Should she stay or should she go?

¿Debería quedarse, o debería irse?

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Abstract. Using bilateral migration data by IAB, this paper provides a gravity model specification of international migratory flows from developing and least developed countries to 20 OECD countries by assuming a gender perspective. Data cover the period 1980-2010 (five years intervals). Additional control variables are used to take into account the specific dynamics of international human flows. In particular, we assessed the role of social institutions and social environment features. On the one hand, country specific social institutions in both origin and destination countries can be considered as additional determinants of emigration in both origin and destination countries for both females and males. However, some gender specific social indicators have not significant impact on female decision to migrate, suggesting the absence of any push/pull process. Disaggregating women flows per level of educational attainment provide more insights for the push/selection theory in origin countries. High difference in gender-specific social institutions in sending countries, reduces the probability of female emigration, limiting their power to take choices. In addition, countries with relative lower levels of Civil Liberties experience higher high-skilled out-flows while countries with lower levels of Political Rights experience lower female out-flows. Results suggest there exists different effects of determinants of migration on the selection and the flow process and the effects of variables changes among destination-origin.

Keywords: gravity model, gender, economics, international migration, push and pull factors.

Resumen. Utilizando la base de datos de IAB sobre migración bilateral, este trabajo proporciona una especificación del gravity model de los flujos migratorios internacionales desde los países en desarrollo y en transición a veinte países de la OCDE. El trabajo asume

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perspectiva de género y analiza los factores condicionantes de la migración y las diferencias en los factores pulll y push entre hombres y mujeres. Los datos abarcan el período 1980-2010 (intervalos de cinco años). Se utilizan variables de control adicionales para tener en cuenta la dinámica específica de los flujos internacionales. En particular, se evalúa el papel de las instituciones sociales y las características del entorno social. El estudio evidencia que por un lado, las características de las instituciones sociales en el país de origen y en el destino, son factores determinantes que afectan la decisión de migrar, tanto para las mujeres como para los hombres. Sin embargo, analizando el impacto de algunos indicadores sociales que toman en cuenta las condiciones de las mujeres en los países de origen no se evidencia un impacto significativo en la decisión de las mujeres de emigrar, lo que sugiere la ausencia de un proceso de push/selection. La desagregación de los flujos de mujeres por nivel de logro educativo proporciona más elementos para la teoría del empuje / selección en los países de origen. La gran diferencia en las instituciones sociales específicas de género en los países de origen reduce la probabilidad de emigración femenina, limitando el poder de las mujeres para la toma de decisiones. Además, los países con niveles relativamente más bajos de "Libertades Civiles" experimentan mayores flujos de migrantes altamente calificados, mientras que los países con niveles más bajos de "Derechos Políticos" experimentan menores flujos de salida de mujeres, evidenciando la existencia de un lock-in en el proceso de toma de la decisión de migrar.

Palabras clave: migración, género, instituciones, modelo gravitacional.

1. Introduction

At the outset of international migration theory, center of interest of all the studies was the canonical economic agent[1], whose main characteristic was the extreme sensibility to all the economic incentives. The central idea behind the theory was that 'individuals' choose to migrate from their origin country to another, in order to increase their wellness. However, that wellness was just seen as an improvement in individual payoff, and the latter was affected only by changes in economic parameters - such as wage, expected income, unemployment rate, etc.- between origin and destination countries (Borjas, 1987). The canonical view of international migration – economic agent moved by economic incentives – has lost more and more consensus in the academic debate. Basically, the orthodox theory was weakened by two great shortcomings.

First of all, focusing attention only on male migrants has left the bulk of international human flows in the dark. In the last decades the share of women in international mobility has raised quickly; nowadays more than 48% of migrants is female (UN Population Division, Trends in Total Migrant Stock: The 2013 Revision) and, moreover, in few countries the bulk of migration flows is dominated by women. Nevertheless, the preeminent authors of the discipline, when dealing with international migration studies, tend to concentrate their attention only on males' behavior, considering women as men's subordinate and not independent migrants. This evasion from a much-needed structure of migration analysis has brought later in time to an unquestioned supremacy of male-dimension. Essentially, by considering only a generic (male) economic agent, economists have implicitly neglected the existence of a gender dimension of international migration. This dimension, has re-

[1] The canonical economic agent in international migration theory was a man, while the study of women's behavior in international migration was seen as a specificity, insomuch as studies about migrant women commonly specify the term female in the title (Grieco and Boyd, 2003).

cently come up to the limelight thanks to the interest suggested by both sociological and feminist economic approaches which postulate different behaviors between male and female, and it is gradually becoming a forefront topic in economic research (Pedraza, 1991).

Rather than a mere theoretical improvement, including gender dimension into migration studies will enforce the awareness about the role that women play in the global migratory dynamic. According to the sociological theory, gender inequality can be one of the most powerful push factor that encourage women to migrate to countries in which the opportunities are more likely to be closer to their expectations (Grieco and Boyd, 2003). Indeed, migration could be seen as a reaction against any form of gender inequality that women suffer in their home country – discrimination at workplace, male-centered society structure, religious constraint and all the other forms of direct or indirect gender discrimination.

In addition, affirming that migrants' behavior is guided by economic incentives only, has led to a myopic analysis and weakly efficient policy indications. Recently, policy makers and economists have stressed the importance of social institution – better defined as non-economic determinants - to understand migrants' decision to migrate. Many studies have underlined the importance of looking at different parameters, such as educational level, access to health, country status, cultural factors etc. (Mayda, 2010). At the current stage, the literary debate on the role of 'social institution'[2] in the determination of both female and male migrants' behaviors are more than in an embryonic state (Bertocchi & Strozzi, 2008). The intuition is that, apart from economic incentives, the decision to migrate is likely to be driven by non-economic factors, such as the quality of institutions in home and destination countries. Noteworthy is the fact that, while social institutions in sending countries are reasonably expected to influence the decision to migrate acting as push or constraint factors, the quality of institutions in receiving countries may also play an important role by drawing migrant interest, especially high skilled female's one (Baudassé & Bazillier, 2012). Thus – from an economic perspective – together gender and social institutions can be additional push and pull factors useful to explain and understand how that complex process of human migration works.

2. Literature Overview

The following literature review, far from being conclusive, has the purpose of providing some instances of the abovementioned denials, to show how institutions, educational level and gender interact in the process of migration. Given the interdisciplinary nature of the subject, different are the branch of social sciences that have contributed to the development of the debate on gender, institutions and migration. One of the most fascinating contributions is the one coming from the sociological world. The approach adopted by sociologist is known as "migrant-centered", since they analyze the different

[2] We use the definition according to which 'social institutions' indicate formal and informal laws that are able to influence the decisions range of migrants (Jutting et al., 2008).

steps of the process that each migrant experience before taking the decision to migrate. Now, since from a sociological point of view each decision is shaped by the social contest in which the individuals live, the analysis of migration cannot overlook the transformation of social structures in sending and receiving countries. As Silvia Pedraza (1991) cleverly summarized, for understanding the migration process:

> "We need to consider the plight of individuals, their propensity to move, and the nature of decision they make. We also need to consider larger social structures within which that individual plight exists and those decision are made." (Pedraza, 1991)

Therefore, the challenge for migration researchers is to link the micro-contest of individuals' decisions to the macro-contest of the social structure in which those decisions are taken. Even with this clarification, the gender dimension seems to be still a peculiar aspect of conventional migration dynamics, centralized on male actors. The keystone to understand the compelling need of incorporating gender into the analysis comes from its twofold nature. Gender is indeed doubly linked with social structures, on the one hand being a social structure itself by influencing and shaping the organization of society, on the other by molding the way in which individuals perceive themselves in the society and thus enacting different behaviors between males and females (Ridgeway & Smith-Lovin, 1999).

As Grieco and Boyd (2003) have pointed out, even if the forces that enact the desire to migrate are the same for male and female, the final output is not the same. Indeed, if women experience inequality – both in the societal and in familiar environment – their decision process is more muddled than the men's one, particularly their probability to migrate is lower and lower. In order to fix the role of gender and social institution into migration theory, Grieco and Boyd (2003) have developed a 'gender sensitive' model that gained great consensus in the sociological debate. The sensitive model includes three stages of analysis, the pre-migration stage that consists in the analysis of all the characteristic of sending countries - which are important determinants of migration - and in the interpretation of individual's reaction to these determinants. The second stage is called the "act of migrating" stage, the intuition at the basis of this stage is that among all the individuals that decide to migrate at the end only few can do that physically, especially because of budget constraint or legal constraint. Therefore, migration could be seen as a self-selecting process and in this stage, all the constraints that individuals face are analyzed. The final stage is the post migration analysis, in which the characteristics of the receiving countries and the position that migrants have in that is deeply analyzed. Moreover, through the interpretation of women's behaviors observed in the analysis, they have crystallized three main "factors" that may influence female's decision to migrate: (1) individual status (age, sex, educational attainment, unemployment); (2) family status (structure, children, and status) and (3) societal status (formal and informal laws that affect women's decision to migrate). The added value coming from the contribution of Grieco and Boyd (2003) is given by the well-structured framework that links the macro-analysis to the micro-analysis. Economists have gradually become aware of the double dimension of gender and have consequently,

started to incorporate gender into international migration theory (Cob-Clark, 1993; Kanaiaupuni, 2000). From an economic perspective, migration is the result of a selection process in which each individual compares the opportunities in home country with the expected opportunities abroad. Individuals will choose to migrate if their payoff abroad will be higher than their payoff in the home country (Borjas, 1987). The migratory decision is widely influenced by migrants' personal characteristic, such educational level, social status, familiar constraint, etc. Therefore, migration could be seen as a self-selective process in which each dimension has a different weight. Being all individual's dimensions affected by the contest in which she leaves, is not conceivable any analysis that transcend the social dimension and the gender ones. This concept was cleverly pointed out in Kanaiaupuni's (2000) work on Mexican migratory dynamics which has become a milestone of economic studies on gendered migratory flows. According to the author, migration is a profoundly gendered process. What Kanaiaupuni did was to start a Copernican revolution in the field of migration studies, putting as center of interest no more the generic migrant but a more complex individual molded by the context in which she lives. However, assuming a gender perspective does not imply a partial destruction of traditional migration theory. Changing perspective implies a change in the theoretical question, which is not anymore how migration is influenced by gender but, what being a man or a woman means to migration behavior. In other words, the challenge to social scientists that want to include the gender dimension in their analysis starts with a new gendered interpretation of conventional migration parameters. Kanaiaupuni (2000) has identified five puzzling determinants of migration – human capital, household status, networks and local opportunities – and has gave a cleverly example of what reinterpret migration determinants from a gender perspective means. Noteworthy are the examples of human capital and local opportunities, the first has been always measured in terms of educational attainment and has been interpreted as a negative component of the migration cost. The intuition is that people with higher educational levels are more likely to move abroad since their skills level ensures them higher entrance probability in the labor market. What Kanaiaupuni (2000) led up to the limelight is the importance of the familiar and societal structures, exemplary is the case of male-oriented societies in which some branches of the labor market are precluded to women, there the per-capita return of investment in education could be much higher for men and therefore could discourage women migration. In the same way, local opportunities – such as the urban condition, the labor market condition, unemployment, etc. – might have different effects on male and female migratory decision. For example, what she found is that in the Mexican context, women migrants are positively selected with respect of high-skills, while men have access mostly to the low-medium skill job market. Thus, because in Mexico high-skilled women have fewer chances than high-skilled men to have a well remunerated job. Forward in time more and more attention has been given to gender inequality and social institutions in the contest of international migration, the research field has been enlarged and different branches of study have been developed. Mainly, the difference is between those studies focused on the micro-dimension of migration flows, which analyze the determinants that drive individuals' decisions and those focused on a 'global' perspective, which

analyze how the world migratory pattern balances out and the consequences of migration flows on both origin and destination countries[3] (Martin, 2007; Jutting et al., 2008; Baudassé & Bazillier, 2012; Ferrant & Tuccio, 2013). More specifically, the institutional dimension has been incorporated in traditional datasets including variables such as Civil Liberties, Educational Level, Access to Health System and Manage of Fertility, the main findings confirm the importance of including institutions in migratory analysis, since all the valuations on the determinants of migration that do not include institutions have resulted biased (Jutting et al., 2008). New studies have demonstrated that discriminatory social institutions play a different role in origin and destination countries. In origin countries may be enacted push factors that encourage women to migrate or constraint factors that tie women tightly to their country. In the first case, for example, women can choose to migrate in order to escape form discriminatory situations in their countries – consider that countries in which women are discriminated in the workplace and cannot reach jobs in line with their skills – therefore institutions can be considered as additive positive determinants[4]. In the latter case, home institution quality can limit women's ability to migrate limiting their power to take decisions – is the case of those countries in which societies present a patriarchal structure that effectively subordinate women to male's decisions (Sen, 1999). On the other hand, institutional quality of receiving countries can be considered as a pull factor that influence women's decision, for example female migrants can be attracted by countries with less discriminatory job markets (Ferrant and Tuccio, 2013). Nonetheless, what Baudassé and Bazillier (2011) have found is that, while we can make robust hypothesis about the pull-function of receiving countries institutions, we cannot do the same with the effect of home countries institutions, since the push hypothesis has been strongly rejected and the constraint one is not strong enough. According to the authors migration is more a selection process rather than an incentive process. Particularly, what they have highlighted analyzing the selection process hypothesis is what they called 'female enhancement effect', which shows how higher levels of gender equality in the workplace are linked with higher levels of females high-skilled migrants and lower levels of males one. Moreover, it is worthy to note how the educational attainment reshape the pattern of international migration. Even if the matter is still a niche, few studies have analyzed the impact of high-skilled female migration on the origin countries in order to measure the impact of women's migration on the so-called brain drain[5]. Dumon, Martin and Spielvogel (2007) investigate the effect of the migration of high-skilled women to OECD countries. Assuming as a starting point that the growing share of women in international migration could be seen as a consequence of important economic changes in origin countries and – among the other factors – as a consequence of rising female educational attainment, they have portrayed the typical pro-

[3] Note that all the studies – micro and macro oriented – do not lost the link between the micro-dimension and the macro-dimension that, as was seen above, is at the basis of an in-depth gendered perspective. Indeed, also the studies focused on the macro dynamics of international migration, through information about country-specific elements and quality of institutions, take into account all the determinants that can influence individual dimension.

[4] There are instances from Mexico - showed in Kanaiaupuni (2000) - where women are positively selected according to their skills level since in their home country they still face discriminatory access to the work market.

[5] For a deep analysis of the brain drain phenomenon see Beine, Docquier and Rapoport (2008).

file of a high-skilled women and have estimated the gender dimension of the brain drain. According to the authors the fact that there are almost as mainly high skilled women migrants as men, with the fact that women still face inequalities in the access to education, raises serious concerns in terms of their brain drain. The result suggested that high-skilled women are more likely to emigrate, more deeply women with a tertiary degree have 13% more probability to emigrate than those with only primary education. On average their results have shown that poor countries are more affected by high-skilled migratory flows and that emigration causes high losses to those countries. Similar conclusions have been reached from Docquier, Lowell and Marfouk (2009). It is reasonable to admit that this result lead to two different considerations. On the one hand is confirmed that social institutions and the gender dimension leave in close contact and evolve together, on the other has emerged the presence of a gender gap in high-skilled migrants. Indeed, according to the abovementioned results, even if the share of migrants is balanced between women and men, high-skilled women seems to be more migratory than high-skilled men. Again, these findings could be in line with the push factor hypothesis, according to which discriminatory social institutions act as an incentive for migrants. However, accepting the existence of a gender gap in international migration implies that women are more migratory than men and therefore weakens the constraint hypothesis. The existence of a gender gap in international migration has been rejected by Docquier, Marfouk, Salomone and Sekkat (2012) whom have found that females tend to migrate more because even with high educational attainment they may face difficulties in find adequate jobs, therefore migrants could be self-selected in respect of educational level. Moreover, in line with the theory, skilled women would prefer to migrate where returns to education are higher – for example large flows of high-skilled women characterize the migratory dynamics between Pakistan and the United Kingdom. Being the access to education unequal in most of developing countries, those countries will lose the bulk of their high-skilled women. In addition, looking at skilled male's migration they found that the more high-skilled male is abroad, the larger is skilled female's propensity to migrate. An overlook to data shows that in average there are more high-skilled men than women and that men are more likely to move as independent or first migrants. This last result shows that women are more likely to follow their spouses abroad than to move to another country and that the apparent gap is a consequence of family reunion programs and unequal access to education. Summarizing, we have briefly reconstructed the state of the art in the field of gendered migration studies, particularly our discussion was developed around three different pillars, the importance of including gender considerations in the study of migratory dynamic, the entwined relation between gender and social institutions and finally the impact of educational differentials – viewed as one of the most important social institutions – in the after-migration scenario of origin countries. In the following sections, we will look for the impact of selected social institutions on migration flows from developing and least developed to OECD countries – taking into account the gender dimension. Secondly, we will focus our attention only on the dimension of education looking at how this particular institution influence women migration, differentiating migration flows per educational level in order to take into account the

brain drain phenomenon. In the next section we present the theoretical framework of analysis, the dataset structure and the variables chosen. In the third section we will present our results and in the last we will conclude.

3. Theoretical Framework

In the present section we evaluate the determinants of bilateral international migratory flows applying a gravity model (Ortega and Peri, 2009; Mayda, 2010; Simpson and Sparber, 2010; van Lottum & Marks, 2012; Beine et al., 2011; Baudassé & Bazillier, 2012). From a macro perspective, migration is supposed to be driven by differences between destination and origin country that act respectively as pull and push factors and to be impeded by the costs of moving. The gravity approach has been conceived starting from the considerations made on migrants behaviour in "The Laws of Migration" (Ravenstain, 1885), where the decision to migrate was seen as consistently affected by the distance between origin and destination countries and – of course – by the income differential between those countries.

The decision to migrate could be standardized as an income-maximization and cost minimization analysis. Each individual decides to leave her origin country for another country if she gains from the move in terms of wellness. Let y_i^j be the income of individual *i* living in country *j*, therefore the decision to migrate is based on the net income differential between origin and destination country: $(y_i^0 - y_i^d) - c_i^{0,d}$, where $c_i^{0,d}$ is the migration cost. Thus, the individual utility function is given by $U_i^{o,d} = u\left((y_i^0 - y_i^d) - c_i^{0,d}\right)$ where $u(.)$ is a strictly increasing continuous function. The migrant, among all the possible destinations will chooses those that maximize her utility:

$$P: \max_{d=\{1,\dots,D\}} \{ U_i^{o,d} .$$

therefore, the aggregate utility of the economy is given by:

$$U_T \int_i^I (y_i^0 - y_i^d) - c_i^{0,d}$$

the numbers of individuals that choose to move from *o* to *d* can be represented by $M_{o,d}$. Assuming a linear utility function (Ortega and Peri, 2009):

$$M_{o,d} = Y_o - Y_d - C_{o,d}$$

immigrant flows depend on the aggregate income differential between origin and destination countries and on the cost of migrating. More generally, looking at the micro-pattern of international migration flows it is possible to rewrite the above defined equation as follows:

$$M_{o,d} = f(A_o, B_d, C_{o,d})$$

Where A_o includes all the specific origin push/constraint factors, B_d all the specific destination pulls factors and $C_{o,d}$ the aggregate cost that migrants face when choose to move from *o* to *d.*

It is necessary to acknowledge some criticism that the gravitational approach to migration dynamics has risen in the literature. Anderson (2011) has highlighted one of the most relevant lack of the gravity model linked to the "cost of migrating" specification.

What has to be included in the computation of the cost of migrating? The literature has often captured those components using proxies for geographical differences between origin and destination countries, as distance, contiguity, language spoken, etc. However, this generic specification of $C_{o,d}$ overlooks the heterogeneity present in the society. In other words, considering $C_{o,d}$ equal among all migrants, does not take into account that all migrants do not face the same cost. According to Anderson (2011) the cost of migrating has to be seen as the sum of two components that is the cost of migrating from origin country to destination country in which each individual will incur and an idiosyncratic component in which only *i* will incur (Anderson, 2011).

Dealing with the problem of the specification of the cost of migrating from a macro point of view Ortega and Peri (2008) redefined the aggregate cost of migration as made up by three different components, firstly those costs that the authors have called "costs between the two countries" that could be seen as the legal barriers between the countries (i.e. migration policies, etc.), secondly the "costs that migrants will incur fiscally while migrating", here among the others factors distances is a good proxy since the greater is the distance between the countries the higher are the costs that each migrant as to face, and finally "the personal costs" that is different for each migrant. Even if is not easy capture the third component, a good example to understand the nature of the personal cost is given by the importance that each migrant gives to her left behind. Notwithstanding, the gravity equation has been considered one of the most robust relationship in economics useful to estimate flows extent between countries and a useful tool to understand the main determinants of male and female migration flows (Greenwood, 1975; Mayda, 2010; Anderson, 2011). Thus, in this work, it is developed the basic gravity model implemented adding those variables that in the literature have been used as proxies to capture social institutions and gender inequalities.

4. Empirical Specification

The empirical specification of the above presented gravity model of migration results in the following double logarithmic equation (Lewer & Van den Berg, 2008):

$$m_{i,j} = a_0 + a_1 DIST_{i,j} + a_2 COLONY + a_3 LANG + a_4 gdp_i + a_5 gdp_j + a_6 pop_i + a_7 pop_j + u_{i,j}$$

Where $m_{i,j}$ is the flows of migrants from *i* to *j*, $DIST_{i,j}$ is the distance in kilometers between the two countries considered and it is measured taking the distance between the two most populated cities in the country pair, COLONY is a dummy that indicates if

the two countries have ever had a colonial link, LANG is a dummy incorporating into the model the language differential between the countries, *gdp* and *pop* are the GDP and the population respectively in origin/destination country and $u_{i,j}$ the error term.

In addition to the basic determinants of emigration, our main specification includes unemployment rates in both origin and destination countries as additional control variables. Unemployment rates have been added in order to take into account the role of working opportunities in origin and destination countries. Since the data register only legal migration, the bulk of migratory flows is driven by labor. More specifically, the presence of unemployment rate in origin and destination countries is easy to understand, people migrate to improve their wellness and working opportunities in origin and destination countries play an important role in shaping migratory flows. Origin unemployment rate could act as a push factor (i.e. the higher is the unemployment rate the lower is the probability to find a job in home country), while destination unemployment rate could attract migrants (i.e. the lower is the unemployment rate in receiving countries the higher will be the attractiveness of the country) (Baudassé & Bazillier, 2012; Ferrant & Tuccio, 2013). Then, the model specification becomes:

$$m_{i,j} = a_0 + a_1 DIST_{i,j} + a_2 COLONY + a_3 LANG + a_4 gdp_i + a_5 gdp_j + a_6 pop_i + a_7 pop_j + a_8 unempl_i + a_9 unempl_j + a_k z(.) + u_{i,j}$$

Where $z(.)$ are all the variables added in order to control for social institutions. Specifically, we have added proxies for the levels of political rights and civil liberties in both origin and destination countries in order to include into the main equation the impact of country specific social institutions. Political Rights and Civil Liberties could be seen as a good proxy to capture the quality of social institutions in both origin and destination countries (Ferrant & Tuccio, 2013). Moreover, our indicators for Civil Liberties and Political Rights also capture the gender discriminatory dimension, since all the different levels are weighted also for gender equity in access to freedom. Inasmuch the final aim of the present work is to analyze the determinants of international migration and the impact of social institution on the decision to migrate differentiating for men and women, we have re-specified the above described equation for both female and male migrants and then we have augmented the main specification in order to incorporate gender differences into the model. Therefore the last specification follows the model shown below:

$$m_{i,j,g} = a_0 + a_n X_{i,j} + a_m G_{i,j,g} + a_k z(.) + u_{i,j}$$

Where g indicates the gender of the migrants, $u_{i,j}$ represents all the parameters included as a control, $z(.)$ is the function which includes country-specific social institutions already seen in equation above and $G_{i,j,g}$ includes gender-specific social institutions embodied in order to take into account their impact on both females and males migration flows.

An econometric challenge arises when dealing with bilateral migration data, in fact data on bilateral flows often present high occurrence of zeros, the reason is that it is most likely that migration does not occur among all country pairs. If overlooked, the occurrence

of zeros generates biased estimators, thus it is necessary to use a particular econometric strategy. We decided to use Heckman two-step procedure to estimate the effect of social institutions quality on migratory flows of both male and female. The added value of the Heckman procedure is that it includes explicitly a potential selection bias (Beine et al., 2011; Baudasse & Bazillier, 2012; Ferrant & Tuccio, 2013). Roughly, the Heckman procedure consists in two parts, the first one in which with a Probit model and an exclusion variable is estimate the probability of observing migrants' flows between two countries, the second step quantifies the size of the observed flows but taking into account the zeros. The correlation parameter is a useful tool in order to test the goodness of the Heckman specification. Particularly, if the correlation parameter is zero, OLS specification will produce unbiased estimates, while if the correlation parameter is different from zero, OLS estimator is biased and the Heckman specification produces consistent estimates.

Following Beine et al. (2011), Baudasse & Bazillier (2012), Ferrant & Tuccio (2013), the variable 'Diplomatic Exchanges' has been used as an exclusion variable in the selection equation. According to the authors, if two countries experience diplomatic exchanges the initial cost of migrating should be reduced, at least because of the likelihood of receiving visas. Hence, the presence of diplomatic exchanges could influence the probability to have positive migratory flows but not their size.

5. Data

5.1. Migration Data

Migration Data are taken from the "IAB Migration by Gender" dataset, produced within the framework of the TEMPO project (TEmporary Migration, integration and the role of POlicies), a European project financed by NORFACE (New Opportunities for Research Funding Agency Co-operation in Europe), a partnership of 15 research councils established to increase cooperation in research and research policy in Europe. It is a macro dataset on international migration and cover information for 20 OECD destination countries for the thirty years with a five-years interval. Migration data refer to individuals aged 25 years and older. Final database contains data for 159 countries of origin and 20 countries of destination for the period 1980-2010 (five years intervals). The original dataset included 195 countries. From these, we selected the developing and least developed countries, according to the classification by WESP (2012). Data on migrants are computed from the Census of the 20 OECD destination countries, in the main dataset Unknown origin countries are aggregate as an ulterior country.

Noteworthy are three shortcomings of our migration dataset. Firstly, to better harmonize our dataset we have dropped Taiwan, Holy See (Vatican State), Macao, Hong Kong and Unknown-origin data, because of the lack of data on social institutions. Secondly, we have considered South and North Korea and North and South Sudan as aggregate states since data on migrants arriving in those countries in our analysis period were not avail-

able. Finally, the "IAB Migration by Gender" dataset includes information only on legal migrants, omitting refugees, displaced people and illegal migrants. However, due to the lack of international illegal flows it is impossible to consider illegal flows at a macro level.

5.2. Gravitational Data

A correct specification of the 'Gravity Model' for international migration flows needs geographical data on both origin and destination countries. Additional control variables are used in order to take into account the specific dynamics of international human flows. Data on GDP and GDP per capita (in PPP), and data on population in origin and destination countries are taken from the World Bank's World Development Indicators database. Time invariant variables are obtained from the CEPII's GeoDist Dataset (Mayer & Zignago, 2011): contiguity is a dummy taking 1 if two countries share common borders[6]; common language is a dummy being 1 if the language is spoken as official primary language; colony is a dummy taking 1 if countries have ever share a colonial relationship, distance is taken as the bilateral distance between the most populated cities in the two countries.

5.3. Social Institutions

In order to measure the impact of Social Institution of both origin and destination countries we have included in our model some variables useful to capture differences in Social Institutions. We use the Civil Liberties and Political Rights measures taken from the Freedom House's flagship publication '2013 Freedom in the World' (House, 2013). The indices have 1 to 7 scale (with 1 representing the highest and 7 the lowest levels of freedom in the case of the Civil Liberties measure and quality of political institutions in the case of the Political Rights measure). The introduction of these index has been greatly supported in the literature on migratory flows (among all, see Ferrant & Tuccio, 2013).

Other variables useful to explain the impact of social institutions on international migratory flows that we have included are all taken from the 'World Development Indicators database' of the World Bank. In the first stage of the analysis we have included unemployment rate of both origin and destination countries, the variable unemployment indicates the share of the labor force seeking for a work but without it[7]. The expected link between unemployment and migratory flows is twofold, for origin countries we expect a positive effect, the higher is the unemployment rate the more people will choose to migrate in search of work. For destination countries, contrarily, we expect a negative impact since, assumed migration highly driven by labour opportunities, *ceteris paribus,* migrants

[6] However, in our model contiguity has small specific-significance, the possible reason is that we are only analyzing OECD-entering flows.

[7] The estimates used in the present work refer to the ILO estimates and not to the national statistics institute. We have chosen to incorporate data modelled to ILO estimates in order to ensure uniformity in the dataset.

will choose destinations with lower unemployment rate. Then other variables have been included as proxies of social institution level: Health Expenditure per capita is the sum of public and private health expenditures as a ratio to the population of the country. The latter variable has been included since it is well-known that the percentage of health expenditure is a useful indicator to evaluate the level of development of a country and the quality of its institutions. However, in the opinion of the author the total expenditure on health service as a low predicting power since it is well known that in most of the low-income countries the bulk of the sanitary system is financed with private funds, that increase our indicator often without increasing the access to health for large shares of the population. Finally, we have added Labor Force indicator for both origin and destination countries, which included all currently active workers. The variable was added as a proxy to social and demographic differences among countries. Noteworthy is the fact that neither Health Expenditure nor Labour Force (in number of individuals active or seeking for a work) have showed significant results, therefore we have dropped those variables from our final reported model.

5.4. Gender-Specific Variables

In order to measure gender discrimination in social institutions across countries, we have performed different equation including for each social institution area a synthetic index. We focus our attention on discriminations in labor market, differences in access to education, differences in access to health services and household discriminations. We do not want to imply that those are the only field in which women experience discriminations, however given the aggregate nature of our dataset and given the aim of this work we have excluded other important fields such as physical integrity, political right differences, religious beliefs, position within the society, etc. As a proxy for measuring the level of discrimination in labor market we have used World Bank 'Labor Force Ratio' index, which is presented in the 'Gender Statistic Database' of the World Bank. In our opinion this index could be seen as a good indicator to capture the impact of gender discrimination within the labor market. Indeed, lower levels of women's participation to the country's labor market might reveal unequal access to labor market for males and females. The expectation upon the possible link between the 'Labor Force Ratio' and migration flows is dyadic. On the one hand we expect a positive link between the Ratio in destination countries and the number of migrants. On the other hand, we do not expect an indeterminate link between the 'Labor Force Ratio' in origin and the migratory flows, since it could be both positive (i.e. the more are the women in the labor force the high will be the number of women leaving their countries to improve their wellness) or negative (i.e. the more are the women in the labor force the lower is the level of discrimination). In order to control for the level of discrimination in the labor market we have also added – for both origin and destination countries – a more robust index 'Unemployment Rate Differential' (i.e. male/female unemployment rates), as said above we predict a strictly positive linkage between

'Unemployment Rate Differential' in destination countries and inflows migrants. Hence, *ceteris paribus*, women will choose countries in which they will have higher opportunities of work. The sign that 'Unemployment Rate Differential' in origin countries will take in our analysis is again undeterminable, since we can have a positive effect in the specific case in which the Unemployment Differential act as a push factor, while we can have a negative effect if its act as a constraint.

In order to measure discriminatory access to education we have included in our analysis the difference between the 'Expected Years of Schooling' for males and females in both origin and destination countries. As has been long discussed in the literature (Docquier et al., 2008; Beine et al., 2008; Docquier et al., 2012) the best proxy to take into account migrants skills is their level of educational attainment. Once included the level of skills in the analysis the results are concordant, high-skilled people (i.e. people with higher level of education) are more likely to migrate abroad and, moreover, to find a job which reaches their expectations. Therefore, to test the for presence of gender inequalities in a society we cannot overlook eventual differences in the access to education among males and females. Hence, we have included the difference between the 'Expected Years of Schooling', which data are taken from the World Bank 'Gender Statistic Database'. Our expectations on the relationship between inequalities in access to education and migration are quite obvious, we expect a strictly negative linkage between differences 'Expected Years of Schooling' of both origin and destination countries, indeed – according to the theory – women with lower educational attainment will migrate less likely and women who choose to migrate will choose places in which there are not gender discriminations.

Appendix 3 summarizes the final variables used for the analysis and the expected sign of their coefficients.

6. Results

Following the scheme specified in the previous sections, firstly we have analyzed the impact of the 'classical' determinants of international migration on both male, female and total net migration flows. Then we estimate the impact of country-specific social institutions on the decision to migrate, again for male, female and total net migration flows. Finally, we estimate the impact of gender-specific social institutions looking only at the female's net migratory choices.

In order to estimate the impact of traditional determinants of international migration, the classical empirical model is estimated performing an Heckman Two-Stage procedure with STATA. In column (1) are reported the estimates on total migration flows, while columns (2) – (3) report the estimates for female and male migration flows, respectively. Variables are expressed in natural logs, except for dummy variables. The variable "Diplomatic Exchanges" is present only in the selected model. Values in parenthesis indicates standard errors. Some observations were censored because of the selection variable Diplomatic Exchanges.

Table 1. *Gravitational Specification of Migration flows (Heckman estimates)*

Variables	(1) Total Migration	(2) Female Migration	(3) Male Migration
Diplomatic* Exchanges	0.187*** (0.0503)	0.261*** (0.0339)	0.205*** (0.0341)
Distance	-0.106*** (0.0278)	-0.0967*** (0.0266)	-0.153*** (0.0270)
Colony	-0.0628 (0.0794)	-0.0879 (0.0793)	-0.0582 (0.0787)
Language	0.563*** (0.0406)	0.680*** (0.0407)	0.583*** (0.0402)
Population Origin	0.107*** (0.0109)	0.101*** (0.0107)	0.133*** (0.0107)
Population Destination	-0.350*** (0.0205)	-0.383*** (0.0197)	-0.350*** (0.0197)
GDP Origin	0.129*** (0.0122)	0.155*** (0.0114)	0.134*** (0.0114)
GDP Destination	0.541*** (0.0178)	0.596*** (0.0180)	0.551*** (0.0179)
Constant	-11.33*** (0.443)	-12.93*** (0.416)	-11.75*** (0.414)
Inverse-Mills Ratio	-0.0106 (0.196)	0.274* (0.166)	0.280 (0.174)
Estimation Method	Heckman	Heckman	Heckman
Observations	13,096	13,096	13,096

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In all our specification control variables are significant, except for Colony. GDP in origin country has a positive and relevant effect on all the three specifications confirming that the bulk of emigration takes place in richer countries rather than in poorer ones. Particularly, an increase in origin GDP will lead to a consistent increase in total migration flows (around 13%) and in both female (around 16%) and male (13%) net emigration flows. GDP in destination country has the expected positive sign and it is highly significant, confirming that the most intensive human flows on international scale are toward richer countries. Populations in origin countries have the expected positive sign in all the three models, confirming the impact of gravitational forces and demographic pressure and so justifying the choice of a gravitational approach. Population in destination countries has negative effect on migration and this can be explained considering the destination countries we have chosen: the ones with higher level of population are also the ones in which it is more difficult to emigrate (e.g. United States, Australia). Hence the flow of migration is more intensive to those developed countries for which it is easier to enter in.

The adequacy of the gravity model is confirmed by the negative and highly significant impact of distance, which is due to the increase of the cost of migration. Linguistic proximity has the expected positive sign and a high impact on net migration flows, confirming that migrants prefer to move in countries in which they can easily speak. Noteworthy is

the fact that women seem to be more sensible to linguistic proximity. It is also worth to underline that the chosen exclusion variable in the Heckman two-step procedure, namely Diplomatic Exchanges, is significant and with the expected positive sign. The presence of a diplomatic representation in destination country is confirmed to be a prerequisite for legal migration. Our results are consistent to those in the literature (see Baudasse and Bazillier, 2012; Ferrant & Tuccio, 2013).

To analyze the impact of country specific social institutions on total, female and male net emigration flows. The augmented model is estimated, using an Heckman two-step procedure in STATA. In (Table 2) are reported the results, column (1) reports the results of social institutions on the net total migration flows, while columns (2) – (3) report respectively the results for females and males. The chosen exclusion variable in Heckman, namely Diplomatic Exchanges, is significant and coherent with our expectations and previous findings. It is worth to note the difference in the number of total observations between equation (1) and equation (2) estimates (13,096 versus 6,365), this lack of observations is due to the occurrence of missing values in the selected country-specific index. However, the consistence of the estimate is confirmed by the coherence of all the control variables used in the model. First, let focus on total migration flows (column (1)). Unemployment rates in both origin and destination countries have the expected signs. Particularly, unemployment in destination country is negatively correlated with migratory flows, while unemployment in origin county is positively linked with migratory flows, confirming that the prevalence of migration is due to working reasons. We have also included Political Rights and Civil Liberties indices (House, 2013) to estimate the effect of social institutions in both origin and destination countries[8]. Particularly, if Civil Liberties index in origin country increases of one-point, total emigration will increase by 12%, by 12.8% and 11.4% for respectively female and male emigration. Therefore, less freedom will increase migration, acting as a push factor. On the other hand, an increase on one point in destination country index will reduce total inflows by 53.7%, specifically by 46.2% and 51.4% for female and male. The latter results might hide societal and cultural bias in female power to take decision, it could be expression of unequal opportunity in home countries. On the other hand, if Political Rights index in origin country increases of one point, total, female and male emigration is reduced by 9.2%, 10.4% for female, 9.7% for male, acting as a constraint. In destination countries the flows are reduced by 45.5%, of which 34.4% for male migrants. The estimates for female seems not to be significant. In general, the impact of social institutions in receiving countries is much greater than that of social institutions in sending countries. Therefore, emigration to higher discriminatory destination country is less likely to occur, for both male and females. From a gendered perspective, women – when choosing to migrate – seems to give more weight to the level of civil liberties.

[8] It is useful to remark that Political Rights and Civil Liberties indicators take values from 1 to 7, indicating with 1 the highest level of Political Rights and Civil Liberties and with 7 the lowest one. Therefore, for the interpretation of the estimated coefficient we consider an increment in the variables as a decline in the quality of country-specific social institution.

Table 2. *The Impact of Social Institutions (Heckman Estimates)*

Variables	(1) Total Migration	(2) Female Migration	(3) Male Migration
Diplomatic Exchanges	0.213*** (0.0663)	0.241*** (0.0643)	0.231*** (0.0650)
Distance	-0.111** (0.0499)	-0.127*** (0.0487)	-0.169*** (0.0497)
Colony	5.511 (0)	5.497 (0)	5.622 (0)
Language	0.782*** (0.0894)	0.923*** (0.0883)	0.788*** (0.0860)
Population Origin	0.151*** (0.0200)	0.134*** (0.0196)	0.167*** (0.0197)
Population Destination	-0.385*** (0.0564)	-0.364*** (0.0547)	-0.340*** (0.0557)
GDP Origin	0.124*** (0.0192)	0.164*** (0.0189)	0.143*** (0.0190)
GDP Destination	0.777*** (0.0574)	0.809*** (0.0561)	0.728*** (0.0563)
Unemployment Destination	-0.255*** (0.0627)	-0.0905 (0.0603)	-0.223*** (0.0614)
Unemployment Origin	0.0717** (0.0292)	0.0641** (0.0286)	0.0587** (0.0287)
PR Destination	-0.455*** (0.126)	-0.110 (0.127)	-0.344*** (0.126)
PR Origin	-0.0922*** (0.0266)	-0.104*** (0.0260)	-0.0970*** (0.0261)
CL Destination	-0.537*** (0.0512)	-0.462*** (0.0508)	-0.514*** (0.0511)
CL Origin	0.120*** (0.0354)	0.128*** (0.0345)	0.114*** (0.0348)
Lambda	-0.559*** (0.212)	-0.196 (0.185)	-0.110 (0.198)
Constant	-17.87*** (1.144)	-19.07*** (1.127)	-17.32*** (1.119)
Rho	-0.33874	-0.11983	-0.06817
Sigma	1.6502593	1.6377002	1.6119576
Wald Test	3993.50	3993.50	3691.94
Estimation Method	Heckman	Heckman	Heckman
Observations	6,365	6,365	6,365

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We then look at the effect of gender differential in social institutions in both origin and destination countries on female migration flows. Estimating the final empirical specification, we distinguish social institutions by fields: gender differentials in the labor market (Table 3) and gender differentials in the access to education (Table 4). First we augmented the basic model by adding the Ratio of Male to Female labor force participa-

Table 3. *The Impact of Labor Market Differentials (Heckman Estimates)*

Variables	(1) Female Flow	(2) Female Selection
Diplomatic Exchanges*		0.240*** (0.0653)
Distance	-0.695*** (0.0459)	-0.101** (0.0491)
Colony	1.468*** (0.112)	5.629 (0)
Language	1.725*** (0.0773)	1.199*** (0.0955)
Population Origin	0.445*** (0.0218)	0.177*** (0.0213)
Population Destination	0.175*** (0.0537)	-0.0404 (0.0466)
GDP Origin	0.466*** (0.0212)	0.147*** (0.0211)
GDP Destination	0.845*** (0.0557)	0.304*** (0.0554)
Ratio Female/Male Labor-Force Participation Destination	0.0697 (0.0615)	-0.228*** (0.0658)
Ratio Female/Male Labor-Force Participation Origin	0.440 (0.317)	3.329*** (0.210)
Male/Female Differential Unemployment Destination	-1.097*** (0.127)	-0.255** (0.123)
Male/Female Differential Unemployment Origin	0.133* (0.0683)	-0.00611 (0.0653)
Lambda		0.585*** (0.177)
Constant	-35.39*** (1.703)	-24.74*** (1.097)
Rho		0.35009
Sigma		1.6720574
Wald Test		4805.17
Observations	6,384	6,384

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

tion in origin and destination countries and the Ratio of Female to Male Unemployment in sending and receiving countries, both data are taken from World Bank's 'Gender Statistic Database'. (Table 3) in column (1) and (2) reports the regression and the selection equations estimated using the two-step Heckman procedure. The Heckman procedure produces robust results since rho is equal to 0.35 and IMR is highly significant. Also the exclusion variable, Diplomatic Exchanges, is significant and in line with our previous findings. In most of the specifications, control variables are significant and with the expected sign. The Colony dummy is not significant in the selection process, indicating that the cultural proximity only affects the extent of female migration flows but does not play a role in the selection process. The gender differential in unemployment of origin country affect

positively the extent of the flow. For those women who migrate, differentials in unemployment act as a push factor, confirming what we have found estimating the previous equation. Finally the Ratio between female and male labor force participation in destination country, shows negative and significant coefficients in the selection model. This result is not in line with previous findings (Baudassé and Bazillier, 2012), implying that lower difference in labor force participation of destination countries will affect negatively the women probability to migrate.

Then we have augmented the basic model including the difference in expected year of schooling between male and female, as a proxy for gender differences in access to education. Data for both origin and destination countries are taken form World Bank's 'Gender Statistic Database'. (Table 4) in column (1) and (2) reports the regression and the selection equations estimated using the two-step Heckman procedure. The Heckman procedure produces less robust results since IMR is not significant. Hence, the model

Table 4. *The Impact of Access to Education Differentials (Heckman Estimates)*

Variables	(1) Female Flow	(2) Female Selection
Diplomatic Exchanges		0.396*** (0.0641)
Distance	-0.688*** (0.0534)	-0.0579 (0.0502)
Colony	1.767*** (0.136)	-0.147 (0.155)
Language	1.730*** (0.103)	0.791*** (0.0837)
Population Origin	0.544*** (0.0340)	0.188*** (0.0230)
Population Destination	0.245*** (0.0674)	-0.389*** (0.0444)
GDP Origin	0.288*** (0.0287)	0.0892*** (0.0238)
GDP Destination	0.719*** (0.0727)	0.608*** (0.0380)
Ratio Expected Years of School Origin	2.267*** (0.195)	0.845*** (0.128)
Ratio Expected Years of School Destination	3.602*** (0.687)	-3.870*** (0.540)
Lambda		0.00743 (0.232)
Constant	-27.16*** (1.492)	-13.39*** (0.894)
Rho		0.00458
Sigma		1.6200687
Wald Test		2381.70
Observations	3,955	3,955

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

could be mis-specified. This may be caused by lack of data for developing and underdeveloped countries for these data. Nevertheless, the exclusion variable, Diplomatic exchange, is significant and in line with our previous findings. Also the other estimates are in line with previous results.

Colony dummy performs as in the previous equation, being positively correlated only with migration flows size. The same happens for Distance. The gender differential (computed as Male to Female) in access to education in origin countries is significant in both steps of estimation. It takes a positive sign, indicating that in those countries in which the gender discrimination in access to education is higher, more women will migrate. Differential in access to education in destination countries is significantly and negatively correlated with the selection equation and positively correlated with the flow equation, indicating that higher differential in access to education in destination countries will reduce the probability that female will migrate, however, above the migrant the differential in access to education act as a pull factor. Therefore, according to our results, social institutions play a key in both origin and destination countries, however we cannot confirm previous finding about the prevalence of the selection process with the respect of push/pull factors (Baudassé & Bazillier, 2012; Ferrant and Tuccio, 2013).

In order to test whether the results reached in the previous paragraph are due to gender differentials or to other unobservable characteristics we have split our female sample according to migrants' level of education. We consider three level of skills high – for whose women with a tertiary degree – medium and low, for those women with secondary and primary degree respectively. Then we have performed augmented models presented in the previous section on our sample. However, we have tested only for level of social institutions in origin countries, since our aim is to understand if discriminatory social institution will lead to different female migratory dynamic. More specifically, what we want is to understand to what extent social institutions in origin countries affect female decision to migrate, when we consider migrants' skills level.

(Table 5) and (Table 6) report the result of estimated equations. In columns (1) – (2) and (3), are reported results for High, Low and Medium skilled women. We use an Heckman two-steps procedure in order to highlight which factors operate through a selection process and which as simple push factors. Let us start with (Table 5). The specification of the model seems to be coherent: both *rho* and IMR result consistent and significant. Specifically looking at the level of social institutions that have been included, results show that Civil Liberties in origin countries affect female decision to migrate acting as a push factor, indeed for each plus one in Civil Liberties indicator, high skilled female flows will increase by 20%. However, our results do not show any significant impact of Civil Liberties indicator on the selection equation. Political Rights indicator also has impact only on the flow of migration: lower political rights protection (index changes by 1 point) will decrease the flow by 18.6% for high-skilled women, 12.5% for med-skilled women and by 17.4% for low skilled. Therefore the higher is the level of educational attainment reached by women the higher is the flow of educated women that will choose to migrate if political rights protection is not strong enough. Finally, female unemployment rate in origin coun-

Table 5. *The Impact of Social Institutions of Origin Country (Heckman Estimates)*

Variables	(1) Low Flow	(2) Low Select	(3) Medium Flow	(4) Medium Select	(5) High Flow	(6) High Select
Distance	-0.434***	-0.0203	-0.242**	-0.0310	-0.0451	0.0153
	(0.114)	(0.0319)	(0.0947)	(0.0321)	(0.116)	(0.0319)
Language	1.177***	0.155*	0.312	0.150*	0.219	0.128
	(0.303)	(0.0843)	(0.238)	(0.0845)	(0.329)	(0.0844)
Population Origin	0.381**	0.104**	0.815***	0.0796	1.002***	0.116**
	(0.188)	(0.0484)	(0.147)	(0.0489)	(0.216)	(0.0485)
Population Destination	0.311***	-0.0321**	0.288***	-0.0259*	0.174***	-0.0328**
	(0.0586)	(0.0147)	(0.0462)	(0.0148)	(0.0662)	(0.0147)
GDP Origin	0.536***	0.0738***	0.636***	0.0963***	0.597***	0.0952***
	(0.0857)	(0.0138)	(0.0777)	(0.0140)	(0.122)	(0.0139)
GDP Destination	0.0977	0.0410***	0.174***	0.0529***	0.185**	0.0566***
	(0.0623)	(0.0137)	(0.0538)	(0.0138)	(0.0832)	(0.0137)
CL Origin	0.154*	-0.0148	0.0823	0.00689	0.201**	-0.00785
	(0.0887)	(0.0252)	(0.0737)	(0.0254)	(0.0952)	(0.0252)
PR Origin	-0.174***	0.00176	-0.125**	-0.0161	-0.186**	0.00109
	(0.0676)	(0.0192)	(0.0577)	(0.0194)	(0.0730)	(0.0192)
Unempl W Origin	0.000396	0.0936***	0.0478	0.112***	-0.0726	0.110***
	(0.103)	(0.0221)	(0.0888)	(0.0224)	(0.135)	(0.0222)
Diplomatic Exchanges		0.214***		0.230***		0.167***
		(0.0452)		(0.0455)		(0.0452)
Lambda		-3.423***		-2.067***		-3.762***
		(1.003)		(0.753)		(1.353)
Constant	-4.578	-3.112***	-10.91***	-3.648***	-8.621	-4.172***
Rho	(3.796)	(0.442) -0.98848	(3.189)	(0.447) -0.80829	(5.753)	(0.444) -1.00000
Sigma		3.4627835		2.5567491		3.7623571
Wald Test		91.91		133.73		79.35
Observations	6,365	6,365	6,365	6,365	6,365	6,365

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

tries seems to act more through the selection process than through affecting the extent of female migration flows. In particular, countries with higher rates of female unemployment will experience more high/med-skilled probability of migration than those with lower unemployment rates.

In (Table 6) the estimates are presented only for female migrants per level of educational attainment. Estimates are robust but many of the control variables are not significant in the analysis. This could be due to the scarcity of observations analyzed. Due to this issue, we had to drop out the variable that accounts for differentials in education. Nevertheless, the selected variable is significant and of the expected sign. Looking at High and Medium level models, respectively columns (2) and (3), we have that gender Differential in Unemployment in origin countries seems to affect negatively the probability to migrate. Difference in Labour force, contrarily, takes the expected sign. The higher is the participation of women to the labour market the higher will be their probability to migrate. Our final analy-

Table 6. *The Impact of Social Institutions of Origin Country (Heckman Estimates)*

Variables	(1) Low Flow	(2) Low Select	(3) Medium Low	(4) Medium Select	(5) High Low	(6) High Select
Diplomatic Exchanges		0.271*** (0.0600)		0.314*** (0.0604)		0.273*** (0.0600)
Distance	-0.329 (0.403)	0.0280 (0.0461)	-0.0616 (0.327)	0.0110 (0.0465)	-0.0663 (0.430)	0.0521 (0.0462)
Colony	1.315 (1.153)	0.0957 (0.132)	0.397 (0.917)	0.110 (0.132)	0.609 (1.211)	0.0664 (0.132)
Language	-0.249 (0.683)	0.0976 (0.0743)	0.496 (0.528)	0.0542 (0.0749)	0.259 (0.742)	0.124* (0.0741)
Population Origin	-0.0997 (0.247)	0.0673*** (0.0228)	-0.0147 (0.185)	0.0590** (0.0229)	-0.184 (0.262)	0.0672*** (0.0228)
GDP Origin	0.0639 (0.207)	0.00961 (0.0226)	-0.0584 (0.178)	0.0338 (0.0228)	0.00496 (0.232)	0.0250 (0.0226)
Ratio LF Origin	0.259 (0.634)	0.00980 (0.0721)	-0.537 (0.548)	0.130* (0.0733)	-0.0411 (0.689)	0.0414 (0.0724)
Ratio Un Origin	0.461 (0.702)	-0.120 (0.0754)	0.613 (0.577)	-0.159** (0.0764)	0.715 (0.753)	-0.128* (0.0755)
Lambda		-8.869*** (2.727)		-7.008*** (1.872)		-9.463*** (2.902)
Constant	14.71* (8.465)	-1.980*** (0.610)	15.06** (7.055)	-2.766*** (0.616)	16.68* (10.08)	-2.659*** (0.611)
Rho		-1.00000		-1.00000		-1.00000
Sigma		8.8694329		7.0079936		9.4627066
Wald Test		3.15		3.70		2.45
Observations	2,622	2,622	2,622	2,622	2,622	2,622

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

sis confirms the presence of two different forces driving female migration, on the one hand the selection process (probability that women have to migrate) on the other the impact of determinants on the extent of the flow and sometimes these two forces act reversely.

7. Conclusions

Migration dynamics are complex and vary in time across origin and destination countries, to be fully understand they require greater attention to gender differences among migrants and differences in social institutions among country pairs. This paper adopting a gravitational approach analyze the impact of migration determinants on migration flows for both male and female. Using an Heckman two-stage procedure this paper describes migration flows in two-ways. Firstly, analyzing the selection process and which are the determinants that influence the probability of migrating and then analyzing the impact of such determinants of the extent of migratory flows. On one side we find that the quality of social institutions in both origin and destination countries play a fundamental role in driving migration.

Particularly we have included in the traditional gravity specification two indices – Political Rights and Civil Liberties (House, 2013) – as proxy for the level of social institutions in both origin and destination countries, and we have added Unemployment levels as an additive control variable. The results show that better level of social institution in destination countries augment the attractive power of the country, while lower levels of social institutions in origin countries decrease the probability of migrating and the extent of migration flows, acting as constraints. Nevertheless, we found that lower levels of Civil Liberties in origin countries act as push factors to migrate. On the other side we analyze the impact of some gender-specific differential on women's decision to migrate. We have firstly augmented the basic model by adding some crucial indicators – such as the difference in labour force participation between men and women, or the difference in expected years of schooling – and then we have estimated, using an Heckman two-stage procedure, the selection power and the push/pull effect of those indicators. Most of our findings are not significant at relevant level, indicating a probable structural bias in the dataset construction. To deep analyze the impact of those indicators on women, and to test if our results inconsistence is given by unobservable migrant's characteristics, we have repeated the country-specific and gender-specific analysis for origin countries parameters and only on female migration flows, this time distinguish women's educational attainment. What we have found is that lower levels of civil liberties in origin countries are linked with higher migration flows while lower levels of political rights are associated with lower migration flows. This discrepancy is maybe due to the different nature of the indexes. Hence, the absence of political rights seems to act as constraint while the absence of civil liberties as a push factor. Moreover, an increase in gender differential in unemployment levels act as constraint on the probability to migrate of women. Many drawbacks limited this paper, firstly data on social institutions and gender specific institutions disaggregated by sex are still scarce or with short time coverage. Thus in our dataset is present an high occurrence of missing values and repeated values. Secondly, international migration data currently cover only legal migratory flows, leaving unknown the numbers of forced and illegal migration. Finally, the model employed – Gravity Model of Migration – presents many problems in capturing migration dynamics. More research is required at both micro and macro level in order to collect better data on migrants and to better specify migration dynamics.

8. Appendix 1: The "IAB Migration by Gender" data

Origin Countries: Afghanistan, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Bahamas, The, Bahrain, Bangladesh, Belize, Benin, Bhutan, Bolivia, Botswana, Brazil, Brunei, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, China, Colombia, Comoros, Congo, Dem. Rep. of the, Congo, Rep. of the, Costa Rica, Cote d'Ivoire, Cuba, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Gabon, Gambia, The, Ghana, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, India, Indonesia, Iran, Iraq, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos,

Lebanon, Lesotho, Liberia, Libya, Madagascar, Malawi, Malaysia, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Federated States of, Moldova, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nauru, Nepal, Nicaragua, Niger, Nigeria, Occupied Palestinian Territory, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sao Tome and Principe, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Singapore, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Suriname, Swaziland, Syria, Tajikistan, Tanzania, Thailand, Timor Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe.

Destination Countries: Australia, Austria, Canada, Chile, Denmark, Finland, France, Germany, Greece, Ireland, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States.

9. Appendix 2: Summary of the Variables Included in the Analysis

Origin Population (World Bank – WDI): demographic pressure: the more people in a country the more people are likely to migrate

Destination Population (World Bank – WDI): Labour Market: an higher population implies higher labour force and consequently higher opportunities for migrants

Origin GDP (World Bank – WDI): Increasing income in origin countries enables more people to migrate

Destination GDP (World Bank – WDI): An High GDP in destination countries increases their attractiveness

Distance (CEPII – GeoDist): Distance between countries increase the cost of migrating

Colony (CEPII-GeoDist): Countries that had been under the same colonial empire share some cultural trait

Common Language (CEPII-GeoDist): People prefer to migrate in countries in which they can easily communicate.

Unemployment Origin (World Bank – WDI): High rates of unemployment in origin countries act as push factors

Unemployment Destination (World Bank – WDI): High rates of unemployment in destination countries discourage immigration

Political Right Origin (FH – Freedom in the World): Lower Political Right in origin countries could act as push factors (increasing migration) or as constraints (decreasing migration)

Political Right Destination (FH – Freedom in the World): Lower Political Right in destination countries reduce the attractiveness of the country

Civil Liberties Origin (FH – Freedom in the World): Lower Civil Liberties in origin countries could act as push factors (increasing migration) or as constraints (decreasing migration)

Civil Liberties Destination (FH – Freedom in the World): Lower Civil Liberties in destination countries reduce the attractiveness of the country

Ratio Female/Male Labor Force Participation Origin (World Bank – GSD): Indicates eventual disparities in labour force participation between females and males. An increasing ratio implies increasing share of women in labour force, therefore it could have a positive impact on migratory flows (more women that migrates as independent workers) or a negative impact (less women that want to leave the country)

Ratio Female/Male Labor Force Participation Destination (World Bank – GSD): Indicates eventual disparities in labour force participation between females and males. An increasing ratio implies increasing share of women in labour force, therefore it increases the attractiveness of the country

Differential in Unemployment Origin (Male/Female) (World Bank – GSD): Indicates eventual difference in unemployment rates between males and females. It can be seen as a push or a limiting factor

Differential in Unemployment Destination (Male/Female) (World Bank – GSD): Indicates eventual difference in unemployment rates between males and females. An increasing ratio will have a positive impact on the decision to migrate

Male/Female Expected Year of School Origin (World Bank – GSD): Indicates disparities in the access to the educational system for boys and girls.

Male/Female Expected Year of School Destination (World Bank – GSD): Indicates disparities in the access to the educational system for boys and girls.

Bibliography

(1) Anderson, James E. 1979. A theoretical foundation for the gravity equation. American Economic Review, 69(1), 106(116).

(2) Baudass_e, Thierry & Bazillier, Remi. 2012. Gender Inequality and Emigration: Push factor or Selection process? Mimeo.

(3) Beine, M, Docquier, F & Ozden, C. 2011. Diasporas. Journal of Development Economics, 95(1), 30(41).

(4) Beine, Michel, Frederic Docquier and Hillel Rapoport. "Brain drain and human capital formation in developing countries: Winners and losers*." The Economic Journal 118.528 (2008): 631-652.

(5) Bertocchi, Graziella and Chiara Strozzi. "International migration and the role of institutions." Public Choice 137.1-2 (2008): 81-102.

(6) Borjas, G J. 1989. Economic theory and international migration. International Migration Review, 23.

(7) Cobb-Clark, Deborah A. "Immigrant selectivity and wages: The evidence for women." The American Economic Review (1993): 986-993.

(8) Docquier, F., Lowell, B. L., & Marfouk, A. 2009. A gendered assessment of highly skilled emigration. Population and Development Review, 35(2) 297-321., 297(321).

(9) Docquier, F., Marfouk, A., Salomone, S. & Sekkat, K. 2009. "Are skilled women more migratory than skilled men?." World Development 40.2 (2012): 251-265.
(10) Dumont, J. C., Martin, J. & Spielvogel, G. 2007. Women on the move: the neglected gender dimension of the brain drain. IZA Working Paper, 2920.
(11) Ferrant, Gaelle & Tuccio, Michele. 2013. South-South Emigration and Discriminatory Social Institutions: a Two-way Relationship. OECD Development Centre, Working Paper.
(12) Greenwood, Michael J. "Research on internal migration in the United States: a survey." Journal of Economic Literature (1975): 397-433.
(13) Grieco, E M & Boyd, M. 1998. Women and Migration: Incorporating Gender Into International Migration Theory. Center for the Study of Population, Florida State University, Working Paper 98-139.
(14) House, Freedom. 2013. Freedom in the World 2013. Available for download at http://www.freedomhouse.org/report-types/freedom-world.
(15) Jutting, Johannes P, Morrisson, Christian, Dayton-Johnson, Je & Drechsler, Denis. 2008. Measuring gender (In) Equality: The OECD gender, institutions and development data base. Journal of Human Development, 9(1), 65(86).
(16) Kanaiaupuni, Shawn Malia. 2000. Reframing the migration question: An analysis of men, women, and gender in Mexico. Social Forces, 78(4)(4), 1311(1347).
(17) Lewer, J J, & Van den Berg, H. 2008. A gravity model of immigration. Economics letters.
(18) Martin, Susan. 2007. Women and migration. Paper presented at the Consultative Meeting on \Migration and Mobility and how this movement affects Women", Malmo.
(19) Mayda, Anna Maria. 2010. International migration: A panel data analysis of the determinants of bilateral flows. Journal of Population Economics, 23(4)(4), 1249(1274).
(20) Ortega, Francesc and Giovanni Peri. The causes and effects of international migrations: Evidence from OECD countries 1980-2005. No. w14833. National Bureau of Economic Research, 2009.
(21) Pedraza, Silvia. "Women and migration: The social consequences of gender." Annual review of sociology (1991): 303-325.
(22) Ravenstein, Ernest George. "The laws of migration." Journal of the Statistical Society of London (1885): 167-235.
(23) Ridgeway, Cecilia L., and Lynn Smith-Lovin. "The gender system and interaction." Annual review of sociology (1999): 191-216.
(24) Simpson, Nicole B. and Chad Sparber. "The short-and long-run determinants of unskilled immigration into US States." (2010).
(25) Van Lottum, Jelle and Daan Marks. "The determinants of internal migration in a developing country: quantitative evidence for Indonesia, 1930-2000." Applied Economics 44.34 (2012): 4485-4494.
(26) WESP, Country Classification Report, 2012.