, and the share of young population. We also use Eurostat in order to calculate the lagged migration rate, which is

² The calculation of the spatial weights follows the approach by Le Gallo and Ertur (2003), and computes centroid distances between the a region and its k-nearest neighbours, where the spatial weighting matrix is defined as:

$$W(k) = \begin{cases} w_{ij}^* = 1 & \text{if } d_{ij} \leq d_i(k) \text{ and } w_{ij}(k) = \sum_j w_{ij}^*(k) \\ w_{ij}^* = 0 & \text{if } d_{ij} \geq d_i(k) \text{ , or } i = j \end{cases}$$

with d_{ij} denoting the distance of order k between region i and j , and w_{ij} and w_{ij}^* , denoting elements of a standardized and unstandardized weight matrix. For our computations we use k equal to 10.

³ The survey – the largest conducted government quality at a regional level in the EU is based on around 200 participants per region and consisted of 34 quality of government-, and demography-related questions. The questions covered education, health care, and law enforcement-services frequently provided by local or regional authorities. For more detailed information on the survey, as well as on the construction of the indices, see Charron et al. (2014).

introduced as a measure for past migration. The information on the geographical coordinates of the NUS-2 regions stems from Eurostat/GISCO.

In addition and following equation (2), we include a selection of natural amenity variables. These refer to climate and/or physical landscape conditions.⁴ The variables include information on environment-related attributes, such as whether a region has access to the sea or is landlocked, and on climate-related characteristics (i.e. precipitation, temperature, cloudiness in January and July). The climate amenity variables stem from Mitchell et al. (2004) and are measured as 30-year averages and therefore introduced in the analysis as time-invariant regressors.

Our final set of variables is of a historical nature. They are included in the analysis as instruments in order to assess potential endogeneity. The historical dataset from which the data stem was gathered by Gilles Duraton, Giordano Mion, and Andrés Rodríguez-Pose, mostly by digitalizing and geo-coding a series of historical maps provided by Kishlansky et al. (2003) and by the online source www.euratlas.com. The historical variables include a number of indicators detailing the historical heritage of the regions of the EU. Four such variables are taken into consideration. The first variable (*Charlemagne*) determines whether a region belonged to Charlemagne's empire. It takes the value 1 if the respective NUTS-2 region was part of the empire and/or represented a tributary territory at the time of the emperor's death. A second variable (*Rome*) aims to proxy exposure by a region to Roman culture and its legal and military system. It measures whether a region belonged to the Roman Empire under Caesar (in 49 BC). *Early Christianity* is an indicator of whether a region was Christianised by around 600 AD. Finally, we also include a variable from the same source measuring the number of kingdom changes of any given region in the early Middle Ages. This variable is intended to provide a proxy for early political instability. The variable was built using several sources showing the boundaries of European kingdoms, based on ethnic origin, over the time period 500 AD to 1000 AD in 100 year intervals. Every region in each of the six time periods is then earmarked by a certain kingdom using geo-coding techniques. The final variable measures the number of times a NUTS-2 region belonged to a different kingdom.

4.2 Econometric Specification

In line with the conceptual framework set out in section 3, our aim is to estimate the sensitivity of regional population movements, measured by the net migration rate, with respect to local government quality indicators. We thereby control for the traditional economic as well as for alternative location-specific migration determinants. Based on equation (2) we define our estimating equation as:

$$\text{mig}_{it} = \frac{\text{Im}_{it} - \text{Em}_{it}}{\text{P}_{it-1}} = \varphi_0 + \varphi_1 \text{econ} + \varphi_2 \text{gov.quality} + \varphi_3 \text{controls} + \varepsilon_{it} \quad (3)$$

where mig_{it} is the net migration rate in NUTS-2 region i in period t (with $i=1, \dots, 254$ and $t=1, \dots, 15$). Econ_{it} denotes a vector referring to traditional economic migration determinants taken into account in the form of local unemployment ratios. The Government quality parameter (gov.quality) denotes a set of indices measuring different government-related institutional characteristics, while the set of control variables includes regional

⁴ Natural amenity data for European NUTS-2 regions are only available for the EU-15. The 2SLS and IV-GMM estimations, including the time-invariant amenities, are presented in section 5.3.

demographic components, such as the share of young population and of those working in the agricultural sector, and the lagged migration rate as a potential indicator for network effects. The natural amenities are included in a reduced sample of our dataset (see section 5.3).

In our first estimation, we employ a fixed-effects panel data estimation strategy with heteroskedasticity robust standard errors clustered at the regional NUTS-2 level. Clustering the standard errors at the NUTS-2 level controls for serial correlation and group-wise heteroskedasticity. The advantage of using panel data estimation is that it enables us to control for unobservable variables that are region-specific and which may bias the results when omitted. Using fixed-effect therefore renders the results robust to region-specific time invariant parameters. In order to control for shocks that affect all EU regions, we also include time dummies in all model specifications.⁵

Our theoretical model and past literature on the drivers of migration leads us to formulate a number of hypotheses regarding the association of the different parameters included in equation (3) and regional population change in the EU. We expect that factors such as the regional unemployment and the share of young population will be negatively connected to population change. The impact of the agricultural share on migration is expected to be ambiguous, since, while, on the one hand, high employment in agriculture may represent a constraint to migration in relatively poor territories, it, on the other, may also act as a driver of increasing emigration. As the association of agricultural employment with migration may be affected by the demographic structure of the population, we also interact agricultural employment with the proportion of young people, a variable for which we expect a positive coefficient.

Past migration is accounted for by including the lagged migration rate as an additional regressor. We anticipate that past migration will exert a positive influence on current migration flows. The presence of local cultural and natural amenities is also likely to enhance the attractiveness of places of destination. Finally, regarding our independent variables of interest, we envisage that regions with a better government – i.e. lower corruption, better rule of law, and more efficient, transparent and accountable governments – are more attractive for migrants.

4.3 Instrumentation strategy

When examining net migration rates as an indicator for a region's pull towards migrants, we need to consider potential endogeneity concerns affecting most economic and non-economic regressors, which may themselves be shaped by in- or outflows of residents. To address endogeneity, we adopt a two-pronged strategy. First, we introduce all explanatory variables with a one year lag and, second, we use instrumental variables (IV) regressions, with a special focus on our institutional variables.

The potential endogeneity of institutions involving different aspects of the political system, democracy, or government quality in general, has been the subject of many studies. Most of these analyses are concerned with economic growth as dependent variable (e.g. Barro, 1999). In the context of migration, political and government quality-related institutions may give rise to potential reverse causality concerns, as new residents may drive local political or institutional changes affecting local politics and potentially how local governments respond to migratory challenges. To control for these reverse causality issues, we instrument local government efficiency, as well as voice and accountability indicators, with past values. We argue that the local political structure is likely to be linked to the current political framework, but should not impact on current migration decisions. A region's level of corruption or the rule of law could also under certain circumstances turn out to be

⁵ Time- and country dummies prove to be highly significant as revealed by the appropriate tests.

endogenous. Local governments may, in principle, respond to migration in- and outflows by selecting the extent to which they enforce the law, affecting the citizens' perceptions of the government's fight against corruption and their ability to trust the local police force or judicial system. We therefore run fixed effects IV regressions in which we instrument the rule of law and corruption indicators with past or initial values, again assuming that past institutional features are linked to current ones, but not to migration decisions today.

In line with the institutional growth literature, we additionally run 2SLS IV-regressions using a set of regional historic variables as instruments for the regional quality of government parameters considered. We use a series dummy variables indicating whether a region (i) belonged to Charlemagne's empire at the time of emperor's death, (ii) was largely Christianised by 600AD, and (iii) was part of the Roman Empire at the time of Caesar. By using these instruments, we assume that a territory's historical heritage plays a role in a region's institutional quality – and, as a result, in its government quality – today. Finally, we also proxy a region's historic exposure to historical political instability by considering the number of times a region experienced a change in the kingdom to which it belonged during the early Middle Ages. We argue that a region's early exposure to royal and/or imperial rule or to the sphere of influence of the Church – meaning also a greater or lower exposure to local or centrally designed administrative, legal, moral or military related norms, standards and requirements – may have crucially shaped informal norms and institutions, influencing, in turn, current levels of government quality. Conversely, a legacy of political instability, caused by constant switches in kingdoms and allegiances could have also left a trace in the relationship between government and citizens.

5. Regression Results

In this section, we present and interpret the regression results based on different estimation techniques. We first report the findings when applying the panel data fixed effects method to equation (2), followed by alternative estimation methods – i.e. fixed effect instrumental variables techniques, 2SLS regressions, and an Arellano-Bond system GMM estimator, to take into account potential endogeneity concerns.⁶

5.1 Fixed effect panel estimations

Table 1 reports the regression results of estimating equation (2) using fixed effect panel data estimation techniques on each measure of institutional quality introduced successively in the analysis. We first discuss the findings for our control variables, before turning to our independent variables of interest, the local government quality parameters.

Regarding the control variables, all columns in table 1 show negative and in most specifications statistically significant coefficients for regional unemployment. High unemployment rates act, as indicated in previous literature, as a powerful deterrent for migration. Similarly, agricultural employment displays significant negative coefficients in all model specifications, suggesting a low appeal of predominantly rural regions, coupled with potentially larger emigration flows out of less industrialised areas. By contrast, regions with a younger demographic structure seem to act as a magnet for migrants, as all the coefficients are positive and significant (table 1), although endogeneity concerns cast some shadows over this specific result. The interaction term between the agricultural employment and the

⁶ Additional regressions, including fixed and random effects, as well as a dynamic panel data (i.e. Arellano-Bond) estimator are presented in the annex.

demographic structure variable has in all specifications a significant negative connection to net migration rates, while migration network effects, proxied by the introduction of the lagged dependent variable as a regressor, suggest a persistent positive influence of past migration flows on current migration decisions, pointing to the importance of network linkages stretching from home to host region.

Table 1. The impact of institutions on the attractiveness of NUTS-2 regions towards migrants. Panel data fixed effects.

	European Union						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Unemployment	-0.189*** (0.067)	-0.066* (0.038)	-0.061 (0.037)	-0.060 (0.037)	-0.047 (0.038)	-0.066* (0.038)	-0.064* (0.038)
Agricultural share	-0.136*** (0.033)	-0.062** (0.024)	-0.064*** (0.024)	-0.062*** (0.024)	-0.071*** (0.024)	-0.062** (0.024)	-0.061** (0.024)
Share of young	0.008*** (0.002)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.004*** (0.001)	0.003** (0.001)	0.003** (0.001)
Share of young x agric. share	-0.173*** (0.028)	-0.071*** (0.018)	-0.079*** (0.019)	-0.073*** (0.019)	-0.085*** (0.019)	-0.071*** (0.019)	-0.068*** (0.019)
Lagged migration		0.497*** (0.051)	0.498*** (0.051)	0.496*** (0.051)	0.496*** (0.051)	0.498*** (0.051)	0.496*** (0.051)
Quality of government index			0.122** (0.052)				
Corruption index				0.093*** (0.036)			
Effectiveness index					0.150*** (0.033)		
Accountability index						-0.004 (0.030)	
Rule of law index							-0.050 (0.052)
Constant	0.029*** (0.004)	0.012*** (0.003)	0.013*** (0.003)	0.012*** (0.003)	0.014*** (0.003)	0.012*** (0.003)	0.012*** (0.003)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effect	-	-	-	-	-	-	-
Observations	3528	3274	3274	3274	3274	3274	3274
R ²	0.303	0.595	0.597	0.304	0.620	0.595	0.215

Notes: Standard errors are in parentheses below all coefficients. *, **, *** respectively denote the 10%, 5%, 1% significance levels. All variables, except the lagged migration parameter have been re-scaled by 100. The regressions are based on a sample of 254 NUTS-2 regions and covers the time period from 1995 to 2009. All specifications include time dummies.

The government quality variable coefficients stress the influence of this type of institutional variables on migration trends. The coefficient for the composite index of regional government quality (column 3) is highly significant positive. This important role of government quality for migration is reproduced when the composite index is divided into its constituent components. In particular, local government effectiveness and low levels of corruption represent crucial elements which shape the attractiveness of places toward migrants (columns 4 and 5). By contrast, the coefficients for the confidence in the enforcement of legal rights, the general trust in the police and judicial system (column 7), as well as the extent to which citizens may participate in the political process, voice their concerns, and value the accountability of their local government (column 6) are positive, but not significant. Overall, these results point towards the absence of graft and the limitation of private interests when exercising public power, coupled with a good quality of public services and effective policy design and implementation as key elements in the attractiveness of European regions to migrants.

5.2 Endogeneity and panel instrumental variable (IV) estimations

We address potential endogeneity concerns in the fixed effects analysis by means of two stage least squares, as well as system-GMM instrumental variable techniques.

Table 2 reports the second stage results for the panel data IV regressions using fixed effects. The first-stage regression results are displayed in Annex table 2.⁷ The results confirm the negative impact of local unemployment rates and of local agricultural employment shares. The coefficient for the share of young residents, by contrast, changes signs in most specifications of the instrumental variable models. It is negative in all regressions and, with the exception of regression 2, always significant. This may suggest a higher migration propensity for the young, as well as reflecting the role of migration as a potential life-time investment decision. The agricultural employment and demographic structure interaction parameter displays positive coefficients and is shown to be statistically significant at the 10% threshold level in most specifications (table 2). The positive impact of this variable may thus be interpreted as an indication for a potential migration poverty constraint depending on a region's agricultural and demographic composition – i.e. the propensity to move out of less developed areas may be enhanced by demographic pressures on the land by a young population. The positive influence of migration network effects on the regional appeal of NUTS-2 regions is confirmed in the instrumental variable regressions, again suggesting a certain path dependency.

In columns (3) to (7) of table 2, we examine the impact of government quality. The coefficients confirm the results reported in table 1. All government quality coefficients are positive. Once again, the coefficients are significant for control of corruption (column 4) and government effectiveness (column 5), but not for government accountability (column 6) and the local rule of law (column 7). Good governance, the reduction of uncertainty for economic transactions, an effective and interest-free use of public power, as well as the quality of public policies and services contribute to determine the ability of regions to attract future residents.

⁷ Potential endogeneity concerns for all regressors are also partially addressed by using lagged values.

Table 2. The impact of institutions on the attractiveness of NUTS-2 regions. IV fixed effects panel data estimations. Second-Stage.

	European Union						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Unemployment	-0.275*** (0.051)	-0.187*** (0.042)	-0.169*** (0.042)	-0.167*** (0.044)	-0.163*** (0.044)	-0.176*** (0.040)	-0.189*** (0.042)
Agricultural share	-0.568*** (0.084)	-0.094 (0.073)	-0.129* (0.073)	-0.121* (0.073)	-0.121 (0.075)	-0.114 (0.071)	-0.103 (0.070)
Share of young	-0.235*** (0.027)	-0.037 (0.025)	-0.065** (0.026)	-0.050** (0.025)	-0.065** (0.027)	-0.054* (0.029)	-0.046* (0.024)
Share of young x agric. share	0.032*** (0.005)	0.005 (0.004)	0.008* (0.004)	0.007* (0.004)	0.007* (0.004)	0.006 (0.004)	0.006 (0.004)
Lagged migration		0.68839*** (0.051)	0.68305*** (0.051)	0.67380*** (0.052)	0.68872*** (0.051)	0.68571*** (0.050)	0.69064*** (0.052)
Quality of government index			0.273*** (0.105)				
Corruption index				0.222* (0.147)			
Effectiveness index					0.238*** (0.060)		
Accountability index						0.112 (0.130)	
Rule of law index							0.074 (0.098)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effect	-	-	-	-	-	-	-
Observations	3030	3018	3018	3018	3018	3018	3018
R ²	0.002	0.252	0.250	0.253	0.252	0.249	0.250
Anderson Rubin statistic χ^2	350.88	350.88	352.86	384.92	361.63	367.95	384.13
A. R. statistic χ^2 (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Endogeneity test (p-value)	-	-	0.334	0.162	0.024	0.282	0.014

Notes: Standard errors are in parentheses below all coefficients. *, **, *** respectively denote the 10%, 5%, 1% significance levels. All variables, except the lagged migration parameter have been re-scaled by 100.

In order to assess the validity of our instrumental variable estimations and to test the quality of our instruments, we perform a series of tests. First, we conduct the Anderson-Rubin test for weak instruments. As demonstrated at the bottom of table 2, the Anderson-Rubin test shows that the null hypothesis of joint insignificance of the excluded instruments is rejected at 1% in all model specifications. Moreover, the first-stage F-test of jointly insignificant instruments are rejected in all first-stage regressions and reports for each model specification an F-test statistic which is by far larger than ten. Finally, we also perform individual endogeneity test on the institutional variables. The test results, reported at the bottom of table 2, indicate that endogeneity tends to be less of a concern for the institutional parameters, except for the effectiveness and the general quality of government index, which are characterised by p-values of 0.024 and 0.014 respectively.

5.3 Two stage-least-squared (2SLS) & IV system-GMM estimations

As an additional robustness test and to further control for potential endogeneity, we consider alternative IV estimation techniques. As there are risks related to the sole use of initial or past values as instruments, we estimate another set of IV regressions, instrumenting our quality of government variables by a selection of time-invariant historic parameters. Due to limited data

availability when using these historic components, the estimation results in this section are based exclusively on the NUTS-2 regions of the EU-15.

Table 3 and Annex table 3 report the estimation results when using 2-SLS regression techniques. Table 3 presents the second-stage regressions, while the first-stage regressions are reported in Annex table 3. The results for the standard migration determinants point to a highly significant impact of local unemployment ratios and a persistently negative, although, not always significant, influence of regional agricultural employment shares. The regional demographic structure is reported to affect net migration rates positively and demonstrates the pull of regions with a very dynamic and young population composition in the EU-15.⁸ Past migration movements, measured by the lagged dependent variable, are also statistically highly significant and display positive parameter estimates in all model specifications.

Using the additional set of historic instrumental variables for our institutional parameters by and large confirms the relevance of the government quality indices and highlights the positive impact of most institutional components. Low levels of corruption and government efficiency remain, once again, statistically significant, underlining the robustness of absence of graft and sound public policies as key determinants for migration. The coefficients for local rule of law and government accountability are, for the third time, statistically not significant when introduced as the only government quality indicators. Including all four quality of government parameters together (table 3, column 9) confirms the importance of low levels of corruption and high government effectiveness as a draw for migrants.⁹ The robustness of these and previous findings also tends to be confirmed when accounting for the potential effect of spatially lagged migration rates (table 3, columns 8 and 10), with the respective parameter estimate of spatial weights showing positive coefficients which are however only weakly statistically significant in specification (10). Finally, when controlling for a set of physical amenity variables, the general quality of government index displays a highly significant positive coefficient on regional net migration rates (columns 11 and 12). Physical amenities – such as blue winter skies and mild, but sunny summers – also entice migrants to European regions (Rodríguez-Pose and Ketterer, 2012).

⁸ The interaction term between the young population and agricultural employment share variables, however, is not significant.

⁹ The findings in Table 3, column 8 have to be considered with some caution, as introducing all regional quality of government variable simultaneously may lead to some inconsistency in the parameter estimates. This is due to the relatively high correlation between them and by the possibility that some of them may be jointly or simultaneously determined.

Table 3. The impact of institutions on the attractiveness of NUTS-2 regions towards migrants. 2SLS regressions. Second Stage.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Unemployment	-0.543*** (0.040)	-0.038** (0.015)	-0.038** (0.015)	-0.025 (0.015)	-0.033** (0.015)	-0.031** (0.016)	-0.031** (0.015)	-0.036** (0.016)	-0.032** (0.016)	-0.036** (0.017)	-0.053*** (0.017)	-0.052*** (0.017)
Agricultural share	-0.154*** (0.043)	-0.021 (0.018)	-0.017 (0.017)	-0.021 (0.017)	-0.019 (0.017)	-0.015 (0.017)	-0.018 (0.017)	-0.026 (0.020)	-0.025 (0.016)	-0.034* (0.019)	-0.016 (0.017)	-0.017 (0.017)
Share of young	0.086*** (0.021)	0.014 (0.010)	0.015* (0.009)	0.015 (0.009)	0.014 (0.009)	0.015 (0.009)	0.015 (0.009)	0.016 (0.010)	0.015 (0.009)	0.015 (0.010)	0.021** (0.009)	0.021** (0.009)
Share of young x agric. share	0.007** (0.003)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.002 (0.001)	0.001 (0.001)	0.001 (0.001)
Lagged migration		0.936*** (0.013)	0.935*** (0.013)	0.939*** (0.013)	0.940*** (0.013)	0.939*** (0.013)	0.939*** (0.013)	0.926*** (0.012)	0.930*** (0.014)	0.916*** (0.013)	0.923*** (0.015)	0.922*** (0.015)
Rule of law index			-0.004 (0.018)						-0.100*** (0.032)	-0.095*** (0.033)		
Corruption index				0.048** (0.021)					0.083*** (0.031)	0.090*** (0.033)		
Effectiveness index					0.021* (0.010)				0.043** (0.021)	0.036* (0.019)		
Accountability index						0.017 (0.017)			-0.003 (0.021)	-0.008 (0.023)		
Quality of government index							0.020 (0.017)	0.020 (0.018)			0.040** (0.017)	0.040** (0.017)
Spatially lagged net migration								0.078 (0.048)		0.095* (0.049)		
Temperature (mean) - January											0.001 (0.004)	0.003 (0.004)
Temperature (mean) - July											0.011** (0.006)	0.010* (0.006)
Cloudiness (mean) - January											-0.003* (0.002)	-0.003** (0.002)
Cloudiness (mean) - July											-0.001 (0.001)	0.000 (0.001)
Coast												-0.016 (0.013)
Constant	-0.080 (0.269)	-0.183 (0.131)	-0.196 (0.129)	-0.252* (0.130)	-0.213* (0.126)	-0.215* (0.126)	-0.221* (0.128)	-0.227 (0.142)	-0.202 (0.129)	-0.211 (0.142)	-0.232 (0.214)	-0.183 (0.217)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2206	2194	2194	2194	2194	2194	2194	2010	2194	2010	2194	2194
R ²			0.908	0.908	0.908	0.908	0.908	0.906	0.908	0.907	0.910	0.910
Hansen-J (p-value)	-	-	0.369	0.381	0.491	0.408	0.436	0.239	0.442	0.162	0.400	0.400
Anderson Rubin statistic χ^2			3474.04	3440.55	3434.81	3489.01	3426.69	2944.29	3811.39	3297.57	3387.42	3365.85
A. R. statistic χ^2 (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Endogeneity test (p-value)	-	-	0.849	0.279	0.886	0.146	0.606	0.478	0.649	0.183	0.555	0.571

The general validity of the instruments used in the analysis is illustrated by the statistics reported at the bottom of table 3. The p-value test results of the Hansen J-statistics for over-identification restrictions show a strong rejection of the null-hypothesis of joint insignificance, while the Anderson-Rubin statistics for weak instruments indicate that the null hypothesis is rejected at the 1% threshold in all model specifications. This further corroborates the validity of the instruments. Finally, the first-stage regression results reported in Annex table 3, show that several of the historical variables considered are correlated – depending on the precise institutional component – with current levels of regional government quality.

We use dynamic-panel regression techniques as our final robustness test. We choose system-GMM estimator, as it enables us to account for unobservable heterogeneity and to control for endogeneity and for the persistency of explanatory variables (Bond et al., 2001). The regression results of the Arellano-Bond system-GMM estimations are reported in table 4. They validate the findings of the 2SLS regressions, by showing a significant positive impact of the corruption, government effectiveness, and the general quality of government variables on migration trends.¹⁰

In brief, we can conclude that government quality matters for sub-national regional population change and may amount to an important regional pull factor for future residents. Our results show that, along with economic and demographic characteristics, local population changes are affected by the institutional surroundings. Better local quality of government attracts more migrants. The analysis further reveals that low corruption and government effectiveness are the most important quality of government dimensions determining a region's attractiveness towards migrants. Finally, the potential response of institutional settings to the presence of migrants or increasing local population, does not affect our findings, as shown by the range of instrumental variable regressions used.

¹⁰ The validity of the internal instruments is confirmed by the corresponding Hansen J-test statistics. The test results are available upon request.

Table 4: The impact of institutions on the population changes in NUTS-2 regions. Arellano-Bond System-GMM estimations.

	EU-15									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Unemployment	-0.064*** (0.013)	-0.021*** (0.006)	-0.016** (0.006)	-0.013*** (0.005)	-0.022*** (0.006)	-0.015*** (0.006)	-0.017*** (0.006)	-0.013** (0.006)	-0.019*** (0.006)	-0.018*** (0.006)
Agricultural share	-0.022 (0.108)	0.01 (0.034)	0.002 (0.028)	0.007 (0.027)	-0.002 (0.029)	0.004 (0.031)	0.007 (0.029)	0.014 (0.031)	0.009 (0.028)	0.007 (0.029)
Share of young	-0.045 (0.055)	0.038 (0.023)	0.023 (0.018)	0.031* (0.017)	0.037** (0.017)	0.036* (0.020)	0.034* (0.018)	0.028 (0.018)	0.027 (0.017)	0.026 (0.017)
Share of young x agric. share	0.000 (0.007)	-0.002 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.001 (0.002)
Lagged migration		0.801*** (0.058)	0.825*** (0.056)	0.829*** (0.048)	0.827*** (0.053)	0.819*** (0.055)	0.831*** (0.051)	0.821*** (0.054)	0.811*** (0.054)	0.804*** (0.055)
Rule of law index			-0.008 (0.049)							
Corruption index				0.100** (0.042)						
Effectiveness index					0.064** (0.028)					
Accountability index						0.023 (0.034)				
Quality of government index							0.077* (0.046)	0.088* (0.051)	0.088 (0.059)	0.099 (0.061)
Spatially lagged net migration								0.384 (0.242)		
Temperature (mean) - January									-0.012 (0.016)	0.011 (0.022)
Temperature (mean) - July									0.028* (0.015)	0.012 (0.017)
Cloudiness (mean) - January									-0.006 (0.004)	-0.008* (0.005)
Cloudiness (mean) - July									-0.001 (0.005)	0.000 (0.005)
Coast										-0.135 (0.107)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effect	-	-	-	-	-	-	-	-	-	-
Observations	2562	2378	2378	2378	2378	2378	2378	2378	2378	2378
AR(1)	0.169	0.008	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
AR(2)	0.956	0.262	0.260	0.260	0.260	0.263	0.262	0.262	0.261	0.262

Notes: Standard errors are in parentheses below all coefficients. *, **, *** respectively denote the 10%, 5%, 1% significance levels. All variables, except the lagged migration parameter have been re-scaled by 100. The first and second lag were chosen as internal instruments.

6. Conclusions

In this paper we set out to investigate the role of government quality in determining the attractiveness of European NUTS-2 regions towards migrants. Using a dataset of 254 European NUTS-2 regions and covering the time period 1995 to 2009, we first analysed the importance of the standard economic and demographic characteristics and confirmed that, as expected, they have played a decisive role in migration decisions to the different regions of Europe. This connects our results to previous analyses of regional migration in Europe. Our interest was, however, focused on the impact of local government quality indicators. The regional Quality of Government dataset of the University of Gothenburg has provided us with measures of local corruption, rule of law, government effectiveness, and government accountability, which are compatible with a raft of more traditional migration determinants at a regional level. The findings of the analysis indicate that, on top of the traditional drivers of migration, quality of government plays an important role in decisions to re-locate in Europe. Better local government is associated to higher net migration rates and this result is robust to the introduction of alternative specifications of model and to the use of alternative methods to assess the connection between both phenomena. The findings also concern not just the general impact of local government quality, but point more specifically to an important impact of local corruption levels, as well as of indicators referring of local politics and government efficiency. Low levels of graft and private rent-seeking in positions of public power combined with customer-driven and effective and efficient local government structures and local bureaucracies can be considered strong pull factors for future residents.

Our results also draw some conclusions for the debate on effective regional development policies designed to enhance the attractiveness of places and help to understand the implications of the considerable differences in institutional quality across regions in Europe. In a context in which 'place-based' approaches to territorial development profoundly influence the current debate on regional policies, the creation of effective institutions at the local and regional level may represent a crucial aspect in promoting the constructive role of the state in shaping regional development patterns. Better institutions at a local and regional level may therefore amount to a key component in creating and channelling incentives for workers and businesses, consequently influencing regional and urban outcomes, such as population change and economic development.

Acknowledgements

The authors are grateful the generous financial support of the European Research Council under the European Union's Seventh Framework Programme (FP7/2007-2013)/ERC grant agreement n° 269868.

REFERENCES

- Acemoglu D., Johnson S., 2005, Unbundling institutions. *Journal of Political Economy*, 113: 949-995.
- Barro R. J., 1999, Determinants of democracy, *Journal of Political Economy*, 107(2): 158-183.
- Beeson P. E., Eberts R. W., 1989, Identifying Productivity and Amenity Effects in Interurban Age Differentials, *Review of Economics and Statistics*, 71:443-452.
- Beine M., Sekkat K., 2013, Skilled migration and the transfer of institutional norms, *IZA Journal of Migration*, 2:9.
- Bertocchi G., Strozzi C., 2008, International migration and the role of institutions, *Public Choice*, 137: 19-102.
- Bode, E., Zwing, S., 1998, Interregionale Arbeitskräftewanderungen: Theoretische Erklärungsansätze und empirischer Befund, Kieler Arbeitspapiere, Nr. 877, Institut für Weltwirtschaft
- Bond S., Hoeffler A., Temple J., 2001, GMM estimates of growth, University of Bristol, Working Paper.
- Camagni R., Cappello R., 2009, Territorial Capital and Regional Competitiveness: Theory and Evidence, *Studies in Regional Science*, 39(1):19-39
- Caselli C., Coleman J., 2001, The U.S. structural transformation and regional convergence: A reinterpretation, *Journal of Political Economy*, 109(3): 584-616.
- Charron N., Lapuente V., Dykstra L., 2014, Regional governance matters: A study on regional variation in quality of government within the EU, *Regional Studies* 48(1): 68-90.
- Davis B., Stecklov G., Winters P., 2002, Domestic and international migration from rural Mexico: Disaggregating the effects of network structure and composition, *Population Studies: A Journal of Demography* ,56(3): 291-309.
- Day M. K., 1992, Interprovincial Migration and Local Public Goods, *The Canadian Journal of Economics / Revue canadienne d'Economie*, 25(1): 123-144.
- Deas I., Giordano B., 2001, Conceptualising and measuring urban competitiveness in major English cities: an exploratory approach, *Environment and Planning A*, 33:1411-1429.
- De Voretz D. J., 2006, Immigration Policy: Methods of Economic Assessment, *International Migration Review*, 40(2): 390-418.
- Docquier F., Lodigian E., Lodigiani E., Rapoport H., Schiff M., 2010, Brain drain and home country institutions, Mimeo, Université Catholique de Louvain.
- Faggian A., McCann P., 2009, Human Capital, Graduate Migration and Innovation in British Regions, *Cambridge Journal of Economics*, 33, 317-333.

- Ferguson M., Ali K., Olfert M. R., Partridge M., 2007, Voting with their Feet: Jobs Versus Amenities, *Growth and Change*, 38,77-110.
- Ghatak S., Levine P., 1993, Migration theory and evidence: An Assessment, CEPR Discussion Paper No. 769, Centre for Economic Policy Research, London
- Greasley S., John P., Wolman H., 2011, Does Government Performance Matter? The Effects of Local Government on Urban Outcomes in England, *Urban Studies*, 48(9): 1835–1851.
- Haapanen M., (2000), Impact of Expected Earnings on Interregional Migration Decisions in Finland, ERSA conference papers, European Regional Science Association.
- Harris J.R. and M.P. Todaro, 1970, Migration, Unemployment and Development: A Two Sector Analysis, *American Economic Review*, 60: 126-142.
- Hicks J., 1932, *The Theory of Wages*, McMillan, London.
- Kaufmann D., Kraay A., Mastruzzi M., 2009, Governance Matters VIII: Aggregate and Individual Governance Indicators, 1996-2008, World Bank Policy Research Working Paper No. 4978.
- Kishlansky M., P. Geary, and P. O'Brien, *Civilization in the West*, 5th edition, 2003, Prentice Hall.
- Le Gallo, J., Ertur, C., 2003. Exploratory spatial data analysis of the distribution of regional per capita GDP in Europe, 1980–1995, *Papers in Regional Science*, 82, 175–201.
- Malecki, E., Jockeying for position: what it means and why it matters to regional development policy when places compete, *Regional studies* 38(9): 1101-1120.
- Massey D.S., Arango, J., Hugo G., Kouaouci A., Pellegrino A., Taylor J.E., 1993, Theories of International Migration: A Review and Appraisal, *Population and Development Review*, 19 (3): 431-466.
- Massey D.S., Arango, J., Hugo G., Kouaouci A., Pellegrino A., Taylor J.E., 1998, *Worlds in Motion. Understanding International Migration at the end of the Millenium*, Oxford: Oxford University Press.
- McGranahan D.A., 2008, Landscape influence on recent rural migration in the U.S., *Landscape and Urban Planning*, 85, 228-240.
- McKenzie D., Rapoport H., 2007, Network effects and the dynamics of migration and inequality: Theory and evidence from Mexico, *Journal of Development Economics*, 84(1):1-24.
- Mitchell T.D., Carter T.R., Jones P.D., Hulme M., New M., 2004, A Comprehensive Set of High-Resolution Grids of Monthly Climate for Europe and the Globe: The Observed Record (1901–2000) and 16 Scenarios (2001–2100), Tyndall Centre Working Paper no. 55, Tyndall Centre for Climate Change Research, University of East Anglia, Norwich, UK.

Partridge M., 2010, The Dueling Models: NEG vs. Amenity Migration in Explaining US Engines Of Growth, *Papers in Regional Science*, 89, 513–536.

Partridge M., Rickman D., 2003, The Waxing and Waning of US Regional Economies: The Chicken-Egg of Jobs Versus People, *Journal of Urban Economics*, 53, 76–97.

Partridge M., Rickman D., 2006, Fluctuations in Aggregate US Migration Flows and Regional Labor Market Flexibility, *Southern Economic Journal*, 72, 958–980.

Pritchett, L., 2006, Let their people come: Breaking the deadlock in international labor mobility. Washington: Brookings Institution Press.

Puhani P.A., 2001, Labour Mobility: An Adjustment Mechanism in Euroland? Empirical Evidence for Western Germany, France and Italy, *German Economic Review*, 2, 127–140.

Roback J., 1982, Wages, Rents, and the Quality of Life, *Journal of Political Economy*, 90, 1257–1278.

Rodríguez-Pose A., Ketterer T.D., 2012, Do local amenities affect the appeal of regions in Europe for migrants?, *Journal of Regional Science*, 52(4): 535-561.

Rodríguez-Pose A., von Berlepsch V., 2014, When migrants rule: The legacy of mass migration on economic development in the United States, *Annals of the Association of American Geographers*, forthcoming.

Rotte R., Vogler M., 2000, The effects of development on migration: Theoretical issues and new empirical evidence, *Journal of Population Economics*, 13, 485–508.

Spilimbergo A., Democracy and Foreign Education, *American Economic Review*, 99(1): 528-543.

Todaro M. P., 1980, Internal migration in developing countries: a survey, in *Population and Economic Change in Developing Countries* (Ed.) R. A. Easterlin, University of Chicago Press, London and Chicago, pp. 361–402.

Zimmermann K.F., 2005, European Labour Mobility: Challenges and Potentials, *De Economist*, 153(4): 425-450.

ANNEX

Annex Table 1: Data sources and exact definition of the variables

Variable	Abbreviation	Exact definition	Source
<i>Dependent variable</i>			
Net migration rate	mig _{it}	Net migration standardised by the region's population (per 1000 inhabitants).	Eurostat Regio database
<i>Standard explanatory variables</i>			
Regional unemployment ratio	unempl _{it}	Regional unemployment rate standardised by the average annual unemployment rate of all regions.	Eurostat Regio database
Agricultural employment share	agri-share _{it}	People employed in the agricultural, mining and fishing industries in percent of total regional employment.	Eurostat Regio database
Young population share	young-share _{it}	People aged between 15 and 24 years as a percentage of the total population.	Eurostat Regio database
<i>Natural and physical amenity variables</i>			
Temperature (mean) - January	temp-jan _i	Mean temperature in January of each year between 1971 and 2000, in °Celsius.	Mitchell et al. (2004)
Temperature (mean) - July	temp-july _i	Mean temperature in July of each year between 1971 and 2000, in °Celsius.	Mitchell et al. (2004)
Cloudiness (mean) - January	cloud-jan _i	Mean cloudiness in January measure on an annual basis between 1971 and 2000; in % of time.	Mitchell et al. (2004)
Cloudiness (mean) - July	cloud-july _i	Mean cloudiness in July measure on an annual basis between 1971 and 2000; in % of time.	Mitchell et al. (2004)
<i>Institutional variables</i>			
Rule of Law index	ruleoflaw _{it}	Index measuring the residents' perception of the objectivity and confidence in the police and in regional law enforcement.	Charron et al. (2014)
Corruption index	corruption _{it}	Measure of corruption in the public school and health care system, and other public services.	Charron et al. (2014)
Government effectiveness index	effectivenss _{it}	Index evaluating the quality of the civil service, the quality of policy formulation and implementation, as well as the government's credibility.	Charron et al. (2014)
Voice and accountability index	accountability _{it}	Extent of citizens' participation in participating in election and the political, as well as freedom of expression, and of the media.	Charron et al. (2014)
Quality of government index	gov.qualiti _i	Regional quality of government index constructed combining all the previous four indicators	Charron et al. (2014)
<i>Instrumental variables</i>			
Romanization	rome _i	Dummy variable indicating whether a region belonged to the Roman empire at the time of Caesar (49 BC).	Duranton, Mion, Rodriguez-Pose
Charlemagne's Empire	charlemagne _i	Indicator variable taking the value 1 if a region was part of the Charlemagne empire and/ or represented a tributary territory to the latter at the time of the emperor's death.	Duranton, Mion, Rodriguez-Pose
Early Christianization	chritianity _i	Dummy variable taking the value 1 if a region was Christianized by around 600 AD.	Duranton, Mion, Rodriguez-Pose
Number of Kingdom Changes	king _i	Variable thus measures the number of time a NUTS-2 region has experienced a different ruler (i.e. kingdom)	Duranton, Mion, Rodriguez-Pose

Notes: The dataset covers the time period 1995 to 2009. All Danish regions were excluded due missing data. The natural amenity data as well as the historic instrumental variable information is only available for the EU-15.

Annex Table 2: The impact of institutions on the attractiveness of NUTS-2 regions. IV fixed effects panel data estimations. First-Stage.

	Rule of law	Corruption	Effectiveness	Accountability	Government Quality
	(1)	(2)	(3)	(4)	(5)
Unemployment	3.060*** (1.061)	2.725** (1.072)	3.062*** (1.068)	3.075*** (1.061)	3.025*** (1.066)
Agricultural share	0.074*** (0.019)	0.085*** (0.019)	0.074*** (0.019)	0.074*** (0.018)	0.078*** (0.019)
Share of young	0.011* (0.006)	0.010 (0.006)	0.011* (0.006)	0.011* (0.006)	0.010 (0.006)
Share of young x agric. share	0.974*** (0.013)	0.969*** (0.012)	0.973*** (0.012)	0.974*** (0.013)	0.967*** (0.013)
Lagged migration	0.003 (0.044)	0.015 (0.043)	0.004 (0.044)	0.003 (0.044)	0.014 (0.044)
Rule of law index	-0.008 (0.027)				
Corruption index		0.177*** (0.033)			
Effectiveness index			0.006 (0.007)		
Accountability index				-0.002 (0.015)	
Quality of government index					0.119*** (0.038)
Year effect	Yes	Yes	Yes	Yes	Yes
Country effect	-	-	-	-	-
Observations	3018	3018	3018	3018	3018
R ²	0.93	0.93	0.93	0.93	0.93
F-statistic of joint significance	96.43	52.21	28.36	67.72	323.07
F-statistic (p-value)	0.000	0.000	0.000	0.000	0.000
Shea Partial R2	0.237	0.149	0.089	0.048	0.364
Partial R2	0.371	0.169	0.160	0.145	0.426

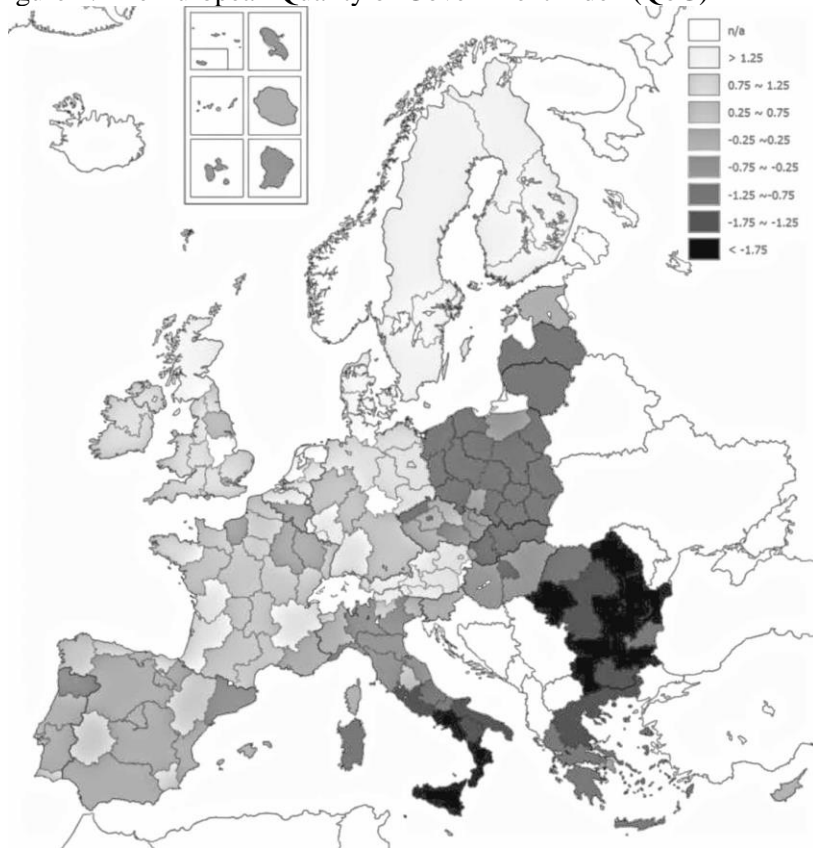
Notes: Standard errors are in parentheses below all coefficients. *, **, *** respectively denote the 10%, 5%, 1% significance levels. All variables have been instrumented using the 3rd lag, except the unemployment variable for the 2nd lag was used as an instrument. The first-stage regression results displayed above only report the first-stage regressions for our main variables of interest for the corresponding second stage regressions presented in table 1.

Annex Table 3: The impact of institutions on the attractiveness of NUTS-2 regions towards migrants. 2SLS regressions. Second Stage. First-Stage.

	Rule of law	Corruption	Effectiveness	Accountability	Government Quality
	(1)	(2)	(3)	(4)	(5)
Unemployment	-0.042*** (0.015)	-0.022* (0.013)	-0.078 (0.048)	-0.118*** (0.027)	-0.009 (0.006)
Agricultural share	0.009 (0.010)	0.012 (0.012)	0.005 (0.019)	-0.039*** (0.014)	-0.007 (0.006)
Share of young	0.005 (0.004)	0.002 (0.004)	0.026*** (0.007)	-0.016*** (0.006)	0.006** (0.003)
Share of young x agric. share	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.003*** (0.001)	0.001 (0.0004)
Lagged migration	-2.729*** (0.894)	-1.161*** (0.430)	-9.186*** (3.047)	-4.867*** (1.585)	-1.770*** (0.352)
Rome	-0.026** (0.010)	-0.012 (0.009)	-0.084* (0.047)	-0.052*** (0.020)	-0.007 (0.007)
Charlemagne	0.013 (0.012)	0.013 (0.014)	0.043 (0.037)	-0.005 (0.027)	0.021** (0.010)
Christianity	-0.014 (0.010)	-0.001 (0.007)	-0.031 (0.020)	-0.032** (0.016)	-0.004 (0.004)
Kingdom changes	0.006* (0.004)	0.002 (0.003)	0.031** (0.015)	0.0004 (0.006)	0.003 (0.003)
Rule of law index	0.850*** (0.047)				
Corruption index		0.916*** (0.021)			
Effectiveness index			0.620*** (0.207)		
Accountability index				0.684*** (0.087)	
Quality of government index					0.974*** (0.006)
Constant	0.087 (0.062)	-0.009 (0.051)	0.007 (0.207)	0.490*** (0.111)	-0.083** (0.033)
Year effect	Yes	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes
Observations	2194	2194	2194	2194	2194
R ²	0.952	0.968	0.802	0.842	0.979
F-statistic of joint significance	427.57	733.02	79.33	148.76	3505.65
F-statistic (p-value)	0.000	0.000	0.000	0.000	0.000
AP Chi-sq (p-value)	0.000	0.000	0.000	0.000	0.000
AP F-statistic	302.36	534.84	55.64	60.41	5307.94

Notes: Standard errors are in parentheses below all coefficients. *, **, *** respectively denote the 10%, 5%, 1% significance levels. All variables have been instrumented using the 3rd lag, except the unemployment variable for the 2nd lag was used as an instrument. The first-stage regression results displayed above only report the first-stage regressions for our main variables of interest for the corresponding second stage regressions presented in table 2.

Annex figure 1: The European Quality of Government Index (QoG)



Source: Charron et al. (2014)