Gender Discrimination and Emigration: Push factor or Selection process?[☆]

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Abstract

This paper aims at providing empirical evidences concerning the linkages between gender equality and emigration. To analyze such linkages, two theoretical hypothesis can be made. The first one is that gender discrimination in origin countries can be a push factor for women. Therefore an improvement of gender equality would decrease the flow of female migrants. The second one is that gender discrimination may create a "gender bias" in the selection of migrants within a household or a community. An improvement of gender equality would then increase female migration. We build several original indexes of gender equality, using principal component analysis. Our empirical results show that the push factor hypothesis is clearly rejected. All things being equal, improving gender equality at the workplace is positively correlated with the migration of women (especially the high-skilled). We observe the opposite effect for low-skilled men. This result is robust to several specification and several measurement of gender equality.

Key words:
Migration, Gender discrimination, labor discrimination, core labor standards
JEL: F22, J61, J71,

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1. Introduction

Gender discrimination is a worldwide phenomena and one of the most persistent form of inequality. Achieving gender equality and women empowerment is a key aspect of development. It is one of the Millennium development goals, adopted in 2000 by the United Nations. If the influence of gender discrimination in education or at the workplace on economic growth has been widely studied[1], discrimination may also affects other individual or collective behavior. One specific aspect is a possible impact on migration behavior.

When considering non-wage motivations of migration, little attention has been given to working conditions (in a broad sense, including social security, unemployment insurance...), and when it has been done, the interest has been focused on destination countries, considered as pull factors. Nevertheless, poor working conditions in source countries can also be considered as push factors. Our paper proposes to address the issue of the linkages between gender equality at the work place and emigration.

Non-discrimination is one of the core labor standards recognized by the International labour organization (ILO). Here, we focus on gender discrimination at the work place, which is only one part of the whole phenomena. As it is stated in the last ILO report devoted to this issue (ILO, 2007), "*like any other social institutions, the labor market and its institutions are both a cause of and a solution to discrimination. In the workplace, however, discrimination can be tackled more readily and effectively*" (p. 15). As labor market characteristics has a central role in the migration decision process, our interest primarily focus on this specific aspect of gender discrimination.

Literature on migration has focused on several gender-related issues. Ravenstein (1885, 1889) edicted seven "laws of migration". The fifth law, as enumerated by Lee (1966) states that "*females appear to predominate among short journey migrants* (Ravenstein, 1889, p.288 and Lee, 1966, p.48). But in the same paper, Lee (1966) describes female migrants as mostly dependent movers: "*not all persons who migrate reach that decision themselves. Children are carried along by their parents, willy-nilly, and wives accompany their husbands though it tears them away from environments they love*" (p.51). As noticed by Lauby and Stark (1988), it may explain why migration studies have been *"focused on the movement of men, on the assumption either that men are the decision makers in the migration process and women are tied movers, or, if women migrate alone, that they follow the same routes, are motivated by the same considerations and experience the same consequences as do male migrants"*. The scope has been enlarged in the 80's. Due to the "feminization of international la-

[1] see for instance Behrman et al. (1999) or Klasen (2002) on discrimination in education and Forsythe et al. (2000), Lagerlof (2003) or Klasen and Lamanna (2009) on the influence of gender discrimination at the workplace

bor migration"[2] observed in the 80's, a new interest for this question emerged. Migration of women was not seen as tied movers only anymore, and the literature considered the dynamic of collective behaviors within the household or the community. One example is the article of Lauby and Stark (1988) for the rural-urban migration by young women in the Philippines (see also Pedraza (1991) for a survey of the literature on international migration of women). More recentely, the World Bank published a book on the international migration of women (Morrison et al., 2007) that addresses the issues of gendered determinants fo migrations, the impacts of remittances on sending countries and the labor market participation of female migrants in the United States. However, very few studies focus on the linkages between gender *discrimination* and migration. This paper is an attempt to fill this gap.

In a paper on emigration in Mexico, Kanaiaupuni (2000) states that "*educated women experience great gender discrimination and few occupational rewards in Mexico and, therefore, may be more likely to migrate across the border where they will earn greater wages than they would otherwise*" (p. 1337). Pedraza (1991) also mentioned the fact that "*the act of emigrating also become a way of escaping total dependence on their husbands"* (p. 309) for women in Dominican Republic. The underlying idea of both papers is that gender discrimination may act as a *push factor*. If migration is seen as a collective decision, gender discrimination may also affect female migration. As emphasized by Lauby and Stark (1988), *"in many cultures, the family is a specially strong unit that exerts influence over a daughter or a son even after they have become adults"* (p. 485). As a consequence, female migration could be preferred to male migration if (i) women are sending more remittances than men, (ii) female migrants earn steadier income than men, or if (iii) opportunity cost is lower for women due to poor labor perspectives in source countries. Therefore, on one hand, if women are more discriminated in the labor market of their origin country, it may be preferable for the household to send them abroad. But on the other hand, cultural norms can play a role against female migration. As stated by Jolly and Reeves (2005), "*it may be less acceptable for women to move about and travel on their own, so women can find it more difficult to migrate, or migrate on shorter distances than men*". Kanaiaupuni (2000) similarly notes that

[2]The term "feminization" is however contentious as noted by Jolly and Reeves (2005) because women already made up almost half the migrants several decades ago. For example, in 1960, female migrants accounted for 47% of the total, against 49% in 2000. However, the feminization consists also in a qualitative change in female migration patterns, including both "*young single women and female family breadwinners, who move both independently and under the authority of older relatives"* (Sorensen, 2005). The so-called feminization should therefore be understood as an increase of individual migration decided alone, for example to look for a job, rather than following male family members (Jolly and Reeves, 2005). Besides, globalization and development of ICTs in the 90s and 2000s should have accelerated this qualitative feminization : *"growth in export and ict enabled sectors, together with a decline in the importance of physical strength and arisein the importance of cognitive skills, has increased the demand for female labor"* (World Bank, 2012).

"in many societies, women's lesser status holds direct consequences for their migration for reasons apart from the household division of labor" (p.1315). Due to cultural reasons, gender discrimination may create a bias in the selection process within the household and reduce female migration. It is what we will call the *selection process hypothesis*. The theoretical linkages are therefore various and our empirical analyses aims at clarifying such linkages.

Our paper contributes to the existing literature at various levels. First, we build several original indexes measuring the level of gender equality at the work place. These indexes aggregate different dimensions such as the income differential, the level of women's participation to the labor market, or the difference in unemployment rates. We also include variables related to the differences in education to take into account the cumulative effect of gender discrimination in education on the one in employment. Second, we provide an empirical analysis of the linkages between gender equality at the work place in source countries and the level of emigration. Using a Heckman two-step estimator, we can test empirically whether the *push factor* or the *selection process* analysis is validated by the data. We found that gender equality tends to increase women migration, especially for the high-skilled. It has an adverse effect on men migration, especially the low-skilled. Improving gender equality thus increases the average skills of migrants. There results are robust to several specification and to the use of alternative indexes of gender equality.

Our paper is structured as followed. In the second section, we will detail the theoretical background of this work. We will explain the two theoretical hypothesis that can be used to explain the linkages between gender discrimination and emigration. The third section will be devoted to the measurement of gender equality. In the fourth section, we will present the empirical strategy and the results. The last section concludes.

2. Migration and Gender: Theoretical hypotheses

In order to identify how gender discrimination in source countries can influence labor migration, we will consider two hypothesis.

- **Hypothesis 1 (push factor hypothesis)**: gender discrimination is a push factor in an individualistic behavior context where men and women decide to migrate depending on the prevalent working conditions in their origin country. In a collective behavior context, gender discrimination may also be a push factor because of a lower opportunity cost for women.
- **Hypothesis 2 (selection process hypothesis)**: gender discrimination creates a gender bias in a collective process of selection of migrants. Within a certain community (the household or the village), a collective decision is made in order to decide who is going to leave and who is going to stay. This

Table 1: Effects of gender equality's improvement on migration

Variables	High-skilled	Low-skilled	Total Migration
Hypothesis 1: Push factor			
Female	-	-	-
Male	0	0	0
Total	-	-	-
Hypothesis 2: Selection process			
Female	+	+/0	+
Male	0/-	-	-
Total	-	+	?

bias is the fact to prefer male population rather than female population even if this choice does not appear as rational considering the expected outcome abroad, the opportunity cost and the level of remittances that can be sent. Social norms concerning job-related issues may affect the migratory behavior.

Our assumption is that if hypothesis 1 is verified, then an improvement of gender equality would result in a decrease of female migration while male migration would be unchanged. If hypothesis 2 is verified, female migration would increase while male migration could decrease. In the selection process, high-skilled women would be preferred over low-skilled men. Therefore, we can expect that low-skilled men migration would decrease while high-skilled women migration would decrease. Table 1 sums up the expected effects on migration.

Understanding how a decrease of gender discrimination (or an improvement of gender equality) may decrease female migration is fairly simple when using a "push factor" model. If working conditions are better off for women in their country, their incentives to migrate decrease.

The "selection process" hypothesis is slightly more complicated. Following the New economics of migration (Stark and Levhari, 1982; Lucas and Stark, 1985), we have to assume that the migration decision is a collective one. The individual is not taking a decision alone, but together with his household, family, village, community. This group wants to minimize the risk by diversifying its source of income. Therefore, they collectively decide to send some members of the group abroad. Let suppose that the decision group is selecting migrants by a scoring process. This scoring process depends both on the group's vision on who will get the highest pay-off when migrating and social norms related to job issues. Let suppose that they attribute to each individual i a score which is a function of two characteristics: gender and skill-level. If x the gender, with $x = 0$ for women and $x = 1$ for men. y is the skill-level with $y \in [0, 1]$ (0 the level of people with no qualification and 1 for the highest skill-level). The i's score would be:

$$z = ax + (1 - a)y \tag{1}$$

with $0 \leq a \leq 1$.

Individuals with the higher score would be selected to migrate by the group. The score for a women with a skill-level y_w would therefore be:

$$z_w = (1 - a)y_w \tag{2}$$

and for a man, with skill-level y_m

$$z_m = a + (1 - a)y_m \tag{3}$$

The group will then choose a women for migration if $z_w > z_m$ which implies that:

$$(y_w - y_m) > a/(1 - a) = ES_{min} \tag{4}$$

ES_{min} is the minimum "education surplus" needed by a women in order to be chosen by the group for migration (ie. the minimum number of supplementary years of education). In this oversimplified model, a is a characteristic of the economy revealing a level of gender discrimination. An improvement of gender equality will be modeled through a decrease in a. Obviously $dES_{min}/da > 0$.

When discrimination decreases, the minimum "education surplus needed" also decreases and therefore more women (with relatively high skills) would be selected for migration. Less men would be selected, especially the ones with a relative lower skill-level. If hypothesis 2 is verified, an improvement of gender equality will be associated with an increase of the skilled women's proportion among migrants and a decrease of low-skilled men.

3. Measurement of Gender Equality

We focus on gender equality[3] at the workplace. This choice does not mean that we do not recognize the multidimensional aspect of gender discrimination and the importance of factors such as family code, physical integrity, son preference, civil liberty or ownership rights, which are the dimensions studied for instance in the OECD SIGI (Social institutions and gender index) (OECD, 2010). But as labor market characteristics are predominant in explaining migration choice, we consider it is more important to focus primarily on those aspects.

[3]We focus on gender equality rather than non-discrimination. Busse and Spielmann (2005) argue that it is not possible to determine if differences between men and women in participation rates are voluntary or not. Because of this, they prefer talking about gender inequality rather than gender discrimination.

Nevertheless, social norms may have indirect effects on the labor market and thus indirectly on migration. In particular, it may influence the *selection process* of migration (see hypothesis 2).

Even if we do not retain all dimensions of gender equality, we assume that discrimination in education has strong links with discrimination at the workplace and should therefore be taken into account. More precisely, discrimination in education will reinforce discrimination in the labor market. it can be seen as an *ex-ante* discrimination. Durlauf (1996), Benabou (1996) or Lundberg and Startz (1998) show that these *ex-ante* discrimination may have negative effects on human capital of next generations and thus lead to persistent differences between those who are discriminated and those who are not. Current discrimination on labor market may also affect the *ex-ante* discrimination (Altonji and Blank, 1999). If women consider they will have lower opportunities to be hired for certain jobs, they will have less incentives to invest in education (Coate and Loury, 1993). Because of all these linkages between the two kind of discrimination, Jolliffe and Campos (2003) among others observe a strong correlation between the unexplained component of the Oaxaca (1973) decomposition (measuring discrimination in employment) and discrimination in education.

We then choose to aggregate different measures taking into account these two aspects. Education variables are (1) primary education ratio, (2) secondary education ratio, (3) tertiary education ratio. Labor market variables are: (1) differences of unemployment rates, (2) income ratio, (3) employment rate for women.

The choice of these variables is based on the literature about the measurement of decent work. Ghai (2003) proposes to use four indexes: labor force participation for women, differences of income, unemployment rate and distribution of skilled jobs. We follow this proposal except for the last variable, because of the difficulty to get consistent estimates for a large number of countries. Moreover, international comparisons are very difficult due to heterogeneous definitions of jobs.[4] Education variables are similar to the Millennium Development Goals indicators[5] except for the literacy rate which is not included here. The number of data by gender is available in a too few number of countries. All data comes from the *World Development Indicators* except the income ratio which comes from UNDP. We use data for 1991 and 2001.

We use Principal component Analysis (PCA) on all those variables. The goal of a PCA is to isolate common factors between different variables by reducing total information in order to get an easier economic description of the variables. Here the goal would be to find a common factor which can be used

[4] This point is acknowledged by Ghai (2003) in his paper.
[5] See: http://unstats.un.org/unsd/mdg/Home.aspx

as a proxy of the general level of gender equality at the workplace. Graphically, we can represent the n countries in a p dimensional space (the p different initial conditions variables, here our 7 variables of gender discrimination). The distances[6] between the n row points in the p dimensional space are a perfect representation of similarities between the rows in matrix X (the matrix with n rows, the countries, and p columns, the variables). The PCA allows to find a lower dimensional space in which we project the row points and which retains the highest level of distances between rows. The best space which maximizes the dispersion of the projected row points is: $\max_H \sum_i \sum_{i'} d_H^2(i,i')$. This is equivalent to maximize $\sum_i d_H^2(i,G)$ with H the space of projection and G the centroïd. The mass is p_i (with $\sum p_i = 1$) and we maximize $\sum_i p_i d_H^2(i,G)$ which is the projected inertia (variance). The lower dimensional space is a one dimension graph. If we define it by a vector u, the projection of a row point on the direction defined by u is: $\psi_i = \sum_{j=1}^{p} x_{i,j} u_j$. The inertia of each point projected on u is $\sum_{i=1}^{n} p_i (\sum_{j=1}^{p} x_{i,j} u_j)^2 = \lambda$. We then need to find the vector u (the eigenvector) which maximizes λ (the eigenvalue). The first vector lets unexplained a given part of the variability. Therefore, a second factor can be built which maximizes another eigenvalue. The process continues until we can explain all variability with a given number of vectors. Each vector is orthogonal to the previous one and the remaining variability decreases with the number of vectors.

To choose the optimal number of vectors (or factors) needed to get a satisfying description of the phenomena, we can use the criterion proposed by Kaiser. As the sum of eigenvalues is equal to the number of variables, unless a factor extracts at least as much as the equivalent of one original variable, we drop it. Table 2 gives the PCA results for our gender equality variables. According to the Kaiser criterion, we can only retain the first two factors which are the only ones with an eigenvalue superior to 1. Table 3 gives the main coordinates of different variables on the different factors. The first factor gives a global overview of the level of gender equality (all variables has a positive coordinate on this axis) while the second axis provides information on the type of discrimination. A positive coordinate on the second axis will indicate a relative higher discrimination in the labor market and a negative coordinate will characterize a higher level of discrimination in education. These two factors explain 66% of all information contained in our data. We will use the coordinates on the first factor as a proxy of the global level of discrimination at the workplace. The index is then tranformed in order to be included between 0 (high level of discrimination) and 100 (high level of gender equality). This factor explains 41% of all information contained in the data. It means that the different variables conveys lots of other information. Here we focus on the common information between all variables.

The main limit of this index is the low number of countries included in the sample, due to data availability (102 observations for 51 countries). We

[6] We use the Euclidian distance. Between countries i and i', it can be defined as follow: $d^2(i,i') = \sum_{j=1}^{p} (x_{i,j} - x_{i',j})^2$

Table 2: PCA results for $index gender equality1$

Component	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	2.48895	0.98798	0.4148	0.4148
Factor 2	1.50097	.690552	0.2502	0.6650
Factor 3	.810416	.12657	0.1351	0.8001
Factor 4	.683846	.395497	0.1140	0.9140
Factor 5	0.28835	.0608784	0.0481	0.9621
Factor 6	.227471		0.0379	1

Table 3: Variable coordinates on main factors

Variable	Factor 1	Factor 2	Factor 3
Female Labor force participation	0.4545	0.4478	-0.2848
Ratio of female to male primary enrollment	0.4813	-0.2802	0.0897
Ratio of female to male secondary enrollment (%)	0.4187	-0.4986	0.1288
Ratio of female to male tertiary enrollment (%)	0.3288	-0.4163	-0.0557
Ratio of male to female unemployment (%)	0.2407	0.3754	0.8795
Income ratio	0.4694	0.3977	-0.3431

thus propose three alternative indexes, both to increase the geographical coverage of our study and to test the robustness of our results (see table 4). The second index includes all variables except the ratio of male to female unemployment and the ratio of female to male tertiary enrollment. The third index only includes labor market variables. We also propose a set of indexes including the average value of each variable in order to increase the coverage.[7] When the first factor gives information on the type of discrimination (discrimination in employment versus discrimination in education), we use the coordinates on the second factor. Nevertheless, the eigenvalue of the factor retained is always higher than 1 and explains at least 30% of the information. Later in this paper, when we do not mention which index we use, we assume that it is the first one ($index\_gender equality1$).

4. Empirical analysis

4.1. Empirical specification

In order to test empirically if linkages between migration and gender equality can be explained either by the *push factor* or by the *selection process* hypothesis, we propose a migration gravity specification (see for instance Borjas (1999) or Clark et al. (2007) for the theoretical foundations of such specification). Migration is driven by the maximization of utility taking into account costs of migration. Each migrant choose to migrate where the pay-off is the highest,

[7] Each variables are the average value respectively between 1981 and 1991, and between 1992 and 2001. If the evolution of these variables during 10 years may be important, we assume that the *gender ratio* is relatively stable.

Table 4: Alternative indexes of Gender Equality

Index *gender_equality*	**1**	**2**	**3**	**1 (av.)**	**2 (av.)**	**3 (av.)**
Number of observations	102	243	166	176	302	224
Factor	1	1	1	2	1	1
Proportion explained by the factor	0.4148	0.4638	0.6555	0.3155	0.4685	0.6581
Variables						
Female Labor force participation	0.4545	0.1776	0.6539	0.6214	0.1389	0.6504
Ratio of female to male primary enrollment	0.4813	0.6927	NA	0.2931	0.6930	NA
Ratio of female to male secondary enrollment (%)	0.4187	0.6647	NA	0.2445	0.6739	NA
Ratio of female to male tertiary enrollment (%)	0.3288	NA	NA	0.1547	NA	NA
Ratio of male to female unemployment (%)	0.2407	NA	0.3903	0.2210	NA	0.4209
Income ratio	0.4694	0.2165	0.6481	0.6288	0.2151	0.6323

considering also the pay-off in his origin country. Migration thus depends on *push* and *pull* factors. Here, we focus on push factors as we only study the influence of gender discrimination in origin countries.

The general bilateral migration equation is the following:

$$Migration_{i,j} = a_0 X_i^{\alpha_1} X_j^{\alpha_2} / C_{i,j}^{\alpha_3} \tag{5}$$

With $Migration_{i,j}$ the total migration stock[8] between two countries. X_i is a matrix of variables affecting push factors. The level of gender equality is one of these factors. X_j is a matrix of control variables affecting pull factors. $C_{i,j}$ is a matrix of bilateral variables controlling for the cost of migration. Taking the log of both side, we obtain the following estimable equation:

$$m_{i,j} = \alpha_0 + \alpha_1 \ln X_i + \alpha_2 \ln X_j + \alpha_3 \ln C_{i,j} + \epsilon_{i,j} \tag{6}$$

With $m_{i,j}$ the log of total migration stocks. However, as we are interested by the influence of discrimination in origin countries, we propose to control for pull factors using destination countries fixed-effects instead of the matrix X_j. This choice is made to minimize possible ommited variable bias and unobservable heterogeneity. The estimated equation will be:

$$m_{i,j} = \alpha_0 + \alpha_1 \ln X_i + A_j + \alpha_3 \ln C_{i,j} + \epsilon_{i,j} \tag{7}$$

With A_j destination countries fixed effects. Unfortunately, we cannot include either origin countries fixed-effects or origin-destination countries fixed effects

[8]We estimate determinants of migrants' stocks rather than flows. As shown by Brücker and Schröder (2006), empirical migration models estimating net migration flows may be misspecified. At the equilibrium, a positive relation exists between the stock of migrants while net migration flows becomes nil. This is consistent with stylized facts that show that net migration rates tend to cease over time.

as our database does not have enough temporal dimension. In order to minimize possible bias, we will use in the matrix X_i and $C_{i,j}$ all variables generally used in empirical studies on the determinants of migration (Hatton and Williamson, 2002). As a robustness check, we transform the database into a multilateral one (limiting the data to *emigration* rates towards all other countries). The number of observations is very limited in these estimations. The *sign* of our estimates are mostly similar but the level of *significance* is much lower due to a lower number of observations. Also, results are much less stable when using alternative indexes. For all these reasons, we decide to keep the bilateral database allowing us to run much stable estimates.

We also want to test the influence of gender discrimination on migration by *gender* and *skill level*. We thus estimate six additional equations (primary, secondary, tertiary educated migrants for each gender).

$$m_{i,j}^{g,s} = \alpha_0^{g,s} + \alpha_1^{g,s} \ln X_i + A_j + \alpha_3^{g,s} \ln C_{i,j} + \epsilon_{i,j}^{g,s} \tag{8}$$

with g the gender and s the skill level (primary, secondary, tertiary). $m_{i,j}^{g,s}$ is thus the log of migration between country i and country j for gender g and skill level s. We then estimate the determinants of the migration skill-ratio.

$$m_{i,j}^{g,t} - m_{i,j}^{g,p} = \alpha_0^{g,s} + \alpha_1^{g,s} \ln X_i + A_j + \alpha_3^{g,s} \ln C_{i,j} + \epsilon_{i,j}^{g,s} \tag{9}$$

with $m_{i,j}^{g,t}$ the log of migration between country i and country j for gender g with a tertiary level of education, $m_{i,j}^{g,p}$ the log of migration between country i and country j for gender g with a primary level of education

We use Heckman (1979) two-step method in order to get consistent estimates. One feature of our dependent variable is the high occurrence of zero, corresponding to nil bilateral migration between two given countries (approximatively 29.5% in our case). In this case, OLS standard estimates may be biased and the two-step procedure is one way to solve this problem. We propose to use the diplomatic representation as a selection variable. Here, this variable should explain the probability to have a non-nil value of migration without explaining the scale of migration. As noticed by Beine et al. (2011), *"Diplomatic representation might affect the probability of initial migration setting some kind of threshold on the initial migration and visa costs faced by potential migrants."* (p35). In absence of diplomatic representation, the cost may be too high which will explain a nil migration. However, the existence of a diplomatic representation cannot explain as such the *scale* of migration.

4.2. Data

Matrix X_i in previous equations includes the level of gender equality, the GDP per capita, the level of population, the average level of education, the

share of young people within the population, the level of democracy for country i. The level of gender equality is measured by our index built through PCA. The GDP per capita (in ppp) is a proxy of income which is supposed to affect negatively migration. But it may also be seen as a proxy of migration costs: if income is too low, workers cannot afford the cost and do not have the capacity to migrate. Population is included to take into account the size of the country, which will increase the "supply" of migrants. For these variables, data come from the *World Development Indicators*. We also include the share of young people (15-34 years-old), who face lower migration costs and thus have a higher propensity to migrate. Data come from the World Development Prospect 2008 revision. We take into account the level of democracy, measured by a combined polity score (Polity IV) proposed by Gleditsch (2003). This may affect migration costs. Autocratic regimes sluggish freedom of movement and increase migration costs. Lastly, in order to minimize unobserved heterogeneity between countries, we also add regional dummies.

We add bilateral variables such as the existence of common frontiers, distance between countries, existence of a common language and a past colonial past. All these variables are correlated with the existence of migrant' networks and then will influence migratory costs. These variables are from CEPII distance database[9].

Concerning data on migration, we use the database provided by Docquier et al. (2008) available for 1991 and 2001. We add a dummy variable for 1991, in order to take into account a possible evolution over the decade.

4.3. Results

We firstly estimate the determinants of global migration stocks both for men and women (see table 5). We do not find any significant impact of the level of gender equality on global migration[10]. However, there is a positive and significant impact of gender equality on the skill ratio, ie. the ratio of tertiary educated over primary educated migrants.

[9] http://www.cepii.fr/anglaisgraph/bdd/distances.htm

[10] We only find a positive impact on the migration of secondary skilled workers but the effect is only significant at the 10% level.

Table 5: Determinants of total migration (Heckman two-steps estimates)

Dep. Var.	**lnmig**	**select**	**lnmig_prim**	**select**	**lnmig_sec**	**select**	**lnmig_ter**	**select**	**lnskillratio**	**select**
ln(Gender Eq.)	0.06	-0.3	-0.04	-0.43	0.353*	-0.16	0.24	0.03	0.432***	-0.22
	(-0.31)	(0.92)	(0.19)	(1.41)	(-1.67)	(0.55)	(-1.32)	(-0.1)	(-3.38)	(0.75)
ln(gdp_o)	0.269**	0.368**	0.19	0.339**	0.253**	0.240*	0.350***	0.317**	0.148**	0.355**
	(-2.51)	(-2.36)	(-1.49)	(-2.33)	(-2.28)	(-1.77)	(-3.67)	(-2.14)	(-2.19)	(-2.49)
ln(pop_o)	0.755***	0.303***	0.777***	0.325***	0.717***	0.293***	0.724***	0.294***	-0.0449**	0.292***
	(-21.42)	(-4.94)	(-19.01)	(-5.69)	(-19.17)	(-5.52)	(-23.14)	(-5.09)	(2.02)	(-5.23)
ln(youth)	-0.869***	-1.344***	-0.739**	-1.150**	-0.827**	-1.020**	-0.971***	-1.339***	-0.31	-1.307***
	(2.78)	(2.71)	(2.06)	(2.51)	(2.56)	(2.35)	(3.53)	(2.84)	(1.6)	(2.9)
ln(edu)	0.317**	-0.16	-0.09	-0.04	0.293*	0.07	0.629***	-0.06	0.708***	-0.04
	(-2.17)	(0.73)	(0.51)	(0.21)	(-1.94)	(-0.38)	(-4.89)	(0.27)	(-7.76)	(0.21)
polity	0.02	-0.01	0.0419**	0	0	0	-0.01	-0.02	-0.0548***	-0.01
	(-1.15)	(0.47)	(-1.98)	(-0.18)	(0.25)	(0.17)	(0.33)	(0.7)	(4.76)	(0.41)
colony	0.04	-0.06	0	0.09	0.07	0.01	0.13	-0.02	0.12	0.12
	(-0.28)	(0.23)	(0.02)	(-0.37)	(-0.47)	(-0.05)	(-0.97)	(0.08)	(-1.2)	(-0.47)
contig	-0.22	0.18	-0.31	0.16	-0.22	0.31	-0.17	0.2	0.14	0.2
	(0.82)	(-0.43)	(1.02)	(-0.39)	(0.8)	(-0.78)	(0.74)	(-0.48)	(-0.86)	(-0.48)
comlang_off	0.15	0.16	0.23	0.28	0.21	0.18	-0.05	0.16	-0.259**	0.19
	-0.85	-0.63	-1.15	-1.15	-1.17	-0.8	0.33	-0.65	2.39	-0.79
dist	2.62E-006	1.11E-005	3.09E-006	1.10E-005	-1.77E-006	1.43E-005	5.35E-008	1.53E-005	-4.44E-006	1.33E-005
	(-0.25)	(-0.68)	(-0.26)	(-0.72)	(0.17)	(-0.98)	(-0.01)	(-0.98)	(0.7)	(-0.88)
asia	-1.604***	-0.28	-1.881***	-0.37	-1.715***	-0.403*	-1.285***	-0.27	0.611***	-0.3
	(11.04)	(1.1)	(11.38)	(1.6)	(11.42)	(1.83)	(10.1)	(1.11)	(-6.82)	(1.31)
america	-1.300***	-0.2	-1.646***	-0.24	-1.404***	-0.31	-0.787***	-0.22	0.847***	-0.15
	(9.59)	(0.9)	(10.62)	(1.13)	(10.02)	(1.55)	(6.59)	(1.04)	(-10.05)	(0.75)
africa	-1.109***	-1.132***	-1.215***	-0.936***	-1.078***	-0.859***	-0.851***	-0.793**	0.435***	-0.804***
	(4.61)	(3.37)	(4.38)	(3)	(4.29)	(3.01)	(4)	(2.55)	(-2.85)	(2.65)
pacific	-1.189***	0.69	-1.516***	0.03	-1.089***	-0.09	-0.835***	0.23	0.689***	-0.18
	(4.97)	(-1.6)	(5.53)	(-0.1)	(4.41)	(0.28)	(3.99)	(-0.6)	(-4.61)	(0.55)
Year 1991	-3.935***	-5.093**	-2.827*	-4.467**	-3.736***	-4.166**	-4.784***	-5.187***	-2.271***	-5.079***
	(3.08)	(2.48)	(1.93)	(2.34)	(2.83)	(2.3)	(4.25)	(2.65)	(2.84)	(2.72)
Constant	-2.13	4.461*	-1.88	3.793*	-3.838**	3.29	-4.518***	2.9	-2.923***	3.64
	(1.39)	(-1.82)	(1.07)	(-1.65)	(2.4)	()	(3.33)	(-1.25)	(3.04)	(-1.61)
Dip. Repres.		0.863***		0.865***		0.678***		0.992***		0.937***
		(-4.24)		(-4.69)		(-3.9)		(-5.07)		(-5.14)
Mills	0.756***		0.957***		0.602**		0.453**		-0.386***	
	(-3.23)		(-3.92)		(-2.32)		(-2.26)		(2.87)	
Observations	1934	1934	1934	1934	1934	1934	1934	1934	1934	1934

z-statistics in parentheses

*** p< 0.01, ** p< 0.05, * p< 0.1

Other control variables take the expected sign. However, for the level of income in origin countries, we find a positive correlation with the level of migration. This may be explained by the higher level of migration cost for too low levels of income. An increase of per-capita GDP may be seen as a reduction of migration costs, associated with a higher level of migration. Bilateral variables are not significant but this can be explained by the inclusion of regional dummies for origin countries and destination countries fixed effects.[11] We should also notice that our selection variable (the diplomatic representation) takes the expected positive sign. The Mills ratio is significant, justifying the use of Heckman two-step procedure instead of OLS estimates.

We then propose to test the influence of gender equality on migration by gender. Results are given in table 6[12]. All things being equal, a lower level of discrimination is correlated with a higher level of female migration and a lower level of male migration. This result suggests a substitution effect between women and men within a given number of migrants.

Table 6: Effects of gender equality by gender (Heckman Two-steps estimates)

Dep. Var.	**lnmig-m**	**select**	**Lnmig-f**	**select**
ln(Gender Equality)	-0.455**	-0.28	0.595***	-0.24
	(2.18)	(0.88)	(-2.84)	(0.79)
Mills ratio	0.728***		0.638***	
	(-3.13)		(-2.77)	
Observations	1934	1934	1934	1934

z-statistics in parentheses
*** p< 0.01, ** p< 0.05, * p< 0.1

This first set of estimates tends to validate the *selection process hypothesis* rather than the *push factor* hypothesis. If gender discrimination explains a gender bias in the selection process, it is also possible that the increase of migrants selectivity observed in table 5 is explained by a higher level of migration for skilled women when discrimination is lower. In order to test this idea, we propose to estimate determinants of migration by gender and skill level. Results are given in table 7. We show that a lower level of gender discrimination is associated with a a lower level of migration for low-skilled men and a higher level for skilled women. The substitution effect shown in table 6 goes along with an increase of the general skill-level of migrants.

We must however distinguish the selection process effect and what we will call thereafter the *female education enhancement effect*. When gender equality

[11] We estimate the model without regional dummies. In these estimates, bilateral variables take the expected sign while the result for other variables does not change.

[12] We only present results for our variable of interest: gender equality. Significance level and sign of other estimated coefficients do not change from the previous specification.

Table 7: Effects of gender equality by gender and skill-level (Heckman Two-steps estimates)

Dep. Var.	**ln_m_mig_prim**	**select**	**ln_m_mig_sec**	**select**	**ln_m_mig_ter**	**select**
ln(Gender Equality)	-0.502**	-0.460	-0.322	0.0820	-0.139	-0.0893
	(-2.058)	(-1.566)	(-1.456)	(0.302)	(-0.750)	(-0.300)
Mills	1.167***		0.498**		0.662***	
	(5.000)		(2.023)		(3.432)	
Observations	1934	1934	1934	1934	1934	1934
Dep. Var.	**ln_f_mig_prim**	**select**	**ln_f_mig_sec**	**select**	**ln_f_mig_ter**	**select**
ln(Gender Equality)	0.377	-0.281	0.908***	0.103	0.857***	0.0228
	(1.584)	(-0.966)	(4.285)	(0.380)	(4.706)	(0.0781)
Mills	1.056***		0.679***		0.589***	
	(4.364)		(2.805)		(3.017)	
Observations	1934	1934	1934	1934	1934	1934

z-statistics in parentheses
*** p< 0.01, ** p< 0.05, * p< 0.1

increases, the women access to higher education also increases. With a lower level of discrimination, we will therefore have more skilled women. We propose to measure this effect through the inclusion of the ratio of skilled women over skilled men. If there is effectively a selection effect, the estimated coefficient for the gender equality index would remain significant even when introduced conjointly with the ratio of skilled women over skilled men.

Table 8: Influence of Gender equality by gender and skill-level - with gender skill-ratio

Dep. Var.	**ln_m_mig_prim**	**select**	**ln_m_mig_sec**	**select**	**ln_m_mig_ter**	**select**
ln(Gender Eq.)	-0.672**	-0.713**	-0.861***	-0.293	-0.407*	-0.360
	(-2.291)	(-2.109)	(-3.336)	(-0.926)	(-1.844)	(-1.045)
ln(genderskill)	0.284	0.527*	0.623***	0.694***	0.214	0.533*
	(1.217)	(1.901)	(3.003)	(2.667)	(1.202)	(1.862)
Mills	1.265***		0.579**		0.671***	
	(5.342)		(2.390)		(3.441)	
Observations	1934	1934	1934	1934	1934	1934
Dep. Var.	**ln_f_mig_prim**	**select**	**ln_f_mig_sec**	**select**	**ln_f_mig_ter**	**select**
ln(Gender Eq.)	0.522*	-0.431	0.0627	-0.0900	0.668***	-0.172
	(1.824)	(-1.291)	(0.252)	(-0.286)	(3.098)	(-0.506)
ln(genderskill)	0.118	0.332	0.364*	0.374	-0.932***	0.400
	(0.513)	(1.209)	(1.816)	(1.448)	(-5.370)	(1.439)
Mills	1.166***		0.723***		0.560***	
	(4.758)		(3.009)		(2.830)	
Observations	1934	1934	1934	1934	1934	1934

z-statistics in parentheses
*** p< 0.01, ** p< 0.05, * p< 0.1

Our main result is confirmed by this new set of estimates. A higher level of gender equality is associated with a higher level of migration for high-skilled women and with a lower level of men migration. One should notice however, that this negative effect is significant for all men skill-level, contrary to previous

estimates where the effect was only significant for low-skilled men. On contrary, the effect for secondary educated women is no longer significant.

Results concerning the gender skill ratio are ambiguous. On one side, the effect is positive for secondary educated men and (at a 10% level of significance) for secondary educated women. Effect is negative for high-skilled women. An increase of the educational possibilities for women may increase their opportunities in their own country, which may explain this negative effect on migration. But it may also be seen as a proxy of the modernization of a society, associated with a higher level of mobility due to lower cultural costs of migration. However, this analysis goes beyond the scope of this paper and should be confirmed by a more detailed study on this specific aspect.

4.4. Robustness check

We propose to use alternative indexes to check if these results are valid while taking into account a broader set of countries or specific variables. Index *lngendereq*2 includes more countries and *lngendereq*3 is built only using labour market variables. We also propose to use these indexes built using average value of each components in order also to increase the coverage of our study (see section 3 for more details). Table 9 gives the result of the impact of gender equality on total migration (same estimations than in table 5 but using alternative indexes).

Table 9: Impact of gender equality on total migration (alternative indexes)

Dep. Var.	**lnmig**	**select**	**lnmig_prim**	**select**	**lnmig_sec**	**select**
lngendereq2	0.347	-0.157	0.117	-0.540**	0.543*	-0.0157
	(1.296)	(-0.574)	(0.376)	(-2.097)	(1.930)	(-0.0657)
lngendereq3	-0.155**	-0.0263	-0.254***	-0.111	-0.0894	-0.0607
	(-2.207)	(-0.249)	(-3.180)	(-1.157)	(-1.246)	(-0.648)
lngendereq1av	-0.0868***	-0.0328	-0.109***	-0.0253	-0.0784***	-0.0333
	(-4.148)	(-1.026)	(-4.558)	(-0.892)	(-3.647)	(-1.195)
lngendereq2av	0.140	-0.127	-0.0269	-0.209*	0.153	0.0166
	(1.111)	(-0.933)	(-0.186)	(-1.650)	(1.168)	(0.139)
lngendereq3av	-0.220***	-0.0710	-0.378***	-0.0856	-0.125*	-0.134*
	(-3.431)	(-0.823)	(-5.205)	(-1.080)	(-1.903)	(-1.713)

Dep. Var.	**lnmig_ter**	**select**	**lnskillratio**	**select**	**Observations**
lngendereq2	0.491**	0.0883	0.497***	-0.293	4063
	(1.980)	(0.341)	(2.861)	(-1.164)	
lngendereq3	-0.000524	-0.0768	0.289***	-0.120	3090
	(-0.00828)	(-0.759)	(6.398)	(-1.280)	
lngendereq1av	-0.0503***	-0.0395	0.0585***	-0.0273	3214
	(-2.673)	(-1.260)	(4.389)	(-0.976)	
lngendereq2av	0.239**	-0.0155	0.310***	-0.0818	4844
	(2.068)	(-0.120)	(3.830)	(-0.661)	
lngendereq3av	-0.0527	-0.131	0.340***	-0.118	3991
	(-0.905)	(-1.574)	(8.439)	(-1.509)	

z-statistics in parentheses
*** p< 0.01, ** p< 0.05, * p< 0.1

The only robust result is the one we obtained in the previous set of estimates. Gender equality tends to be positively correlated with the *selectivity* of migrants. In some cases, we find a negative correlation with the level of total migration and with the level of low-skilled workers migration (in 3 out of 6 indexes). This may be explain by a higher effect on male migration than on female migration. However, this result is not robust to the use of different indexes so we should be cautious in the interpretation of this result. Results concerning secondary educated migrants are ambiguous. If we find a negative impact when using $lngendereq1_{av}$, the effect is not significant for two other indexes and positive for $lngendereq2$. For tertiary-educated migrants, there is a slightly positive correlation but, once again, this result is not robust. If we find a positive and significant coefficient when using two indexes, the coefficient is not significant for other two indexes and even negative in one case. The only robust result is therefore the increase of migrants selectivity (effect on the skill-ratio) where the coefficient is positive and significant whatever the index chosen.

We then propose to estimate the determinants of migration by gender (equivalent to table 6). Results are given in table 10. The negative correlation observed with male migration and the positive one with female migration is robust to the use of alternative indexes. However, average level of significance is stronger in the case of male migration. Concerning female migration, the estimated coefficient is not significant in two cases. This may explain why we observe in some estimations a negative impact on migration (table 9).

Table 10: Impact of gender equality on migration by gender (alternative indexes)

Dep. Var.	**lnmig-m**	**select**	**Lnmig-f**	**select**	**Observations**
lngendereq2	-0.543*	-0.360	1.171***	0.158	4063
	(-1.940)	(-1.369)	(4.196)	(0.622)	
lngendereq3	-0.375***	-0.0316	0.132*	-0.0908	3090
	(-5.193)	(-0.310)	(1.856)	(-0.897)	
lngendereq1av	-0.127***	-0.0358	-0.0219	-0.0374	3214
	(-5.933)	(-1.132)	(-1.039)	(-1.207)	
lngendereq2av	-0.368***	-0.226*	0.671***	0.0955	4844
	(-2.837)	(-1.714)	(5.146)	(0.754)	
lngendereq3av	-0.443***	-0.00840	0.0714	-0.0756	3391
	(-6.756)	(-0.101)	(1.096)	(-0.930)	

z-statistics in parentheses
*** p< 0.01, ** p< 0.05, * p< 0.1

In table 11, we present results by gender and skill-level. The most robust result is that gender equality is negatively correlated with low-skilled men migration and positively correlated with high-skilled women migration, all things being equal. Coefficients for primary and secondary educated workers are significant for all indexes. For high-skilled men, results are more ambiguous (negative for three indexes and non-significant for two). For women, coefficient is always significant and positive for tertiary and secondary educated women (except in one case). Results are ambiguous for low-skilled women. The idea of a sub-

stitution effect between low-skilled men and high-skilled women is validated by these estimates. Our main result is robust to the use of alternative indexes.

Table 11: Impact of gender equality on migration by gender and skill-level (alternative indexes)

Dep. Var.	**ln_m_mig_prim**	**select**	**ln_m_mig_sec**	**select**	**ln_m_mig_ter**	**select**
lngendereq2	-0.711**	-0.902***	-0.634**	0.107	-0.139	-0.370
	(-2.117)	(-3.639)	(-2.149)	(0.460)	(-0.537)	(-1.480)
lngendereq3	-0.500***	-0.104	-0.362***	0.00152	-0.199***	-0.0701
	(-6.053)	(-1.140)	(-4.879)	(0.0172)	(-3.078)	(-0.724)
lngendereq1av	-0.152***	-0.0300	-0.126***	-0.0325	-0.0812***	-0.0431
	(-6.222)	(-1.079)	(-5.763)	(-1.194)	(-4.248)	(-1.391)
lngendereq2av	-0.582***	-0.378***	-0.550***	0.123	-0.162	-0.206*
	(-3.816)	(-3.083)	(-4.021)	(1.066)	(-1.358)	(-1.653)
lngendereq3av	-0.607***	-0.0617	-0.431***	-0.0183	-0.248***	-0.0960
	(-8.073)	(-0.820)	(-6.405)	(-0.251)	(-4.170)	(-1.209)
Dep. Var.	**ln_f_mig_prim**	**select**	**ln_f_mig_sec**	**select**	**ln_f_mig_ter**	**select**
lngendereq2	0.812**	-0.0272	1.274***	0.0709	1.405***	0.487**
	(2.562)	(-0.110)	(4.441)	(0.304)	(5.453)	(1.984)
lngendereq3	-0.00437	-0.0907	0.203***	-0.0704	0.302***	-0.102
	(-0.0546)	(-0.984)	(2.838)	(-0.790)	(4.778)	(-1.074)
lngendereq1av	-0.0453*	-0.0318	-0.0114	-0.0310	0.0157	-0.0478
	(-1.904)	(-1.149)	(-0.534)	(-1.153)	(0.846)	(-1.593)
lngendereq2av	0.437***	0.0564	0.645***	0.0812	0.831***	0.204*
	(2.966)	(0.461)	(4.876)	(0.697)	(6.991)	(1.669)
lngendereq3av	-0.135*	-0.0694	0.164**	-0.0705	0.247***	-0.0506
	(-1.852)	(-0.912)	(2.499)	(-0.954)	(4.235)	(-0.660)

z-statistics in parentheses
*** p< 0.01, ** p< 0.05, * p< 0.1

The last set of estimates (see table 12) includes the gender-skill ratio as an additional control variable (same specification than results described in table 8). Our main results remain. The inclusion of this variable controlling for the *female enhancement effect* does not change the sign and the magnitude of coefficients associated with gender equality. In most estimates, we also find a positive correlation between the gender-skill ratio and the emigration rates for low-skilled men and low-skilled women. Results are more ambiguous for other skill-level. This result observed for both gender is interesting but its interpretation goes beyond the scope of the paper. It would be interesting to study more in depth the effect of the modernization of the society on the mobility by gender and skill-level. Here, the only goal for including this variable is to minimize a possible omitted variable bias in the estimation of the coefficient of our variable of interest. We clearly show that our result is robust. And it also open new perspectives for future researches.

5. Conclusion

In this paper, we test empirically two possible theoretical explanations of the linkage between gender discrimination and migration. The first one is the

Table 12: Impact of gender equality on migration by gender and skill-level (alternative indexes)

Dep. Var.	**ln_m_mig_prim**	**select**	**ln_m_mig_sec**	**select**	**ln_m_mig_ter**	**select**
lngendereq2	-1.133***	-0.930***	-0.905***	-0.0618	-0.173	-0.448*
	(-3.160)	(-3.466)	(-2.835)	(-0.244)	(-0.619)	(-1.649)
ln_f_educ_ratio	0.363***	0.0220	0.211**	0.130*	0.0247	0.0593
	(3.311)	(0.275)	(2.165)	(1.720)	(0.291)	(0.734)
lngendereq3	-0.555***	-0.107	-0.389***	-0.0267	-0.199***	-0.0811
	(-6.594)	(-1.158)	(-5.123)	(-0.303)	(-3.004)	(-0.833)
ln_f_educ_ratio	0.412***	0.0281	0.200*	0.320**	-0.00195	0.129
	(3.182)	(0.204)	(1.681)	(2.465)	(-0.0191)	(0.916)
lngendereq1av	-0.165***	-0.0140	-0.133***	-0.0330	-0.0801***	-0.0371
	(-6.519)	(-0.493)	(-5.847)	(-1.183)	(-4.030)	(-1.171)
ln_f_educ_ratio	0.248*	-0.250**	0.125	0.00810	-0.0173	-0.0914
	(1.958)	(-2.410)	(1.129)	(0.0846)	(-0.181)	(-0.873)
lngendereq2av	-0.813***	-0.369***	-0.713***	0.0339	-0.192	-0.255*
	(-4.813)	(-2.746)	(-4.644)	(0.268)	(-1.441)	(-1.870)
ln_f_educ_ratio	0.318***	-0.0117	0.208**	0.120*	0.0382	0.0665
	(3.162)	(-0.157)	(2.312)	(1.709)	(0.486)	(0.882)
lngendereq3av	-0.623***	-0.0464	-0.435***	-0.0214	-0.238***	-0.0912
	(-8.193)	(-0.611)	(-6.376)	(-0.293)	(-3.957)	(-1.145)
ln_f_educ_ratio	0.140	-0.209**	0.0341	0.0462	-0.0902	-0.0801
	(1.321)	(-2.352)	(0.363)	(0.557)	(-1.105)	(-0.887)

Dep. Var.	**ln_f_mig_prim**	**select**	**ln_f_mig_sec**	**select**	**ln_f_mig_ter**	**select**
lngendereq2	0.425	-0.142	1.150***	-0.130	1.332***	0.328
	(1.245)	(-0.532)	(3.691)	(-0.510)	(4.756)	(1.230)
ln_f_educ_ratio	0.311***	0.0903	0.0943	0.151**	0.0546	0.120
	(2.955)	(1.131)	(0.988)	(1.988)	(0.656)	(1.523)
lngendereq3	-0.0806	-0.108	0.156**	-0.0926	0.264***	-0.117
	(-0.989)	(-1.163)	(2.130)	(-1.032)	(4.093)	(-1.217)
ln_f_educ_ratio	0.570***	0.169	0.342***	0.240*	0.272***	0.157
	(4.543)	(1.207)	(3.020)	(1.824)	(2.752)	(1.121)
lngendereq1av	-0.0667***	-0.0319	-0.0260	-0.0300	0.00488	-0.0638**
	(-2.696)	(-1.119)	(-1.170)	(-1.087)	(0.250)	(-2.065)
ln_f_educ_ratio	0.376***	0.000913	0.253**	-0.0154	0.177*	0.244**
	(3.145)	(0.00872)	(2.369)	(-0.157)	(1.884)	(2.389)
lngendereq2av	0.205	1.15e-05	0.543***	-0.0257	0.733***	0.115
	(1.246)	(8.60e-05)	(3.644)	(-0.201)	(5.487)	(0.855)
ln_f_educ_ratio	0.305***	0.0763	0.131	0.142**	0.123	0.118
	(3.155)	(1.025)	(1.492)	(1.988)	(1.601)	(1.593)
lngendereq3av	-0.176**	-0.0692	0.138**	-0.0703	0.224***	-0.0595
	(-2.387)	(-0.905)	(2.082)	(-0.948)	(3.790)	(-0.775)
ln_f_educ_ratio	0.358***	-0.00305	0.213**	-0.00256	0.186**	0.133
	(3.561)	(-0.0339)	(2.353)	(-0.0301)	(2.344)	(1.509)

z-statistics in parentheses

*** p< 0.01, ** p< 0.05, * p< 0.1

hypothesis of a push factor, with a negative correlation between gender equality and migration of women. The second hypothesis is the selection process hypothesis in which an improvement of gender equality will reduce the bias in the selection process. More skilled women would then be selected to migrate and less low-skilled men. Our estimates clearly support this latter hypothesis.

We build several indexes measuring the effective level of gender equality based on principal component analysis. By using different indexes, we are able to identify robust relations between our variable of interests. Overall, we find the general skill-level of migrants increases when gender discrimination decreases. We also show that, all things being equal, an improvement of gender equality is correlated with a fall of migration for men and an increase for women. More specifically, whatever index is chosen, we find a negative correlation between low-skilled men migration (primary and secondary educated) and gender equality. On contrary, the correlation is positively high with migration of high-skilled women.

We also control that this effect is not driven by a broader effect of *gender enhancement*. We include the gender ratio of skilled workers as an additional control variable and this does not affect our results concerning the effect of gender equality. One interesting result which is let for future research is that this gender enhancement effect seems to be positively correlated with the migration of low-skilled workers, *whatever is their gender*. An underlying effect may be the impact of the modernization of a society on the mobility of workers. This should be confirmed by further studies.

One important consequence of our study is that a reduction of gender bias increases the general skill-level of migrants. One can fear an increase in brain drain. However, a reduction of gender discrimination also gives more incentives to women to invest more in human capital. Further researches will also be devoted to this possible ambiguity.

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