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Multilateral resistance to migration

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ABSTRACT

The rate of migration observed between two countries does not depend solely on their relative attractiveness, but also on the one of alternative destinations. Following the trade literature, we term the influence exerted by other destinations on bilateral flows as Multilateral Resistance to Migration, and we show how it can be accounted for when estimating the determinants of migration rates in the context of a general individual random utility maximization model. We propose the use of the Common Correlated Effects estimator (Pesaran, 2006) and apply it to high-frequency data on the Spanish immigration boom between 1997 and 2009. Compared to more restrictive estimation strategies developed in the literature, the bias goes in the expected direction: we find a smaller effect of GDP per capita and a larger effect of migration policies on bilateral rates.

1. Introduction

The responsiveness of the scale of migration flows to varying economic conditions — both in sending and recipient countries — and to changing immigration policies at destination represents a central topic in the international migration literature. While some recent contributions have provided econometric analysis of aggregate data where the identification strategy is consistent with the proposed underlying individual-level migration decision model (Beine et al., 2011; Grogger and Hanson, 2011; Ortega and Peri, 2013),[1] others have relied on econometric specifications that have not been fully micro-founded (Clark et al., 2007; Mayda, 2010; McKenzie et al., 2012; Pedersen et al., 2008).

This methodological difference notwithstanding, these papers share a crucial feature, as Hanson (2010) observes that the literature is characterized by a long-standing tradition of "estimating bilateral migration flows as a function of characteristics in the source and destination countries only" (p. 4373). Still, would-be migrants sort themselves across alternative destinations, so that it is important to understand whether this econometric approach allows to control for the possible dependence of the migration rate between any pair of countries upon the time-varying attractiveness of other migrants' destinations. Hanson (2010) argues that "failing to control other migration opportunities could […] produce biased estimates" (p. 4375), and this issue resembles the one raised by Anderson and van Wincoop (2004) with respect to the estimation of the determinants of bilateral trade flows.

Trade between two countries does not depend on bilateral trade costs only, but rather on the relationship between these costs and the costs with the other trading partners; Anderson and van Wincoop (2004) refer to the attractiveness of trading with other partners as multilateral resistance to trade.[2] Similarly, migration rates between a dyad represented by an origin and a destination country do not depend solely on the attractiveness of both, but also on how this relates to the opportunities to move to other destinations. Following the terminology introduced by Anderson and van Wincoop (2004), we refer to the influence exerted by the attractiveness of other destinations as *multilateral resistance to migration*.[3]

Why can multilateral resistance to migration introduce a bias in the estimates of the determinants of bilateral migration flows? Consider,

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[1] Bertoli et al. (2013) analyze the income-sensitivity of international migration flows using individual-level data.

[2] Baldwin (2006) observes that this is nothing more than a specific case of the general principle that "relative prices matter."

[3] We choose this terminology to credit the contribution of Anderson and van Wincoop (2004), Anderson (2011), in his review of the gravity model, also derives multilateral resistance terms for the determinants of migration flows although he does not specifically introduce the concept multilateral resistance to migration and there are some subtle differences between his approach and ours (see Section 2).

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for instance, the case of migration policies, which can be coordinated at a supranational level. An instance of such a policy coordination was represented by the visa waiver granted in 2001 by the European Council to the citizens of the countries which would have eventually joined the EU three years later. If one is interested in estimating, say, the impact of the change in the Spanish visa policy toward Polish citizens on the migration flows from Poland to Spain, a key analytical challenge is represented by the need to control for the influence exerted by the *simultaneous* policy changes implemented by other countries following the EC Regulation. These changes can increase the attractiveness of alternative European destinations for Polish would-be migrants, confounding the identification of the effect of interest.

This paper directly tackles this challenge, thus addressing the concern raised by Hanson (2010). First, it relates the stochastic properties of the underlying individual migration decision model to the need to control for multilateral resistance to migration when estimating the determinants of bilateral migration rates. Second, it shows which type of data usually employed in the literature suffices to obtain consistent estimates even when multilateral resistance to migration matters. Third, it applies the proposed econometric approach — which draws on Pesaran (2006) — to analyze the determinants of migration flows to Spain over 1997–2009 using high-frequency administrative data.

The paper presents a general random utility maximization (RUM) model that describes the migration decision problem that individuals face. The theoretical model shows that multilateral resistance to migration represents an issue for the analysis of aggregate data whenever the stochastic component of location-specific utility is such that the independence of irrelevant alternatives assumption fails.[4] The derivation of the econometric specification from the RUM model reveals that multilateral resistance to migration, which is unobservable for the econometrician, gives rise to an endogeneity problem, as the regressors are correlated with the error term, which also exhibits serial and spatial correlation.

We show that the multilateral resistance to migration term entering the error of the equation that describes the determinants of aggregate migration rates on the basis of the RUM model can be expressed as the inner product of a vector of dyad-specific factor loadings and a vector of time-specific common effects. This entails that the structure of the error term coincides with the multifactor error model presented in Pesaran (2006). Pesaran (2006) proposed an estimator, the Common Correlated Effects (CCE) estimator, which allows to derive consistent estimates from panel data when the error follows this structure, i.e. it is serially and spatially correlated, and the regressors are endogenous.[5] The CCE estimator requires to estimate a regression where the cross-sectional averages of the dependent and of all the independent variables are included as auxiliary regressors: consistency of the estimates follows from the fact that the multilateral resistance to migration term can be approximated by a dyad-specific linear combination of the cross-sectional averages (Pesaran, 2006).

The adoption of the CCE estimator allows us to address the challenge posed by multilateral resistance to migration using the same type of data that are traditionally employed in the literature. This approach is more general than the one proposed in Mayda (2010), who includes a weighted average of income per capita in the other destinations as a control for their time-varying attractiveness,[6] and the one in Ortega and Peri (2013), which is valid only under a more restrictive specification of the underlying RUM model and which assumes that would-be migrants from different origin countries have identical preferences over the set of possible destinations. For instance, in our earlier example on migration from Poland to Spain, Ortega and Peri (2013) restrict the effect of a change in French migration policies on the Polish migration rate to Spain to be the same as the effect of a change in Greek migration policies, while the CCE estimator is much more flexible and it allows for a differentiated responsiveness to variations in the attractiveness of alternative destinations.

The proposed econometric approach is applied to the analysis of the determinants of bilateral migration rates to Spain between 1997 and 2009, when this country experienced an unprecedented boom in immigration. In fact, Spain recorded "the highest rate of growth of the foreign-born population over a short period observed in any OECD country since the Second World War" (OECD, 2010): the immigrant share went from 3% of the population in 1998 to 14% in 2009 (INE, 2010b).[7] Migration data come from the *Estadística de Variaciones Residenciales*, EVR (INE, 2010a), an administrative dataset collected by the *Instituto Nacional de Estadística*. A key feature of the EVR is that it provides us with high-frequency data, which give to the dataset the longitudinal dimension that is required to be confident about the application of the CCE estimator (Pesaran, 2006).

The data from the EVR, which have been aggregated by quarter, have been combined with data from IMF (2010a) and World Bank (2010) on real GDP and population at origin for 61 countries,[8] which represent 87% of the total flows to Spain over our period of analysis. Furthermore, we have compiled information about the various facets of Spanish immigration policies — such as bilateral visa waivers and agreements on the portability of pension rights — which have been shown to be relevant determinants of recent immigration to Spain (Bertoli et al., 2011). The quality of the data is thus notably higher than it is typical in the literature: it includes both legal and illegal migration, gross rather than net flows and a vast array of migration policy variables not usually available.[9]

Our results show that ignoring the multilateral resistance to migration term biases the estimation of the determinants of migration rates to Spain. In addition, the direction of the bias is the one we could expect. The effect of GDP at origin on migration rates to Spain is two thirds of that found in a specification that does not control for multilateral resistance to migration, although it is still negative and significant: a 1% drop in GDP per capita in a country increases its emigration rate to Spain by 3.1%. This bias is in the opposite direction of that found on the impact of migration policies. The only migration policy that is found to have a significant effect on migration rates to Spain is the adoption of a visa waiver. This effect only turns significant when multilateral resistance to migration is accounted for: establishing a visa waiver for a country multiplies its emigration rate to Spain by a factor of 4,[10] while the estimated effect when multilateral resistance to migration is not controlled for is not significantly different from zero.

The paper is related to four strands of the literature. First, the papers that analyze the determinants of bilateral migration flows using panel data in a multi-origin multi-destination framework (Clark et al., 2007; Lewer and den Berg, 2008; Grogger and Hanson, 2011; Mayda, 2010; Ortega and Peri, 2013; Simpson and Sparber, 2012; Pedersen et al., 2008; Beine et al., 2011). Our theoretical model can also be applied to that framework but, in terms of the structure of the data, our paper is more closely related to Clark et al. (2007) and McKenzie et al. (2012),

[4] The converse is also true: if the independence of irrelevant alternatives characterizes the individual migration decision problem, then the time-varying attractiveness of other destinations can be disregarded in the econometric analysis, as in Grogger and Hanson (2011) and Beine et al. (2011).

[5] Driscoll and Kraay (1998) allow to address the violation of the classical assumptions on the error term, but still require exogeneity of the regressors, which does not hold when multilateral resistance to migration is an issue.

[6] Hanson (2010) wonders whether this is "a sufficient statistic for other migration opportunities." We show that this is not the case in general.

[7] These figures can only be compared with Israel in the 1990s, when "immigration increased Israel's population by 12% between 1990 and 1994, after emigration restrictions were lifted in an unstable Soviet Union" (Friedberg, 2001), at a time when Israel had not joined the OECD yet.

[8] Data from the International Financial Statistics (IMF, 2010a) have been also combined with data from the World Economic Outlook (IMF, 2010b), and various Central Banks, as described in the Appendix A.3.

[9] Docquier and Rapoport (2012) mention these among the desirable qualities that international migration data should have.

[10] This huge effect is in line with the findings of Bertoli et al. (2011) for the case of Ecuadorian migration to Spain.