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Does Masculinity Matter for Female Leaders? Evidence in cross-section countries

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Abstract

This article attempts to answer the question: why are women not often at the head of nations? We test the probability of occurrence of female leaders at the head of the country using data from ARCHIGOS data set of Goemans et al. (2009). Our hypothesis is that the occurrence of female leaders as head of government is also determined by culture. This hypothesis is validated empirically. Hence, we tested the strength of this relationship, which proved to be highly robust.

JEL Codes: Z13, D02, D7, J16,

Keywords: Female leaders, culture, masculinity, political selection

0. Introduction

The determinants of female political leadership constitute a highly debated issue in the literature. However, this literature is particularly devoted to the legislature (eg Austen and Mavisakalyan, 2016, Kodila-Tedika, 2013), leaving aside women's leadership in the executive branch. The goal of this research is precisely to complete this theoretical vacuum. Why are some countries headed by female leaders, others not? Are not these differences due to cultural differences? This is the question that our quest attempts to answer.

We use Hofstede's (2001) cultural data on the degree of masculinity in each country in the context of cross-countries and data from ARCHIGOS (Goemans et al., 2009). From this last database, we built dummies for the countries where a woman was at the head of the executive in 2010. Given the nature of this variable, we have thus used a probit model. The probability of having a woman at the head of the executive is due to culture. This conclusion is robustness. We conducted several tests. We changed the years when a woman was at the head of the executive, changed the sample and the estimation technique. Given the likely error in measuring masculinity, omission bias, and inverse causality, we used instrumental econometrics for this purpose and culture determines the selection of women at the head of the executive.

The contribution of this article can be placed in the context of a growing literature examining the effect of different cultural dimensions on economic outcomes (for a review, see Spolaore and Wacziarg, 2013; Alesina and Giuliano 2015). Aussi, elle est une contribution sur la littérature récente qui considère les traits

psychologiques et les caractéristiques individuelles des leaders (e.g. Kodila-Tedika & Mulunda Kabange, 2016).

The rest of the article is split in five sections. The first section presents a brief review of the literature on the consequences of culture on various variables with the consideration of empirical studies based solely on data from Hofstede (1980, 2001). The second section develops arguments in favour of our hypothesis. Section three presents the data and the results found. The sensitivity and / or robustness tests are described in Section four. Finally, we draw a conclusion in the last section.

1. Literature Review

Recent studies have considered the cultural effects of individualism. Nikolaev et al. (2017) suggest that societies with more individualistic values have a significantly lower net income inequality. The results are robust even after controlling for many factors such as economic development, legal origins, religion, human capital, other cultural values, economic institutions and geographic controls. By integrating the cultural dimensions of individualism and masculinity. Aggarwal et al. (2013) show how the cultural traits of countries of origin, and the cultural distances separating them, interact with geographic distance and other gravity variables, find previously unreported effects and show that if gravity still discourages portfolio investment (FPI), aspects of culture and cultural distance can compensate for this by supporting the REIT Using World Economic Forum survey data for more than eighty countries.

Aggarwal et al (2014) examine the determinants of (1) access to equity financing, (2) access to debt financing, (3) access to venture capital and (4) overall access to

capital. Access to finance is associated with the cultural dimensions of avoidance, uncertainty and masculinity. Furthermore, access to finance is positively associated with greater wealth and better investor protection.

Gorodnichenko and Roland (2011ab, 2016) found that individualism positively affects income and innovation. Davis (2016) for instance argues empirically that individual responsibility positively impacts economic development. Kyriacou (2016) shows that the effect of individualism on development disappears when one credibly controls the quality of governance. This is statistically explained by individualism. Licht et al. (2007) also showed that individualism was linked to the quality of government. Other scholars such as Davis & Williamson (2016) suggest a causal relationship between individualism and regulation of entry. The results of Cline & Williamson (2017) show that individualism has a positive and significant link to the effectiveness of contract enforcement. Interaction effects, however, suggest that democracy amplifies the influence of individualism on the effectiveness of contract enforcement. Cline & Williamson (2017) suggests that culture is a constraint for policy makers, as any official policy or institutional structure will work very differently depending on the cultural environment.

Other studies have linked individualism to informal institutions. For instance, Pitlik & Rode (2017) looked at the impact of individualistic values on personal attitudes to government intervention as a potential link of culture and formal institutions. They consider that two key elements of an "individualistic culture" are particularly relevant for the formation of attitudes, namely the values of self-determination. The results indicate that the two elements of individualistic values are negatively associated with interventionist preferences. Van Hoorn (2014) shows that higher individualism is strongly associated with more sophisticated

management practices. Culture would be an important determinant of management practices than formal institutions. This also shows that management practices are indeed an important mediator in the empirical link between culture and per capita income.

With a sample of 2069 adult, Linan et al. (2016) argue that individualistic values affect entrepreneurial intentions. Pinillos and Reyes (2011) link individualism to entrepreneurial activity, considering the level of economic development. The results show that a country's entrepreneurship rate is negatively related to individualism when development is medium or low and positively related to individualism when the level of development is high. Thus, individualism is not related to entrepreneurship in the same way in countries with different levels of development.

This vast literature on culture has essentially revolved around the individualized-collectivist dimension, leaving aside other cultural dimensions, like masculinity, Hofstede (1980, 2001) put forward. However, only research by Gorodnichenko and Roland (2011a,b), Aggarwal et al. (2012), Aggarwal et al. (2014) considered the variable culture in conducting econometric analysis without necessarily developing an argument around it as it is proposed for individualism. In this paper, we complete this literature by considering the effect of masculinity on the selection of politicians.

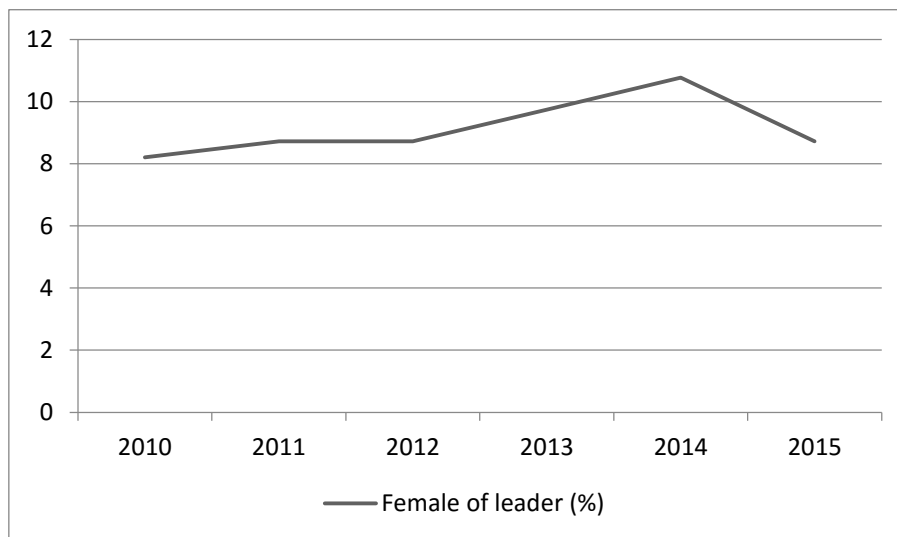
2. Theoretical motivation

The political selection theory assumes that citizens are tempted to believe in a benevolent planner, in that the preference of citizens should be directed towards competent and honest leaders (Besley, 2005, Besley & Reynal-Querol, 2011).

However, the available studies seem to give women a certain honesty (eg Swamy et al., 2001, Capezio & Mavisakalyan, 2016) and a strong social preference (Chattopadhyay and Duflo, 2004), which translates for example into better results in terms of health (eg Mavisakalyan, 2014), education (Clots-Figueras, 2007).

The evolution of female leaders in the world is shown in Figure 1. It shows the ratio of female leader to the number of countries considered in our sample. This rate is very low, estimated at about 9%, with nothing changed in the last five years.

Figure 1. Evolution of female leader in word



Source: Author's own compilation

The question of why there are less women as head of state while the democratic regime offers the ideal framework for selecting politicians, is essential to address. Our hypothesis is that culture makes all the difference. The cultural element refers to in this paper is the masculine culture (masculinity) or the patriarchal societies. Patriarchal or masculine societies determine, to our understanding, the course of women. The masculine culture (masculinity) has indirect and direct

effects. Indirectly, the masculine culture deteriorates women's background or does not allow them to accumulate a stock of human capital. Indeed, some cultural practices, especially in patriarchal or masculine societies, encourage families to be reluctant to send girls to school with boys. Some studies have shown a significant negative relationship between the proportion of a country's Muslim population and its school enrolment rates. The effects are greater for girls (Schultz 1987, Boone 1996, Forsythe et al. year). Because of the lack of education, women also perpetuate this under-accumulation. In India, for example, children whose mothers are more educated study two hours more per day than children of less educated mother (Behrman et al., 1999). Rosenzweig and Wolpin (1994) show that school success for mothers has a positive impact on those of their children. Because of the lack of human capital stock, women are directly dissuaded from politics or from being in politics. Hence, the same behaviour is carry on to the next generation of female who struggle to assume a leadership role.

The effects of masculine culture can also be direct. This culture determines the political preferences of both society and the woman herself. It determines the respective roles of men and women. In the case of a derogation, a whole formal and informal system of reprimands and sanctions is triggered (Narayan et al., 2000). This naturally affects the incentives of women.

Nowadays, women who are discussing politics are undermined and mistrusted, particularly in some older, less educated, and more educated communities (Inglehart, 1997). Women are not expected to work outdoors (Jejeebhoy 1995, Alderman and King 1998). These different elements consolidate social prejudices. It can only reduce the selection of women who wants to run for

political position. It is therefore a difficult constraint to overcome, as much work has pointed to ubiquitous oppression and patriarchal control over women politicians (Beck 2003, Bratton 1999, Geisler 1995, McEwan 2000, 2003). Moreover, the utility function of women can also take a hit as the values conveyed by the male or patriarchal culture dissuade women from finding satisfaction in politics. This paper leans on the work of Inglehart and Norris (2005) who addressed the issue of cultural to influence on the process of gender equality.

3. Data

The variable of interest in this paper is the female leader. We further built an index of the variable female leader of the data base on the ARCHIGOS data set of Goemans et al. (2009). We created dummy variables for all countries that were led by women in 2010.

We measure a society's position on the Masculinity versus Femininity continuum by employing four separate measures of individualism from Hofstede (1980, 2001). Hofstede (2001) initially used surveys of IBM employees in about 30 countries to study differences in corporate culture. Hofstede's cultural data base has been expanded. Hofstede's (1980, 2001) cultural data is based on surveys in over 100 countries designed to understand differences in corporate culture. To avoid cultural biases in the way questions are framed, the translation of the survey into local languages was done by a team of English and local language speakers. Hofstede uses factor analysis to identify four dimensions of cultural variation – individualism, power distance, masculinity and uncertainty avoidance – with the individualism score being the highest and most important factor loading.

The index of masculinity looks at the extent to which a culture supports a traditional view of masculine and feminine traits and refers to the dominance of men over women and to the dominance of “male” values such as assertiveness and competitiveness versus norms of caring and modesty. In Hofstede’s words, “In a strict sense, only behaviours directly connected with procreation (childbearing and child begetting) are “feminine” or “masculine.” Yet, every society recognizes many other behaviours as more suitable to females or more suitable to males; these represent relatively arbitrary choices, mediated by cultural norms and traditions” (Hofstede, 2001: 280). Hofstede (2001: 297) defines: “Masculinity stands for a society in which social gender roles are clearly distinct: Men are supposed to be assertive, tough, and focused on material success; women are supposed to be more modest, tender, and concerned with the quality of life. Femininity stands for a society in which social gender roles overlap: Both men and women are supposed to be modest, tender, and concerned with the quality of life.”

The control data sources and descriptive statistics elements are reproduced in Table 1.

Table 1. Descriptive Statistics

Variables	Source	Mean	Std.Dev.
Masculinity	Hofstede (2001)	47.490	18.423
Female of leader	Author from ARCHIGOS data set of Goemans et al. (2009).	.082	.275
GDP per capita	WDI, World Bank.	38.248	38.188
Globalization	Economic globalization by using the KOF index also used by Dreher (2005)	60.219	18.072
Institution	World Bank Governance indicator	-.140	2.206
School	Barro and Lee (2010)	7.535	2.649
Africa	Author	.283	.452
Americas	Author	.175	.381
Europa	Author	.222	.416
Asia	Author	.253	.436
Oceania	Author	.067	.250

4. Baseline Results

To evaluate the baseline effect of the masculinity culture on female leaders of country i , we estimate the following model using a probit:

$$\Pr(\text{FemaleLeader} = 1)_i = \delta X_i + \beta \text{Culture}_i + \mu_i \quad \text{for all } i=1, \dots, N \quad (1)$$

where Culture_i is the level of masculinity in a country's, X_i is a vector of controls for economic and institutional characteristics of countries defined in section 2, and μ_i is a disturbance term.

The Probit estimates of equation 1 are presented in Table 2. In the first column, we simply estimated a relationship between our variable to explain and our variable of interest. The level of masculinity appears as an important variable in predicting the likelihood of a woman leading a country's executive. In column 2,

we controlled for other variables to mitigate the omission bias. The behaviour of our variable of interest remains the same. It is possible that regional or continental specificities may affect this result. In the last column, we catered for fixed effects related to continents. The finding suggests almost similar results obtained in previous tests, with the coefficient of the variable of interest becoming more important. According to the marginal effects reported in the last column of Table 2, an increase in the masculine culture level of 10% degrades by 4 percentage points the probability that a woman will arrive at the head of a country, *ceteris paribus*.

Table 2. Female leader and Masculinity (Probit)

	I	II	III	Marginal effects from probit estimation
Masculinity	-0,017* (0,009)	-0,016* (0,010)	-0,020* (0,011)	-.004
Globalization		-0,024 (0,019)	-0,026 (0,023)	-.005
GDP per capita		-0,009* (0,005)	-0,010* (0,006)	-.002
School		0,125 (0,118)	0,154 (0,150)	.032
Institution		0,156 (0,158)	0,215 (0,169)	.044
fix continental effect	No	No	Yes	
Intercept	-0,396 (0,412)	0,353 (1,213)	0,407 (1,726)	
Obs	104	82	71	
Pseudo-R2	0.0495	0.1349	0.1738	

note: .01 - ***; .05 - **; .1 - *;

The predictive quality of our model is remarkable. Indeed, for the countries that have known female leader, about 75% have been well predicted. The prediction rate for females leading countries as well as for male-dominated countries is 85.92%.

5 Robustness

As shown in Table 1, we use several approaches such as, the change in estimation technique (5.1), the exclusion of continents (5.2), the transformation of the masculinity variable (5.3) and the change in the years when the woman was at the head of the executive and the reduction of the sample size to only democratic countries (5.4).

5.1 Change of estimation technique

In Table 3, we use a linear probability model. The conclusions remain the similar to Table 2: both female leader and masculinity have the same nature of relationship. The change in technique did not affect the concluding results. However, the only difference found on is the level of confidence that is now 95% overall.

Table 3. Female of leader and Masculinity: linear probability model

	I	II	III
Masculinity	-0,004** (0,002)	-0,004* (0,002)	-0,004** (0,002)
Globalization		-0,005 (0,004)	-0,004 (0,004)
GDP per capita		-0,002* (0,001)	-0,002* (0,001)
School		0,022 (0,023)	0,022 (0,028)
Institution		0,033 (0,031)	0,038 (0,032)
fix continental effect	No	No	Yes
Intercept	0,294*** (0,089)	0,512** (0,241)	0,419 (0,256)
Obs	104	82	82
R2	0,039	0,114	0,158

note: .01 - ***; .05 - **; .1 - *;

5.2 Exclusion of continents

Table 4 below presents a further robustness check in which we exclude continents. The idea consist of assessing the behaviour of the variables of interest (masculinity) when a continent is excluded from the sample. This is also a means of controlling for extreme values that could influence the baseline findings. The relatively lower correlation coefficient observed when continents are excluded implies that the excluded continent has a higher level of female leaders' development. In the same line of intuition, a relatively higher correlation coefficient upon the exclusion of a continent means the excluded continent has a larger variation and more related variables to female leaders.

Overall, the result does not change because the sign is the same with almost the same magnitude for the coefficient of the variable masculinity. However, since the continents America, Asia and Europe are alternately excluded, the statistical significance disappears.

Table 4. Exclusion of continents (Probit)

	Exclusion Oceania	Exclusion Africa	Exclusion Americas	Exclusion Asia	Exclusion Europa
Masculinity	-0,018* (0,010)	-0,016* (0,010)	-0,016 (0,011)	-0,015 (0,011)	-0,025 (0,017)
Globalization	-0,025 (0,021)	-0,028 (0,020)	-0,040 (0,025)	-0,021 (0,026)	-0,014 (0,024)
GDP per capita	-0,009* (0,005)	-0,009* (0,005)	-0,010 (0,006)	-0,013* (0,007)	-0,004 (0,007)
School	0,141 (0,133)	0,089 (0,123)	0,078 (0,134)	0,118 (0,151)	0,305* (0,169)
Institution	0,119 (0,163)	0,170 (0,158)	0,332 (0,223)	0,230 (0,202)	-0,039 (0,206)
Intercept	0,407 (1,221)	1,010 (1,288)	1,402 (1,557)	0,046 (1,674)	-1,113 (1,531)
Number of observations	79	71	64	64	50
Pseudo-R2	0.1325	0.1273	0.1788	0.1946	0.1718

note: .01 - ***; .05 - **; .1 - *;

5.3 Robustness with Transformation of interest variable

In Table 5, we replicate the estimations of the last column of Table 2 with emphasis on extreme observations. The two-transformation employed are Logarithm (Column 1) and Box-Cox transformation (Column 2) (Box and Cox, 1964). We notice that the variable of interest remains consistently significant with the same negative sign, but with an improved coefficient. The level of masculinity always decreases the probability of a woman to lead.

Table 5. Robustness with Transformation of interest variable (Probit)

	Log of Masculinity	Box-Cox transform
Masculinity	-0,633* (0,332)	
Masculinity		-0,019* (0,010)
Globalization	-0,022 (0,023)	-0,026 (0,023)
GDP per capita	-0,010* (0,006)	-0,010* (0,006)
School	0,110 (0,147)	0,154 (0,150)
Institution	0,197 (0,169)	0,216 (0,169)
fix continental effect	Yes	Yes
Intercept	2,105 (2,110)	0,381 (1,723)
Number of observations	71	71
R2	0.1716	0.1738

note: .01 - ***; .05 - **; .1 - *;

5.4 Sensitivity checks

Dummy variables for women-led countries, are created for the year 2010 in this paper. This choice is arbitrary. It is therefore possible that this may affect the conclusions to be drawn. With that, we created dummy variables for other years, 2011 to 2015.

Table 6 returns the results with the change of years between 2011 and 2015. For column 1, the results refer to the year 2011 and column 2 to the year 2012, till 2015. The concluding findings remain unchanged in most of the years, except for the year 2013.

Table 6. Female of leader and Masculinity: Year (Probit)

	2011	2012	2013	2014	2015
Masculinity	-0,027** (0,011)	-0,026** (0,011)	-0,010 (0,009)	-0,019** (0,009)	-0,019* (0,011)
Globalization	-0,024 (0,024)	-0,011 (0,022)	-0,013 (0,020)	-0,019 (0,020)	-0,047* (0,026)
GDP per capita	-0,012** (0,006)	-0,010** (0,005)	-0,005 (0,004)	-0,004 (0,004)	-0,012* (0,006)
School	0,029 (0,153)	0,026 (0,138)	0,069 (0,128)	0,130 (0,129)	0,199 (0,170)
Institution	0,266 (0,176)	0,156 (0,162)	0,112 (0,147)	0,079 (0,146)	0,204 (0,174)
Effet fixe continental	Yes	Yes	Yes	Yes	Yes
Intercept	1,986 (1,783)	1,375 (1,680)	0,080 (1,574)	0,204 (1,416)	1,503 (1,782)
Obs	71	82	82	79	68
Pseudo-R2	0.2270	0.1963	0.0931	0.1245	0.2072

note: .01 - ***; .05 - **; .1 - *;

In Table 7, we maintain the same sensitivity test on by considering the year 2010 and reducing our sample size. The exclusion of other countries is dictated by the fact that they are not considered democratic. To determine the democratic countries of the non-democratic, we considered the classification of Cheibub et al. (2010). The sample change is dictated by the theory of political selection summarized above. Following this argument, the democratic regimes are the ones to select the leaders with these abilities. However, we indicated that the results for women are of great value. It was therefore expected that democratic regimes could promote female leadership. The results obtained are indifferent from the previous ones

Table 7. Female of leader and Masculinity: Year (Probit)

	2010	2011	2012	2 013	2014)	2015
Masculinity	-0,024** (0,011)	-0,030** (0,012)	-0,028** (0,012)	-0,012 (0,009)	-0,020** (0,009)	-0,020* (0,010)
Globalization	-0,029 (0,024)	-0,028 (0,025)	-0,014 (0,024)	-0,013 (0,021)	-0,015 (0,021)	-0,043 (0,026)
GDP per capita	-0,012* (0,006)	-0,013** (0,006)	-0,011** (0,006)	-0,005 (0,005)	-0,003 (0,005)	-0,011* (0,006)
School	0,183 (0,157)	0,075 (0,159)	0,056 (0,148)	0,090 (0,134)	0,146 (0,133)	0,198 (0,168)
Institution	0,137 (0,170)	0,186 (0,177)	0,086 (0,165)	0,039 (0,149)	0,014 (0,148)	0,145 (0,176)
Continental effect	(dropped)	(dropped)	-0,996	-0,667	0,210	(dropped)
Intercept	1,681 (2,000)	3,135 (2,068)	2,374 (1,994)	0,749 (1,842)	-0,048 (1,504)	1,320 (1,761)
Obs	59	59	64	64	62	57
Pseudo-R2	0.2117	0.2611	0.2204	0.0960	0.1098	0.1736

note: .01 - ***; .05 - **; .1 - *;

5. Addressing endogeneity

Various empirical tests conducted so far have established a statistically significant and robust negative relationship between executive-controlled by women and masculinity. However, one can question the possibility of giving a causal interpretation to this finding because of the unobserved heterogeneity. Furthermore, reason likely to bias the results is in the measure of our variable of interest. Bertrand and Mullainathan (2001) show that survey data tend to bias the regression results when survey data are used as explanatory variables. For, differences in the interpretation of the questions asked can lead to a classical measurement error; which leads to a mitigation bias. In addition, these data are prone to measurement errors due to cognitive errors and the perceived social desirability of responses.

However, the hypothesis of inverted causality is debatable. Indeed, having women in power can certainly influence many things. For example, Beaman et al. (2009) found that the presence of women in the power arcane has radically changed the perception of voters about the effectiveness of women in the role of authority. Having already had a village chief (pradhan) has lowered the importance of sexist stereotypes among male villagers in India. In a further study, Beaman et al. (2012) state that where there has never been a woman leader in the pradhan position, the difference between sons and daughters in terms of the wishes of the parents is great. Pradhan women increase the aspirations of parents for their daughters and those of girls for themselves. Kodila-Tedika (2013) find that significant female representation influences formal pro-women institutions. These studies may support only the hypothesis of reverse causality. However, one must not show a strong enthusiasm. Studies such as Beaman et al. (2009, 2012) are studies based on the randomization approach and thus present the weaknesses of its external validity and the durability of the effect found. Also, the effects of having women leaders are not always favourable to women. Clots-Figueras (2011), for example, presents some interesting results: women politicians from disadvantaged classes and tribes invest more in the social (education and health) and distribution on the one hand and laws promoting economic rights of women on the other hand. Furthermore, high caste of parliamentarians women have no impact on "pro-women" laws, and do not show high preference for the social as their counterparts. Kodila-Tedika & Asongu (2017) consider the case of a female leader, as head of the country. They did not find a fundamental shift in pro-women institutions in Liberia during Ellen Johnson Sirleaf's tenure. Because of this, one must use caution in interpreting the results. A classic way to deal with

the problem of reverse causality or omission bias is to use an instrumental variable, a source of exogenous variation, and estimate a 2SLS model.

Fernandez (2010) documents the hypothesis of culture being passed from one generation to another. As a result, it is logical to think that people with a masculine or patriarchal culture have passed on this conception of life to their descendants. From this argument, we use the dummy of muslim countries as the first instrument. Indeed, the Islamic or muslim culture is not pro-woman. This is one of the reasons that is at the root of the movement of Islamic feminism (Kian-Thiébaud 2003, Badran 2010, Latte Abdallah 2010). Kholdi (1996) presents some sentences of the nationals of this part of the world, indicating the feminine passivity in these societies.

"Islam does not recognize social equality between men and women. According to Islamic principles, men and women do not have equal rights [...]. According to the Koran, women are inferior to men and Islamic jurisprudence has recognized and codified gender differences: the price of blood for the murder of a Muslim woman is half that of a Muslim man; women inherit half of man's share; they are not allowed to travel or even leave the house without the permission of their husbands; men have the unilateral right to divorce; and only men can assume the religious and juridical direction [...]. In an Islamic society, a Muslim man enjoys the most complete social status. In such a society the superiority of man is not a social reality but a religious truth.

"God created the woman to do housework and to take care of the education of her children. God created man for external affairs, to face the problems of life "

Whether this is a misinterpretation or not of the sacred texts of this religion, it is none the less true that these are so many "truths" that are overflowing in these societies (Kian-Thiébaud, 2003).

In the literature, there are also several other instruments to cultural variables. In this case, we also used one of the instruments of Gorodnichenko and Roland (2011ab, 2016) and Ang (2015). Gorodnichenko and Roland (2011ab, 2016) use the blood distance from the UK as an instrument. Ang (2015), for his part, suggests that there is a link between culture and technology adoption variables of Comin et al. (2010).

Table 8 shows the estimates of the last column (III) in Table 2, by instrumenting the masculinity variable according to the instruments identified. In the first column, we instrument by the dummy of Muslim countries. The blood distance from the UK and the technology adoption variable are used in columns 2 and 3 respectively. The endogeneity bias visibly underestimated the magnitude of the coefficient of the variable of interest. This variable also gains in level of significance. The findings are similar to previous results obtained in this paper.

Table 8. Female of leader and Masculinity: IV Probit

	I	II	III
Masculinity	-0,054*** (0,015)	-0,055*** (0,013)	-0,060*** (0,006)
Globalization	-0,004 (0,025)	-0,007 (0,021)	0,003 (0,015)
GDP per capita	-0,006 (0,010)	-0,007 (0,010)	-0,011** (0,005)
School	0,119 (0,127)	0,105 (0,099)	0,155 (0,131)
Institution	-0,079 (0,223)	-0,056 (0,251)	-0,116 (0,088)
Continental effect	Yes	Yes	Yes
Intercept	2,321* (1,353)	2,617* (1,376)	2,072* (1,130)
Obs	66	60	54
Instrument	Culture musliman	Distance	Technology AD 1500
Wald test of exogeneity (p-value)	0.7857	0.7060	0.3320

note: .01 - ***; .05 - **; .1 - *;

Conclusion

Can we pretend that at the end of this research, have validated our hypothesis? First, it is worth remembering that the hypothesis tested in this article claims that culture is an indispensable element in political selection, especially when it comes to bringing women politicians to the head of the executive. Our contention is to bring empirical arguments to this hypothesis. We mobilized the ARCHIGOS data set of Goemans et al. (2009) to highlight on the presence of women at the head of the executive.

Our econometric estimates suggest that an increase in the male culture level of 10% degrades by almost 4 percentage points the probability of a female leader at the head of state. This conclusion is robust to sample change, econometric technique and other sensitivity tests. However, the probable relationship may

suffer from reverse causality bias for many reasons. To take this into account, we have been able to show, through an instrumental probit model, that this relationship is causal.

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