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TOO FEW WOMEN AT THE TOP OF FIRMS: FOREIGN OWNERSHIP, GENDER SEGREGATION AND CULTURAL CAUSES

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Abstract

This study uses enterprise survey data from a sample of 26 countries to address the question "why are there too few women at the top of firms?". That is, it asks why the proportion of firms with females at the top is low in relation to the share of females in full-time employment. To reduce the risk of bias arising from a confounding variable the range of explanatory variables used was wide, including data at the level of the firm, sector and country. An important contribution to the analysis was made by the inclusion of national cultural attitudes. The most important findings of the enterprise level analysis were that foreign owned firms were statistically significantly less likely to employ a female top manager, that the pattern of female top managers by sector follows a wider pattern of gender segregation, and that national cultural attitudes are important in the determination of the gender of the top manager. Having established the importance of cultural attitudes in determination of the gender of top managers the study uses a second set of data to analyse national attitudes associated with hostility to female executives. Unsurprisingly this hostility to female executives is predominantly on the part of males rather than females but religion and a lack of education are important too. The paper contributes to the literature on gender in International Business and overlaps with the literature dealing with the need for affiliates to adjust to local culture.

JEL classification: J16; E24; F23

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TOO FEW WOMEN AT THE TOP OF FIRMS: FOREIGN OWNERSHIP, GENDER SEGREGATION AND CULTURAL CAUSES

1. Introduction

This study contributes to and overlaps with the literature on International Business in several ways. Firstly, there exists only a limited literature relating to women at the top of international firms. This study shows that for a sample of 26 countries foreign owned firms are less likely to appoint a female top manager than wholly domestic firms but, perversely, tend to employ a higher proportion of females. It is not easy to analyse why too few women are top managers. The range of potential determinants are wide, covering firm level characteristics such as foreign ownership, sector and country level characteristics (most notably including local cultural attitudes). Statistically it is important that important determinants (confounding variables) are not excluded. Failure to do so would increase the risk of bias and a strength of the paper is that it has a wide range of explanatory variables. By considering cultural attitudes it also overlaps with the international business literature that deals with issues arising from adjustment to cultural differences with the host country of affiliates. The breadth of the analysis enables the study to also highlight the role of gender segregation, an issue that has been barely covered by the existing literature on international business and gender.

The statement that there are "too few" women at the top of firms depends critically on another question: how many should there be? This is not simple to answer. Roughly half of working age women participate in the labour force and statistics on participation rate in the global workforce, i.e., the labour force as a percentage of the working-age population, show that women account for 47.7% of the global workforce. Men constitute a higher proportion - 72% (ILO, 2022). Data also shows that only 27% of women are managerial workers and just 18 % of firms have a female top manager (Global Gender Gap Report 2020). The World Bank (2022) highlights that female labour force participation, and the share of managers has remained relatively flat over the last three decades.

We use the World Bank Enterprise Survey, which includes a sample of about 23,800 firms from 26 countries, to analyse the reasons for under-representation of women as top managers or owners of firms. We use the share of women in full-time employment as a benchmark and find that, in relation, to the typical share of females in full-time employment females are underrepresented as top managers of firms. This analysis focuses on several sets of determinants – firm level factors such as foreign ownership and gender segregation at work and country level factors including macro-economic variables such as gross domestic product (GDP) per capita, institutional variables and national cultural differences, particularly with respect to attitudes to women as executives.

One key finding is that foreign owned firms are less likely to have female top managers or owners than wholly domestic ones. Although statistically significant it is modest in terms of magnitude. Of much

more consequence for the presence or absence of females at the top of the firm is gender segregation. The evidence of this study shows that there are strong links between the firms and sectors in which female employment is most concentrated and those in which female top managers and owners are most concentrated. Finally, the same analysis shows that cultural attitudes towards women as executives is an important and statistically significant factor in explaining why there are not more women at the top of firms. Although this study does not offer conclusive evidence it does offer a potential explanation of why foreign owned firms are less likely to have females at the top. The demands of operating an affiliate in a different culture may lead to more caution than is strictly necessary.

Given the importance of cultural attitudes this study provides a second strand of analysis using data from published surveys of cultural values. This helps to identify those individual characteristics that are associated with hostile attitudes to female executives. For example, it is not surprising that many women do not share the view that men make better executives nor is it surprising that hostility to such a role for women declines with the level of education of the individual. Both of these contain clues as to how, for example, policy makers might effect a change in attitudes in the longer term.

2. Literature Review

A host of studies examine why there is a gender gap in earnings for developed and developing countries and identify occupational segregation, differences in human capital, discrimination, and social norms as potential factors (see Blau & Kahn, 2000; Borrowman and Klasen, 2019; Magda and Salcha, 2020 for a review). Some examine how the gender gap in education and employment impact on a country's economic growth (see for example Blecker and Seguino, 2002; Klasen, 2002; Cavalcanti and Tavares, 2007; Klasen and Lamanna, 2009). Others analyse the impact of economic growth on women's participation in the labour force (Mammen and Paxson, 2000; Lincove, 2008; Luci, 2009; Tam, 2011). The review of literature provides a broad consensus on the finding that female labour force participation contributes to socioeconomic development, provides additional income in the household which in turn reduces poverty in a country (Thévenon, 2013; Klasen et al. 2022). There is nonetheless considerable debate on the direction of causality between female empowerment and economic development (see Duflo, 2012 for a comprehensive survey) and the effect of economic development on women's labour force participation is a complex phenomenon (Gaddis and Klasen, 2014). Literature also acknowledges that foreign firms offer wage premia due to firm externalities which in turn impacts the foreign-domestic pay gap (Hijzen et al. 2013). However, there is lack of information on whether foreign ownership wage premia are higher or lower for men than for women and if so, whether the gender pay gap have increased or decreased following foreign investment inflows and the ownership structure of firms (Borrowman and Klasen, 2019).

Economic theory suggests that gender pay gaps should be smaller among foreign-owned companies than among domestically owned firms. The review of literature suggests the gender wage gap difference exists although the evidence is mixed. Meng (2004) and Zweimueller (2008) verify the theoretical link between the (higher) degree of market competition and the (smaller) size of the gender labour market gap and examine the gap between foreign-owned and domestically owned firms. There are country specific analyses which report higher gender pay gaps in foreign-owned firms than in domestically owned firms (see for example Halversson et al. (2022) for Swedish firms; Magda and Salach (2021) for Poland; Vahter and Masso, 2019; Rickne (2012) for China; Liu, et al. 2000), Maurer-Fazio and Hughes 2002). More recently, Magda and Salach (2021) examined firm level data for Poland and reported that foreign-owned firms pay higher firm-specific wage premia to women than men and that gender pay gaps at every decile of the wage distribution are larger in foreign-owned firms. Nekby (2003) also evidences gender wage gap difference between foreign and domestically owned firms. However, Tang and Zhang (2021) and Kodama et al. (2018) find that foreign affiliates (in

China and Japan, respectively) employ proportionally more women and appoint a higher number of female managers. Kodama et al. (2018), for instance, highlight that the gender wage differential is smaller in foreign affiliates than in domestic firms for Japan. It is important to highlight that there are differences between developing and developed economies and the mechanisms used to address the divergence affects the gender wage gap. Studies confirm that foreign direct investment inflows may not necessarily translate into more women entering the labour market or attaining higher levels of education (see for example Magda and Salach, 2021; Oostendorp, 2009; Seguino and Grown, 2006). While studies are clear about the effects of internationalisation the mechanism behind a differential wage-setting across genders in globally active firms is yet to be explored in full detail.

There is burgeoning literature on female participation at senior levels, e.g. board level, and the performance of firms through the lens of agency theory and resource dependence theory (Adams and Funk, 2012). In line with the agency theory, Carter, et al. (2010) state that the monitoring function of the board plays an important role in mitigating principal–agent conflicts which leads to better firm performance (Fama and Jensen, 1983; Jensen and Meckling, 1976). The resource dependence theory suggests that gender diversity improves access to external resources, i.e. firms with larger and/or more diverse boards have advantages in obtaining and maintaining resources, which include human capital in the form of knowledge, skills, and talent; advice and counsel; channels of communication; and legitimacy (Hillman and Dalziel, 2003; Pfeffer and Salancik, 2003; Goodstein et al, 1994). Others suggest that the existence of gender diversity on company boards strengthens managerial accountability. For example, Adams et al. (2009) report that female directors have better monitoring ability and are not likely to be hindered by traditions.

A review of literature suggests that job segregation is the main reason for gender wage differentials within and across countries (see for example Bayard et al. 2003; Amuedo-Dorantes and de la Rica, 2006; Brynin and Perales, 2015). Further investigation by separating the effects of female segregation into low-paying firms and female segregation into low-paying jobs within firms by Javdani (2015) suggests that the former effects are a major driver of gender wage inequality. Borrowman and Klassen (2019) investigate the determinants of aggregate occupational and sectoral segregation by gender in developing countries using household-survey-based aggregate cross-country database including sixty-nine countries between 1980 and 2011. The study reports rising female labour force participation is associated with falling sectoral but increasing occupational segregation in developing countries. The study emphasises the role of income inequality and religious affiliation in line with institutionalist and feminist economics theories and presents some interesting results. First, rising education levels tend to increase rather than decrease segregation. Second, segregation can lead to crowding into particular sectors or occupations that can reduce the pay and bargaining power of women workers (also see Bergmann, 1974; Charles and Grusky, 2004; Caraway, 2007). Cross-country empirical studies examining the relationship between gender pay and occupational segregation present mixed results. For instance, studies find a significant and negative relationships (see Semyonov and Jones, 1999; Meyer, 2003; Ball, 2008) though Chang (2004) reports no significant relationship unlike Swanson (2005) who reports a significant and positive relationship. The explanation for such wide-ranging results is attributed to the fact that some indices of segregation are more sensitive to changes in the overall labour force participation rate unlike others. Studies that examine occupational segregation find that gender segregation exists, and women continue to be over-represented in low-paying occupations (see Goldin, 2014; Blau et al. 2013; Gradin, 2019). For instance, Gradin (2019) examines the segregation of women into low-paying occupations for the United States and finds that the decline in gender segregation of occupations was accompanied by a reduction in their stratification, which is attributed to several factors, such as education, marital status and gender-biased changes in the earnings structure.

Among factors that impact the participation of women at the managerial level education is important (Besamusca et al. 2015; Islam and Amin, 2016). Culture is also factor that is strongly correlated with women's participation in the labour market (Fernandez, 2007; Fernandez at al. 2004; Fernandez and Fogli, 2009; Farre' and Vella, 2013). Traditional attitudes to gender equality inhibits the acceptance of female managers within firms. Seguino (2011) finds that the prevalence of religious beliefs decreases gender equality though there the study does not identify any specific religion as more or less likely to be a hindrance to female empowerment. Vella (1994) provides cross sectional evidence on the relationship between attitudes towards working women and the labour market and finds that religious affiliation influences educational attainment which in turn determines whether women expect to rise to managerial positions within companies. Farré and Valla (2007) analyse the intergenerational transmission of cultural attitudes to female senior managers in firms and find that the children of women with a strong presence in the workplace expect to continue with this tradition. Institutions play an important role in women's participation in the workforce. For example, legal gender disparities affect women's engagement, both as workers and as top managers or business owners (Islam et al., 2018). Cipollone et al. (2014) find that labour market institutions and family-oriented policies explain almost 25% of the actual increase in labour force participation for young women, and more than 30% for highly educated women. A combination of child support policies and country wide institutional practices have a positive effect on female labour market integration (see e.g., Sànchez-Mangas and Sànchez-Marcos, 2008; Lefebvre et al. 2009). Further, conjugal preferences and fertility have a significant effect on the rate of female participation in the labour force (Gasparini and Marchionni, 2015; Amin et al. 2016; Klasen et al. 2020). In addition, women's age, societal family system, family size and number of children positively influence female participation in the labour market. Access to finance (Muravyev at al. 2009) impacts women's participation as entrepreneurs and infrastructure improvement is positively associated with gender participation in the workforce (Wamboye and Seguino, 2015).

Recent studies highlight the link between women managers and their propensity to innovate. Esarey and Chirillo (2013) find that risk-aversion or differences in morals between women and men does not lead to any difference in innovation behaviour, but it is the access to financial resources increases the propensity of women-led firms to innovate exponentially (Becker-Blease and Sohl, 2007; Audretsch, et al. 2022). Others suggest that women-led firms are disadvantaged vis a vis male-led firms in terms of access to finance the due to differences in risk perceptions of investors (Estrin et al. 2013; Belitski and Desai, 2019; Bednar et al. 2019), and this impacts on the likelihood of women led businesses to innovate successfully.

3. Development of Hypotheses and Research Model

There is no clear and indisputable guide as to what proportion of firms should have female top managers or female owners. Despite females being approximately one half of the human population in almost all countries they represent significantly less than one half of the labour force, in no small part due to parenthood. For similar reasons when they do work a higher proportion of women work on a part-time basis, a mode of working not well suited to the top manager of a firm. For these reasons this study uses the share of females in the full-time labour force as the benchmark. Thus, if the proportion of firms with female top managers falls below the share of women in the full-time labour force this study considers it worthy of further investigation.

Our study, in part, examines data from 26 countries for which World Bank Enterprise Surveys were conducted (described in more detail in section 4). Table 1 presents some summary details.

Table 1 : female employment, management and ownership			
Foreign Ownership	**Mean share of females**	**Proportion of firms with**	
	in firm employment	**female top**	**some female**
		manager	**ownership**
Full Sample	29.6%	16.0%	35.1%
By Any Foreign Ownership			
No foreign ownership	29.4%	16.3%	35.7%
Some foreign ownership	31.1%	12.6%	29.0%
By Majority Foreign Ownership			
less than 50% foreign owned	29.4%	16.3%	35.8%
50% or more foreign owned	32.2%	11.2%	24.8%

These show that, in our sample, the share of females in full-time employment was just under 30% but only 16% of firms had a female top manager. Female ownership is more complex as our data did not distinguish between mainly or wholly female owned firms and ones with minority female ownership.

The determinants of the gender of a firm's top managers must include a number of key firm characteristics. For example, one that is a focal point of this study is whether or not the firm is foreign owned. There exists a substantial literature that affiliates of foreign firms do adjust to the culture of the home country (Halversson et al. 2022; Tang and Zhang, 2021; Magda and Salach, 2020; Kapás and Czeglédi, 2019). This would suggest that such affiliates are no more or less likely to employ female top managers than domestic firms. However, as the data reported in Table 1 suggest otherwise it is clearly a worth testing whether or not these are statistically significant differences.

Hypothesis 1: affiliates of foreign firms are no more or less likely to employ a female top manager than domestic firms in the host country.

Although not strictly a firm characteristic the sector to which the firm belongs is also very relevant to both female employment and top managers of firms. There is an extensive literature on gender segregation at work (see, for example, Reskin, 1993; Jarman et al. 2012). Research by, for example, Carrington and Troske (1998) suggests that the same forces that shape female employment to be concentrated in certain occupations also shape female top managers to be concentrated in the same sectors. The literature focuses on the occupational choices and the restrictions upon them faced by women. Gender segregation by occupation is, in many cases, linked to such segregation by sector. For example, health care occupations or teachers are specific to one or two sectors. Although this is not true for all occupations it is for a sufficient number for there to be observable gender segregation by sector.

Table 2 presents details of the Duncan and Duncan (1955) gender segregation index calculated by sector for each country in our sample. Appendix 4 provides more complete details of female employment and the proportion of firms with female top managers or owners by sector.

Table 2: Gender segregation indices by industry at the country level			
Country	**Gender Segregation Index by 3 digit ISIC (min=0.max-1)**	**Country**	**Gender Segregation Index by 3 digit ISIC (min=0.max-1)**
Argentina	0.335	Malaysia	0.297
Bolivia	0.387	Morocco	0.356
Colombia	0.363	Netherlands	0.281
Cyprus	0.335	Peru	0.317
Egypt	0.355	Poland	0.340
France	0.296	Portugal	0.377
Greece	0.322	Romania	0.409
Guatemala	0.379	Russia	0.396
Italy	0.181	Spain	0.380
Jordan	0.433	Sweden	0.216
Kazakhstan	0.378	Thailand	0.879
Kenya	0.272	Tunisia	0.495
Lebanon	0.209	Turkey	0.408

This leads to the second hypothesis:

Hypothesis 2: the concentration of female top managers in certain sectors is linked to the concentration of females in employment in the same sectors.
Note that this is not simply an assertion that female bosses are more likely to employ female workers, although that is very likely to be part of the explanation. Females are also more likely to make similar occupational choices or to be forced by circumstances into similar choices. In short it is an assertion that gender segregation affects gender in both employment and top management.

The gender of the top manager and owners of a firm are driven by a complicated mix of different circumstances. These include not only firm characteristics such as foreign ownership and sector characteristics such as gender segregation but also country level determinants. Appendix 3 provides details of the proportion of firms with a female top manager or with some female ownership for the 26 countries in our sample of enterprises. It is very clear that there is important variation between one country and another. For example, only just over 4% of firms in Jordan had a female top manager. In Malaysia nearly 35% of firms did. This evidence leads to a conclusion that country level characteristics play a potentially important role in understanding the determinants of female participation at the top of firms.

One source of relevant differences between countries is macro-economic – for example, differences in per capita income. National legal and institutional differences are also likely to be of consequence. A third source of relevant differences is also a particular focus of this study – national differences in cultural attitudes and values.

Hypothesis 3: differences between countries are important in understanding the determinants of female participation at the top of firms. Macro-economic and institutional characteristics are relevant but differences in national cultural attitudes are also important.
Cultural attitudes towards women in business can be clearly identified from existing surveys. For example, it is possible to identify responses to the statement: “Men make better business

executives than women do". Although these attitudes are of clear potential relevance they do not exist in a vacuum. For example, they may well be related to religion and to the level of education of the individual. It is important to understand how attitudes to female executives are related to these other cultural values for two reasons. Firstly, it helps managers of internationalised firms to understand how to adapt to the values in the country of affiliates and managers of the affiliates to position the company in line with local cultural values. Secondly, policy makers in the country of may be able to influence long term change by means of, for example, investment in education.

Hypothesis 4: cultural attitudes are related to several other shared values in a way that can provide a basis for business and policymakers to adapt.

To address the hypotheses the research model uses two distinct samples – the main sample comprises just under 24,000 enterprises from 26 countries and the secondary sample covers over 147,000 individuals from a much larger sample of countries. The sample of enterprises is used to analyse the probability of observing (a) female top manager and (b) some female ownership. The range of explanatory variables includes firm level and country level characteristics. At the country level macro-economic, institutional and national cultural attitudes are all included, with the secondary set of data used to generate summary national cultural values. The thrust of this is to provide a clear and comprehensive analysis of why there are not more females at the top of firms.

The secondary sample (of individuals) was used not only to provide summary measures of national attitudes to women for the main analysis but also to provide an analysis of how these attitudes are related to other cultural values.

4. Research Method and Data

Data for the study were taken from several sources. For the main analysis data were taken from the World Bank Enterprise Surveys from 26 countries. Details of the countries involved and the sample size for each are provided in Appendix 1. These (firm level) data were combined with country level data from three sources: *World Development Indicators* (World Bank), the *Women, Business and the Law database* (World Bank) and from the combined *European Values Survey and World Values Survey* database. For the (separate) supporting analysis of cultural attitudes the *European Values Survey and World Values Survey* database was used for a larger sample of 88 countries. Details are again provided in Appendix 1.

The first step, using the augmented enterprise survey data, was to conduct a probit analysis of two (0,1) dependent variables at the firm level: a female top manager and some female ownership. Details of these and the independent variables used for the analysis are presented in Appendix 2A. As discussed earlier there are wide range of possible determinants of female participation at the top of firms and a single, coherent and tightly specified theory that closely corresponds with observable data simply does not exist. Under these circumstances it has for long been argued that researchers should work from a general specification (to reduce the risk of omitted variable bias) to a specific one – see, for example, Campos et al (2005) and Hoover and Perez (1999). This approach was followed for the estimation of both probit models. The results reported are for the specific version of each model with redundant variables excluded. The full set of explanatory variables used in the general specification are

given in Appendix 2A. Those not appearing in the results tables were found to be jointly statistically insignificant.

An important limitation to analysis using surveys of enterprises and of individuals is the potential heterogeneity of the sample. Although the probit model may well be effective in summarising the sample as a whole there may be important behavioural differences between various sub-samples that are not captured. In these cases, inferences drawn from the full sample could be misleading. An example from research on an entirely different topic comes from research into the gender pay gap. Research repeatedly estimates a significant gender pay gap for the US but when the sample is divided by age the gender pay gap disappears from workers under 25 years old.

In this case there is several possible ways the sample could meaningfully be sub-divided so simply doing so is not a feasible solution. The most common way to check whether there is a potential problem with sample heterogeneity is to use a matching estimator. Most of these seek to provide a "like for like" comparison. The sample is divided into "treated" (say foreign owned) firms and "untreated" (wholly domestic owned) firms. A control group of the untreated firms is created by selecting domestic firms which as closely as possible match the treated firms in all key characteristics other than being foreign owned. By minimising all differences other that the treatment variable the matching estimator provides a better basis for inference in the presence of sample heterogeneity.
For these reasons this study uses two different matching estimators to act as robustness checks on the conclusions drawn from the two probit models. Matching models typically estimate the average treatment effect for treated group (ATT). This is defined as:

$$ATT = E(Y_{1i} - Y_{0i} \mid D_i = 1) \equiv E(\beta_i \mid D_i = 1) \qquad (1)$$

where Y is the outcome (say, gender of the top manager), with subscript 1 for those firms that are *treated* (female top manager) and subscript 0 for those that are not (male top manager). D is an indicator of the treatment received (by definition 1 for treated and 0 for untreated).

Matching models differ in the way in which the ATT is estimated. As a robustness check on the two probit models a *coarsened exact matching* approach was applied. As with other matching models it creates a control group of "untreated" firm which are comparable to the "treated" ones, but it goes a little further. It is, of course, possible that there are treated firms (say with a female top manager) that are simply not comparable to any of the untreated ones (male top manager). Coarsened exact matching also removes such firms from the sample of treated firms and, in consequence, creates a stronger basis for comparison. Further details of this technique are given in Blackwell et al (2009) and Iacus et al (2012).

To provide a robustness check on the conclusion of a strong association between females in top positions and female employment we used an alternative matching estimator – inverse probability weighted regression adjustment (IPWRA). Like other matching estimators it uses a probability model to estimate the probability of observing a treated firm given the shared key characteristics other than the treatment variable. It then estimates an outcome regression (in this case with the share of females in firm employment) using these common characteristics as explanatory variables, weighted by the inverse of the estimated probability.

One advantage of this technique is that it is not restricted to a single treatment variable. In this case it allowed the two (0,1) variables for female top manager and female ownership to be used as treatment variables with the share of females in firm employment as the outcome.

Further details of IPWRA are available from Cattaneo (2010) and Cattaneo et al (2013). Hirano et al (2003) show that IPWRA belongs to the class of doubly robust estimators. That is, it has the useful property that if one of the probability or outcome models is mis-specified (but the other is not), the estimator remains consistent. King and Neilsen (2019) also show that these estimators have lower bias than alternative matching estimators.

The final component of our analysis used the *European Values Survey and World Values Survey* database to analyse the links between attitudes to women as business executives to other cultural attitudes and to individual characteristics such as age, gender and level of education. The data for almost all variables were responses according to a Likert scale. To analyse this, we used responses to (a) *men make better business executives than women* and (b) *when jobs are scarce men should have more right to a job*, as dependent variables for two separate ordered probit models. The list of variables used for this analysis is provided in Appendix 2B. For more details on ordered probit estimation see De Luca and Perotti (2011).

5. Results

Table 3 presents the results of the probit analysis for the probability of observing (a) a female top manager and (b) some female ownership of the firm. The results reported are the consequence of working from general to specific with redundant variables excluded. This means that the list of explanatory variables differs between the two probit models estimated.

Table 3: Probit analysis of the probability of observing a female top manager or some female ownership (marginal effects)			
		Dependent variable	
Variable	Description	femman	femown
		dF/dx	dF/dx
d078	"men make better business executves", average score by	0.0741***	0.2408***
	country(1 = stromgly agree, 4 = strongly dsagree)	(0.0124123)	(0.0142638)
forgn50	50% or more foreign ownership (0,1)	-0.0258***	-0.0953***
		(0.0085491)	(0.012266)
mgrexp1	years of experience of top manager	-0.0017***	0.0011***
		(0.0002069)	(0.00028)
femshare	share of females in firm employment	0.1835***	0.2234***
		(0.008069)	(0.0118377)
burcy	perceived severity of bureaucratic obstacles	-0.0235***	
	(0=no obstacle,4=very severe obstacle)	(0.0027549)	
export	exports as a % of total sales		0.0004***
			(0.0001238)
newprod	new product introduced in last 3 years (0,1)		0.0350***
			(0.0081574)
newproc	new process introduced in last 3 years (0,1)		0.0388***
			(0.0092667)
empl	full time employment by firm	-0.0265***	
		(0.0098631)	
opw	firm productivity - output per worker	-0.0009***	
		(0.0002433)	
ppw	firm profitability - profit per worker	-0.0010***	
		(0.0002503)	
wblindex	women, business and law overall index (0-100)	-0.0038***	
		(0.0003253)	
wentrindex	women, business and law entrepreurship index (0-100)	0.0023***	-0.0008***
		(0.0002843)	(0.0003329)
femlab	female labour foce particpation rate (country)	0.0056***	0.0066***
		(0.0002105)	(0.0002607)
gdpcap	GDP per capita (current US $)	-0.0397***	-0.0915***
		(0.0030933)	(0.0039749)
ruralpop	rural population as a % of total	0.0009***	-0.0025***
		(0.0001938)	(0.0002578)
	Number of observations	20416	21830
	LR chi2(13) / LR chi2(11)	2060.03	3506.69
	Prob > chi2	0.000	0.000
	Pseudo R2	0.1156	0.1231
	Log likelihood	-7880.3974	-12490.633
Standard errors are in parentheses. *** indicates statistically significant at 99% confidence			

In relation to hypothesis 1 the results show that foreign owned firms are statistically significantly (at 99% confidence) less likely to employ a female top manager or to have some female ownership than other firms. In both cases the (marginal) effect is of a modest but not a trivial magnitude. Contrary to hypothesis 1 foreign ownership can be shown to have a negative effect on women at the top of firms.

The coefficients for the share of females in employment is strongly positive and statistically significant (at 99%) for both dependent variables. That is, the results strongly support that

the view that female top managers and female owners in large measure tend to be concentrated in the same firms (and hence same sectors) as female employees. They show that a degree of gender segregation applies at the top of firms in a similar way to the pattern of employment.

The women, business and the law entrepreneurship index is statistically significant at 99% confidence for both the probability of observing a female top manager and for observing a female top manager and for some female ownership. As one might expect the effect is positive but of a modest magnitude for a female top manager. Perversely it is negative for some female ownership. In principle a more favourable institutional structure in the country should improve both. It would need further research but, speculatively, it may be that a more hostile institutional backdrop diverts females from active participation as a top manager to more passive ownership.

An important result is that cultural attitudes which support women as executives has a statistically significant (again at 99% confidence) positive effect on both female top managers and female ownership. These positive effects are also of some magnitude. In short, the results (hypothesis 3) provide strong support for the view that national cultural attitudes are an important determinant of whether firms have a female top manager or some female owners.

A common problem with surveys of individuals or of firms is of sample heterogeneity. That is, the probit regressions provide a summary of the whole sample, but it may be that behaviour is better represented by two or more sub-samples. To avoid the possibility of misleading conclusions Table 4 presents a series of robustness checks using coarsened exact matching. This removes observations from both the treated group (say, firms with a female top manager) and the untreated group (firms with no female top manager) which do not share common key characteristics. Only like is compared with like.

TABLE 4: coarsened exact matching analysis for female top managers and female ownership

Treatment/outcome	**label**	**ATT**	**Std. Err.**	**t**	**P>t**
Outcome: female top manager					
Any foreign ownership (0,1)	foreign0	-0.0940***	0.0346	-2.72	0.007
50% or more foreign owned (0,1)	forgn50	-0.1169***	0.0399	-2.93	0.003
Country score for "Men make better business executives":					
Diagrees or strongly disagrees (0,1)	d078	0.1239**	0.0637	1.95	0.052
Outcome: some female ownership					
Any foreign ownership (0,1)	foreign0	-0.0811***	0.0297	-2.73	0.006
50% of more foreign owned (0,1)	forgn50	-0.1892***	0.0344	-5.5	0.000
Country score for "Men make better business executives":					
Diagrees or strongly disagrees (0,1)	d078	0.8258***	0.0513	16.09	0.000

**** indicates statistically significant at 99% confidence, ** at 95% confidence**

The results show the key conclusions of Table 3 to be robust with respect to the choice of estimator. Foreign ownership (defined separately to be (a) any and (b) majority) to have a statistically significant negative effect on both a female top manager and some female ownership. They also show that cultural attitudes in favour of female executives to have a positive and statistically significant effect on both.

As a robustness check on the conclusions linking females at the top with the share of females in firm employment we used a different matching estimator – IPRWA. The key conclusion was of gender segregation: that females at the top tend to concentrate in the same firms and sectors as female employees as a result of the same social drivers. The probit regression models specified the two (0,1) variables as the dependent (outcome) variables. The IPWRA robustness check uses the reverse: the outcome is the share of females in firm employment and the treatments are the two (0,1). This helps to not only control for the effects of heterogeneity but also for misspecification with respect to the direction of "causality".

Table 5: IPWRA Analysis of the Share of Females in Firm Employment				
Outcome		**Absolute Effects**		
		Some female ownership	**Female top manager**	**Both**
Share of females in firm employment	**ATT**	0.0568***	0.0872***	0.1494***
	Std Error	(0.0046)	(0.0112)	(0.0068)
		Relative Effects		
		Ownership vs. top manager	**Ownership omly vs. both**	**Top manager only vs. both**
	ATT	0.0329***	0.0967***	0.0748***
	Std Error	(0.0119451)	(0.0074079)	(0.0146)
Outcome		**Absolute Effects**		
		More than 50% foreign ownership	**Female top manager**	**Both**
Share of females in firm employment	**ATT**	0.0315***	0.0950***	0.0742***
	Std Error	(0.0082)	(0.0066)	(0.0222)
		Relative Effects		
		foreign ownership vs. female top manager	**foreign ownership only vs. both**	**top mamager only vs both**
	ATT	0.1056***	0.0623***	-0.0231
	Std Error	(0.0133)	(0.0233)	(0.0228)
Robust standard errors are in parentheses				
***** significant at 99% confience.**				

Table 5 confirms that the conclusion of a strong, statistically significant (at 99% confidence) positive association between (a) a female top manager and (b) some female ownership is robust with respect to the choice of estimator. It supports the view that gender segregation is an important factor in understanding the determination of women at the top of firms.

6. Comments

The analysis based on the World Bank enterprise surveys makes a strong case that national attitudes to women as business executives do have an effect of lowering the number of firms with female top managers, an effect that is not only statistically significant but also non-trivial in magnitude. Rather than treating these attitudes as simply been given in a cultural vacuum it is possible to understand more about other values and attitudes to which they are linked.

Table 6 provides details of an ordered probit analysis of a sample of over 140,000 individuals drawn from a total of 88 countries (including the 26 in the enterprise survey sample) identified in the combined EVS and WVS database. The analysis is conducted for two different dependent variables – (a) "men make better business executives than women do" and (b) "when jobs are scarce men should have more right to a job than women". The analysis provides a basis for assessing which other attitudes and which personal characteristics are most strongly associated with such attitudes,

The results firstly show that both sets of attitudes – towards females as executives and females in work – are positively related to each other. The relevant coefficients are statistically significant and of a consequential magnitude. This means that both attitudes share much common ground. Unsurprisingly a negative attitude to women as business executives is, in large measure, not shared by women themselves. The relevant coefficient is not only statistically significant (at 99%) but of considerable magnitude. More curiously women seem to be against but much less likely to be opposed to the view that men should be preferred to women when jobs are scarce. The coefficient is again positive and statistically significant (at 95%) but of a much lower magnitude.

The analysis in Table 6 shows that the higher the educational level of the respondent the more likely to disagree that women make worse executives and that men should be prioritised for scarce jobs. In both cases the relevant coefficients were positive, statistically significant and non-trivial in size. The degree of intolerance of individuals (with respect to potential neighbours) was negatively and statistically significantly related to both attitudes to women. That is, those that exhibit intolerance were less likely to be sympathetic to women executives or women at work.

A key feature shaping both sets of attitudes to women is religion. The importance of God to the individual is shown in Table 6 to have a negative and statistically significant effect (99% confidence) on whether men make better executives but no statistically significant effect on men being prioritised for jobs. Both Roman Catholics and Protestants were found to be statistically significantly (at 99%) more likely to disagree with both unfavourable (to women) statements. Orthodox Christians were significantly more likely to agree that men made better executives but not that men should be preferred when jobs are scarce. No statistically significant effects were obtained relating the Jewish religion to either of the two statements. Both Buddhists and Muslims were statistically significantly (at 99%) more likely to agree with both unfavourable statements. Attitudes to women as business executives are more likely to be negative as the strength of belief in God increases. Several religions are positive about women executives – mainly Christians other than orthodox. No single religion but many (such as Orthodox Christians, Buddhists, Hindus and Muslims) are associated with attitudes not supportive of women executives.

Table 6: Ordered probit analysis of cultural attitudes to women as executives and employees			
Variable	**Description**	**Dependent variable**	
		d078	**c0011**
c001	Men should have more right to a job than women	0.2604***	
	strongly agree = 1, strongly disagree = 4	(0.0050575)	
d078	Men make better business executives than women do		0.2488***
	strongly agree = 1, strongly disagree = 4		(0.004224)
c039	Work is a duty towards society	0.0363***	0.0792***
	strongly agree = 1, strongly disagree = 5	(0.0032145)	(0.0033084)
d061	Pre-school child suffers with working mother	0.2664***	0.0669***
	strongly agree = 1, strongly disagree = 4	(0.0038172)	(0.0040299)
e036	Private versus government ownership of business	-0.0084***	-0.0125***
	strongly private = 1, strongly government = 10	(0.0011858)	(0.0012533)
female	female (0,1)	0.3511***	0.0159**
		(0.0065299)	(0.0068769)
e233	Democracy: Women have the same rights as men.	0.0548***	-0.0016049
	not important = 1, essential = 10	(0.0013014)	(0.001388)
x003	Age (years)	0.0001747	0.0008***
		(0.0001968)	(0.0002049)
x025r	Highest educational level attained by respondent	0.0849***	0.1276***
	0 = less than primary, 8 = doctorate	(0.004395)	(0.0045999)
neighbours	intolerance measure	-0.1213***	-0.0438***
	min.=0, max =5	(0.0026183)	(0.0027731)
f063	How important is God in your life	-0.0227***	-0.0207702
	not at all = 1 , very important = 10	(0.001239)	(0.0012729)
_lf025_1	Roman Catholic (0,1)	0.1181***	0.1069***
		(0.0106058)	(0.0108647)
_lf025_2	Protestasnt (0,1)	0.1444***	0.0498***
		(0.0125179)	(0.0126038)
_lf025_3	Orthodox Christian	-0.2219***	-0.0057
		(0.012051)	(0.0125789)
_lf025_4	Jewish	0.096	-0.0197
		(0.0729001)	(0.0735991)
_lf025_5	Muslim	-0.3544***	-0.3938***
		(0.0117196)	(0.0124857)
_lf025_6	Hindu	-0.0812*	-0.0581
		(0.0465108)	(0.0493795)
_lf025_7	Buddhist	-0.2740***	-0.1078***
		(0.0170319)	(0.0181619)
_lf025_8	Other Christian	0.1362***	0.1110***
		(0.0220307)	(0.0225664)
_lf025_9	Other Religion	0.1628***	-0.0501**
		(0.0235237)	(0.0239841)
	Number of observations	116,861	116,861
	LR chi2(19)	30769.5	16689.88
	Prob > chi2	0.000	0.000
	Pseudo R2	0.1039	0.0720
	Log likelihood	-132667.83	-106773.14

7. Conclusions and recommendations for business managers and policymakers

A key finding of the study is that foreign owned firms are statistically significantly lees likely to have a female at the top than wholly domestic ones. This is a point that, to date, has received little attention in the International Business literature. It is in apparent contradiction to the fact that, in our sample, foreign owned firms employed a higher proportion of females than domestic ones. This points to the potential role of cultural attitudes. It is top management rather than the ordinary employee that needs much greater compatibility with local cultural attitudes. The results of the study imply that foreign owners are over cautious in selecting top managers of affiliates who can work well with local culture. On the other hand not choosing the best person to lead a local affiliate on grounds of gender is clearly not in the best interests of any business so there should be incentives for change.

That cultural attitudes are of consequence in determining the gender of the top management of firms is of particular consequence for international business. The management team of a parent company are often under pressure in their home country to provide more prominent roles for women. Findings, as in this study, thar affiliates are less likely to have female top managers than local domestic firms are a potential embarrassment in this respect. On the other hand, the existing literature contains an abundance of evidence (see Halversson et al. 2022; Tang and Zhang, 2021; Magda and Salach, 2020; Klasen et al. 2020; Kapás and Czeglédi, 2019; Webster and Piesse, 2018; Amin, et al. 2016) that affiliates of transnational firms do have to adapt to local culture to survive. The gender of the top manager of a local affiliate is clearly one such issue.

Aspects of attitudes to women executives in some cultures will not be easy for policy makers to change in part because of links to religion. A number of prominent countries in our sample have in recent years backtracked from secularism. Moves in the opposite direction – towards restoring and enhancing secularism - would provide a more favourable cultural climate for female executives. Another key finding is that the higher the level of education of an individual the less likely they are to be hostile to female executives. Changes in attitudes to women is but one of many potential gains from strengthening education.

As the results of this study show it is, in large measure, men rather than women who are opposed to female executives. It is, therefore, attitudes of men towards female executives that are most in need of change. This starts in a much wider context than in business alone. Policies to provide political and social empowerment of women could well have a by-product of also empowering them in positions at the top of firms.

This study has shown that much of what helps determine women at the top of firms (or the lack of) is only partly within the normal scope of control of most businesses. Gender segregation at work was declining in many countries for some time but has been resistant to further change. The drivers involved, as the literature on gender segregation shows, are far from being within the control of any individual business. This means that real change is more in the hands of policy makers and it is debatable how far policy makers could induce rapid change. The measures needed to change attitudes are, in part, educational and in part require social change. For example, both business and, more importantly, policy makers need to do more to understand and change the forces that shape gender segregation. People typically work in teams not as individuals and there are external benefits to be gained from reducing barriers to appointing the most capable person to any position but the top manager of a firm is, by definition, one of the most important.

REFERENCES

Adams, R. and Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance, *Journal of Financial Economics*, 94 (2): 291–309.

Aly, Y.H. and Quisi, I. A. (1996). Determinants of Female Labor Force Participation in Kuwait: A Logit Analyses. *The Middle East Business and Economic Review*, 8(2).

Amin, M. and Islam, A. (2015). Does mandating non-discrimination in hiring practices influence women's employment? Evidence using firm-level data. *Feminist Economics*, 21(4), 28–60.

Amuedo-Dorantes, C. and S. de la Rica. (2006). The Role of Segregation and Pay Structure on the Gender Wage Gap: Evidence from Matched Employer-employee Data for Spain. *The B.E. Journal of Economic Analysis and Policy* 5: 1–34.

Audretsch, D.B., Belitski, M. and Brush, C. (2022). Innovation in women-led firms: an empirical analysis, *Economics of Innovation and New Technology,* 31:1-2, 90-110, DOI: 10.1080/10438599.2020.1843992

Ball, J. A. (2008). Feminization of the Labor Force, Development, and Economic Reform: Effects on Job Segregation by Sex. *Journal of Developing Areas,* 42(1): 53–67.

Bayard, K., Hellerstein, J., Neumark, D. and Troske, K. (2003). New evidence on sex segregation and sex differences in wages from matched employee–employer data. *Journal of Labor Economics*, 21(4):887–922

Becker-Blease, J. R., and Sohl, J. E. (2007). Do Women-Owned Businesses Have Equal Access to Angel Capital? *Journal of Business Venturing,* 22 (4): 503–521.

Bednar, S. and Gicheva, D. (2014). Are Female Supervisors More Female-Friendly? *American Economic Review,* 104: 370–375.

Bednar, S., Gicheva, D. and Link, A. N. (2019). Innovative Activity and Gender Dynamics. *Small Business Economics*. doi:https://doi.org/10.1007/s11187-019-00282-2.

Belitski, M. and Desai, S. (2019). Female Ownership, Firm age and Firm Growth: A Study of South Asian Firms. *Asia Pacific Journal of Management*. doi:https://doi.org/10.1007/s10490-019-09689-7.

Bergmann, B. (1974). Occupational Segregation, Wages and Profits When Employers Discriminate by Race or Sex. *Eastern Economic Journal*, 1(2): 103–10.

Besamusca, J., Tijdens, K., Keune, M., & Steinmetz, S. (2015). Working women worldwide. Age effects in female labor force participation in 117 countries. *World Development*, 74: 123–141.

Blackwell, M., Iacus, S., King, G., & Porro, G. (2009). cem: Coarsened exact matching in Stata. *The Stata Journal*, *9*(4): 524-546.

Blau, F. D., Brummund, P. and Liu. A. Y.H. (2013). Trends in Occupational Segregation by Gender 1970–2009: Adjusting for the Impact of Changes in the Occupational Coding System. *Demography,* 50: 471–492.

Blau, F.D. and Kahn, L.M. (2017). The Gender Wage Gap: Extent, Trends, and Explanations. *Journal of Economic Literature,* 55(3): 789–865.

Blau, F.D. and Kahn, L.M. (2006). The U.S. Gender Wage Gap in the 1990s: Slowing Convergence. *Industrial and Labor Relations Review,* 60(1): 45–66.

Blecker, R..A. and Seguino, S (2002). Macroeconomic effects of reducing gender wage inequality in an export-oriented, semi-industrialized economy. *Review of Development Economics,* 6(1):103–119.

Borrowman, M. and Klasen, S. (2020). Drivers of Gendered Sectoral and Occupational Segregation in Developing Countries. *Feminist Economics*, 26 (2): 62-94, DOI: 10.1080/13545701.2019.1649708

Brynin, M., and Perales, F. (2015). Gender Wage Inequality: The De-gendering of the Occupational Structure. *European Sociological Review,* 32: 1–13.

Campos, J., Ericsson, N. R., & Hendry, D. F. (2005). *Introduction: General to- Specific Modelling. (1–81).* Cheltenham, UK: Edward Elgar.

Caraway, T.L. (2007). *Assembling Women: The Feminization of Global Manufacturing*. Ithaca, NY: Cornell University Press.

Carrington, W. J., & Troske, K. R. (1998). Sex segregation in US manufacturing. *ILR Review*, *51*(3), 445-464.

Carter, D., D'Souza, F., Simkins, B. and Simpson, W. (2010). The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review*, 18 (5): 396–414

Cattaneo, M. D. (2010). Efficient semiparametric estimation of multivalued treatment effects under ignorability. *Journal of Econometrics*, 155 (2), 138–154.

Cattaneo, M. D., Drukker, D. M., and Holland, A. D. (2013). Estimation of multivalued treatment effects under conditional independence*. Stata Journal,* 13 (3), 407–450.

Cavalcanti, T. and Tavares, J. (2007). The output cost of gender discrimination: a model-based macroeconomic estimate. Discussion Paper 6477. Centre for Economic Policy Research, London

Chang, M. L. (2004). Growing Pains: Cross-National Variation in Sex Segregation in Sixteen Developing Countries. *American Sociological Review* 69 (1): 114–37.

Charles, M. and Grusky, D.B. (2004). *Occupational Ghettos: The Worldwide Segregation of Women and Men*. Stanford, CA: Stanford University Press.

Cipollone, A., Patacchini, E. and Vallanti, (2014). G. Female labour market participation in Europe: novel evidence on trends and shaping factors. *IZA J Labor Stud* 3, 18. https://doi.org/10.1186/2193-9012-3-18

De Luca, G., and V. Perotti. (2011). Estimation of ordered response models with sample selection. *Stata Journal* 11: 213–239.

Duflo, E. (2012). Women Empowerment and Economic Development, *Journal of Economic Literature,* 50 (4): 1051–1079

Duncan, O. D. and Duncan, B. (1955). A methodological analysis of segregation indexes. *American sociological review*, 20 (2): 210-217.

Esarey, J. and Chirillo, G. (2013). 'Fairer sex' or purity myth? Corruption, gender and institutional context. *Politics and Gender* 94: 361-389.

Estrin, S. and Mickiewicz, T. (2011). Institutions and Female Entrepreneurship. *Small Business Economics* 37 (4): 397.

Fama, E. and Jensen, M. (1983). Separation of ownership and control. *Journal of Law and Economics*, 26 (2): 301–325.

Farré, L. and Vella, F. (2007), The intergenerational transmission of gender role attitudes and its implications for female labor force participation, *Institute of Labor Economics (IZA), Discussion Paper No. 2802.*

Fernández, R. (2007). Women, work, and culture. *Journal of the European Economic Association*, 5(2–3): 305–332.

Fernandez, R., Fogli, A. and Olivetti, C. (2004). Mothers and sons: Preference formation and female labor force dynamics. *The Quarterly Journal of Economics*, 119(4), 1249–1299.

Fernandez, R.and Fogli, A. (2009). Culture: An empirical investigation of beliefs, work, and fertility. *American Economic Journal: Macroeconomics, American Economic Association*, 1(1): 146–177.

Gaddis, I. and Klasen, S. (2014) Economic development, structural change, and women's labor force participation. *Journal of Population Economics,* 27: 639–681. https://doi.org/10.1007/s00148-013-0488-2

Gasparini, L. and Marchionni, M. (2015). *Bridging gender gaps? The rise and deceleration of female labor force participation in Latin America*. La Plata, Argentina: Centre for Distributive Labor and Social Studies (CEDLAS), Universidad Nacional de La Plata.

Goldin, C. (2014). A Grand Gender Convergence: Its Last Chapter. *American Economic Review* 104: 1091–1119.

González, F.A.I. and Virdis, J.M. (2022). Global development and female labour force participation: evidence from a multidimensional perspective, *Journal of Gender Studies*, 31(3): 289-305, DOI: 10.1080/09589236.2021.1949581

Goodstein, J., Gautam, K. and Boeker, W. (1994). The effects of board size and diversity on strategic change, *Strategic Management Journal*, 15 (3): 241–250

Gradín, C. (2020). Segregation of women into low-paying occupations in the United States, *Applied Economics*, 52 (17): 1905-1920, DOI: 10.1080/00036846.2019.1682113

Halvarsson, D., Lark, O. and Tingvall, P.G. (2022). Foreign Ownership and Transferring of Gender Norms, IFN Working Paper No. 1433, Research institute of Industrial Economics, Stockholm: Sweden.

Hijzen, A., Martins, P.S., Schank, T. and Upward, R. (2013). Foreign-owned firms around the world: a comparative analysis of wages and employment at the micro-level. *European Economic Review,* 60:170–188.

Hillman, A. and Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review*, 28 (3): 383–396.

Hirano, K., Imbens, G. W., and Ridder, G. (2003). Efficient estimation of average treatment effects using the estimated propensity score. *Econometrica,* 71(4): 1161-1189.

Hoover, K. D., and Perez, S. J. (1999). Data mining reconsidered: encompassing and the general-to-specific approach to specification search. *The Econometrics Journal*, 2(2): 167-191.

Iacus, S. M., King, G., and Porro, G. (2012). Causal inference without balance checking: Coarsened exact matching. *Political analysis*, 20(1): 1-24.

ILO (2021). Differences between male and female labour force participation rates. Online: https://www.ilo.org/infostories/en-GB/Stories/Employment/barriers-women#global-gap

Islam, A. and Amin, M. (2016). Women managers and the gender-based gap in access to education: Evidence from firm-level data in developing countries. *Feminist Economics*, 22(3): 127–153.

Islam, A., Muzi, S. and Amin, M. (2019). Unequal Laws and the Disempowerment of Women in the Labour Market: Evidence from Firm-Level Data, *The Journal of Development Studies*, 55 (5): 822-844, DOI: 10.1080/00220388.2018.1487055

Jarman, J., Blackburn, R. M., and Racko, G. (2012). The dimensions of occupational gender segregation in industrial countries. *Sociology*, 46(6): 1003-1019.

Javdani, M. (2015). Glass ceilings or glass doors? the role of firms in male–female wage disparities. *Canadian Journal of Economics* 48(2): 529–560.

Jensen M. and Meckling, W. (1976). Theory of the firm: Managerial behaviour, agency cost, and ownership structure. *Journal of Financial Economics*, 3 (5): 305–360.

Kapás, J., Czeglédi, P. (2020). The impact of culture on FDI disentangled: separating the "level" and the "distance" effects. *Econ Polit* 37: 223–250. https://doi.org/10.1007/s40888-020-00175-8

Killingsworth, M.R. and Heckham, J.J. (1986). Chapter 2 female labor supply: A survey. *Handbook of Labor Economics*, pp. 103 – 204. doi: https://doi.org/ 10.1016/S1573- 4463(86)01005-2. URL http://www.sciencedirect.com/science/article/pii/ S1573446386010052.

King, G. and Nielsen, R. (2019). Why Propensity Scores Should Not Be Used for Matching." *Political Analysis*, 27: 4.

Klasen, S. (2002) Low schooling for girls, slower growth for all? Cross-country evidence on the effect of gender inequality in education on economic development. World Bank Econ Rev 16(3): 345–373.

Klasen, S. and Lamanna, F. (2009). The impact of gender inequality in education and employment on economic growth: new evidence for a panel of countries. *Feminist Economics* 15(3): 91–132.

Klasen, S., Le, U.T.N., Pieters, J. and Silva, M.S. (2021). What Drives Female Labour Force Participation? Comparable Micro-level Evidence from Eight Developing and Emerging Economies, *The Journal of Development Studies*, 57 (3): 417-442, DOI: 10.1080/00220388.2020.1790533

Kodama, N., Javorcik, B. S. and Abe, Y. (2018). Transplanting corporate culture across international borders: Foreign direct investment and female employment in Japan. *The World Economy*, 41 (5): 1148–1165.

Lefebvre, P., Merrigan, P. and Verstaete M. (2009). Dynamic labor supply effects of childcare subsidies: Evidence from a Canadian natural experiment on low-fee universal. *Labor Economics*, 16(5):490–502.

Lincove, J.A. (2008). Growth, girls' education, and female labor: a longitudinal analysis. *Journal of Developing Areas*, 41(2): 45–68

Liu, P.W, Meng, X. and Zhang, J. (2000). Sectoral gender wage differentials and discrimination in the transitional Chinese economy. *Journal of Population Economics* 13(2): 331–352.

Lopez-Acevedo, G., Devoto ,F., Morales, M. and Rodriguez, J.R. (2021). Trends and Determinants of Female Labor Force Participation in Morocco An Initial Exploratory Analysis, World Bank Policy Research Working Paper No. 9591.

Luci, A. (2009). Female labour market participation and economic growth. *International Journal of Innovation and Sustainable Development*, 4(2/3): 97–108.

Magda, I. and Sałach, K. (2021). Gender pay gaps in domestic and foreign-owned firms. *Empirical Economics,* 61: 2237–2263. https://doi.org/10.1007/s00181-020-01950-z

Mammen, K. and Paxson, C. (2000). Women's work and economic development. *Journal of Economic Perspectives,* 14(4): 141–164.

Maurer-Fazio, M. and Hughes, J. (2002). The effects of market liberalization on the relative earnings of Chinese women. *Journal of Comparative Economics* 30(4):709–731

Meyer, L. B. (2003). Economic Globalization and Women's Status in the Labor Market: A Cross-National Investigation of Occupational Sex Segregation and Inequality. *Sociological Quarterly,* 44(3): 351–83.

Muravyev, A., Talavera, O. and Schäfer, D. (2009). Entrepreneurs' gender and financial constraints: Evidence from international data. *Journal of Comparative Economics*, 37(2), 270–286.

Oostendorp, R.H. (2009). Globalization and the gender wage gap. *World Bank Economic Review,* 23(1):141–161

Pfeffer, J. and Salancik, G. (2003). *The external control of organizations: A resource dependence perspective.* Stanford, California: Stanford University Press.

Reilly, K.T and Wirjanto, T.S. (1999). Does more mean less? the male/female wage gap and the proportion of females at the establishment level. *Canadian Journal of Economics,* 906–929

Reskin, B. (1993). Sex segregation in the workplace. *Annual review of sociology*, 241-270.

Rickne, J. (2012). Gender and work compensation in China's industrial sector. *Review of Income Wealth,* 58(2):307–329

Sahn, D. and Alderman, H. (1988), The Effects of Human Capital on Wages, and the Determinants of Labor Supply in a Developing Country. *Journal of Development Economics*, 29.

Sánchez-Mangas R, Sánchez-Marcos V (2008). Balancing family and work: The effect of cash benefits for working mothers. *Labor Econ*omics, 15(6): 1127–42. 10.1016/j.labeco.2007.10.002

Seguino, S. (2011). Help or Hindrance? Religion's Impact on Gender Inequality in Attitudes and Outcomes, *World Development*, 39: 8, 1308–1321

Seguino, S. and Grown, C. (2006). Gender equity and globalization: macroeconomic policy for developing countries. *Journal of International Development,* 18(8): 1081–1104.

Sekkat, K., Szafarz, A., and Tojerow, I. (2015). *Women at the top in developing countries: Evidence from firm-level data* (IZA Working Paper No. DP 9537). Bonn, Germany: IZA (Institute of Labor Economics).

Semyonov, M. and Jones, F.L. (1999). Dimensions of Gender Occupational Differentiation in Segregation and Inequality: A Cross National Analysis. *Social Indicators Research,* 46(2): 225–47.

Shah, N. M. (1986). Changes in Female Role in Pakistan: Are the Volume and Pace Adequate? *The Pakistan Development Review*, 25(3).

Simón, H. (2012). The Gender Gap in Earnings: An International Comparison with European Matched Employer-Employee Data. *Applied Economics,* 44(15): 1985–99.

Song, J., Price, D.J,. Guyenen, F., Bloom, N., von Wachter, T. (2019). Firming up inequality. *Quarterly Journal of Economics,* 134(1): 1–50.

Swanson, P.A. (2005). Occupational Sex Segregation and Economic Development. *Journal of Business and Economic Research,* 3(8): 43–52.

Tam, H. (2011) U-shaped female labor participation with economic development: some panel data evidence. *Economic Letters*, 110(2): 140–142.

Tang, H. and Zhang, Y. (2021). Do multinationals transfer culture? Evidence on female employment in China. *Journal of International Economics*, 133, 103518.

Thévenon, O. (2013). Drivers of Female Labour Force Participation in the OECD. OECD Social. *Employment and Migration Working Papers*, 145, 58.

Vahter, P. and Masso, J. (2019). The contribution of multinationals to wage inequality: Foreign ownership and the gender pay gap. *Review of World Economics*, 155 (1): 105–148.

Wamboye, E.F.and Seguino, S. (2015). Gender effects of trade openness in Sub-Saharan Africa. *Feminist Economics*, 21(3): 82–113.

Webster, A., & Piesse, J. (2018). Are foreign-owned firms more likely to pay bribes than domestic ones? Evidence from emerging markets. *World Development*, *101*, 142-161.

World Bank (2011). *World Development Report 2012: Gender Equality and Development*. Washington, DC: World Bank.

World Bank (2022). Gender data portal. Online https://genderdata.worldbank.org/data-stories/flfp-data-story/

Appendix 1: Country Samples					
	Sample			Sample	
Country	World Bank	Values surveys	Country	World Bank	Values surveys
	Enterprise Surveys	(EVS and WVS)		Enterprise Surveys	(EVS and WVS)
	Number of firms	Number of individuals		Number of firms	Number of individuals
Albania		1435	Lebanon	515	1200
Andorra		1004	Libya		1196
Argentina	859	1003	Lithuania		1448
Armenia		2723	Macau		1023
Australia		1813	Malaysia	1172	1313
Austria		1644	Maldives		1039
Azerbaijan		1800	Mexico		1741
Bangladesh		1200	Mongolia		1638
Belarus		1548	Montenegro		1003
Bolivia	297	2067	Morocco	1070	1200
Bosnia		1724	Myanmar		1200
Brazil		1762	Netherlands	799	4549
Bulgaria		1558	New Zealand		1057
Canada		4018	Nicaragua		1200
Chile		1000	Nigeria		1237
China		3036	North Macedonia		1117
Colombia	949	1520	Norway		1122
Croatia		1487	Pakistan		1995
Cyprus	209	1000	Peru	842	1400
Czech Republic		1811	Philippines		1200
Denmark		3362	Poland	726	1352
Ecuador		1200	Portugal	985	1215
Egypt	3072	1200	Puerto Rico		1127
Estonia		1304	Romania	810	2870
Ethiopia		1230	Russia	1201	3635
Finland		1199	Serbia		2545
France	1552	1870	Singapore		2012
Georgia		2194	Slovakia		1432
Germany		3698	Slovenia		1075
Great Britain		1788	South Korea		1245
Greece	600	1200	Spain	1039	1209
Guatemala	278	1229	Sweden	568	1194
Hong Kong		2075	Switzerland		3174
Hungary		1514	Taiwan		1223
Iceland		1624	Tajikistan		1200
Indonesia		3200	Thailand	961	1500
Iran		1499	Tunisia	521	1208
Iraq		1200	Turkey	1655	2415
Italy	708	2277	Ukraine		2901
Japan		1353	USA		2596
jordan	340	1203	Venezuela		1190
Kazakhstan	1163	1276	Vietnam		1200
Kenya	890	1266	Zimbabwe		1215
Kyrgyzstan		1200			
Latvia		1335	**Full Sample**	**23781**	**147261**

APPENDIX 2A: Variables used in the main analysis			
Name	**Description**	**Source**	**Notes**
Enterprise level variables			
(a) dependent (outcome) variables (also used as independent variables)			
femman	whether the firm's top manager is female (0,1)	WBES	
femown	whether the firm has some female owners (0,1)	WBES	
femshare	the share of females in firm employment	WBES	
(b) independent variables			
export	the share of exports in total sales	WBES	
mgrexp	the number of years of experience of the firm's top manager	WBES	
size	the firm size class	WBES	
emplft	full time employees - permanent and temporary	WBES	
opw	productivity - output per worker	WBES	
ppw	profitability - gross profit per worker	WBES	
burcy	perceived constraints from bureaucracy (0=none, 4=very severe)	WBES	
Country level variables			
(a) economic and institutional			
gdpcap	GDP per capita	WDI	
rural	Rural population as a percentage of the total	WDI	
femlabforce	Female labour force participation rate	WDI	
wblindex	Overall Women Business and the Law (WBL) Index	WBL	Overall WBL index - scale 1-100 (higher scores imply greater gender parity)
wentrindex	WBL index for female entrepreneurship	WBL	WBL Entrepreneurship Indicator Score (scale 1-100)
fememploy	Whether females have the same employment rights as men (0,1)	WBL	
(b) cultural values (country average scores)			
d078	Men make better business executives than women do	EVS + WVS	strongly agree=1, strongly disagree=4
c001	Men should have more right to a job than women	EVS + WVS	strongly agree=1, strongly disagree=3
d060	University is more important for a boy than for a girl	EVS + WVS	strongly agree=1, strongly disagree=4
d061	Pre-school child suffers with working mother	EVS + WVS	strongly agree=1, strongly disagree=4
e233	Women have the same rights as men.	EVS + WVS	not necessary for democracy=1, essential for democracy=10
Key:			
WBES	World Bank Enterprise Surveys		
WDI	World Development Indicators (World Bank)		
WBL	Women, Business and the Law database		
EVS + WVS	European Values Survey and World Values Survey combined database		

APPENDIX 2B: Variables used in the analysis of cultural values		
Variable	**Description**	**Notes**
D078	Men make better business executives than women do	strongly agree = 1, strongly disagree = 4
C001	Jobs scarce: Men should have more right to a job than women	strongly agree = 1, strongly disagree = 4
C039	Work is a duty towards society	strongly agree = 1, strongly disagree = 5
D060	University is more important for a boy than for a girl	strongly agree = 1, strongly disagree = 4
D061	Pre-school child suffers with working mother	strongly agree = 1, strongly disagree = 4
E233	Democracy: Women have the same rights as men.	not important = 1, essential = 10
F063	How important is God in your life	not at all = 1 , very important = 10
X001	Female (0,1)	
X003	Age	
X025R	Highest educational level attained - Respondent	
F025	Religious denomination	
Neighbours	Would not like as neighbours - sum of the following:	
	People of a different race (0,1)	
	Heavy drinkers (0,1)	
	Immigrants/foreign workers (0,1)	
	Drug addicts (0,1)	
	Homosexuals (0,1)	

Appendix 3: female employment, management and ownership by country			
Foreign Ownership	**Mean share of females**	**Proportion of firms with**	
	in firm employment	**female top**	**some female**
		manager	**ownership**
By Country:			
Argentina	25.3%	7.9%	62.2%
Bolivia	29.5%	24.2%	67.3%
Colombia	41.3%	19.5%	69.0%
Cyprus	37.5%	8.1%	43.5%
Egypt	14.9%	4.6%	7.2%
France	33.3%	15.2%	45.0%
Greece	35.7%	16.2%	51.0%
Guatemala	32.7%	12.2%	23.7%
Italy	30.2%	10.6%	21.0%
Jordan	15.7%	4.4%	25.0%
Kazakhstan	38.0%	27.4%	32.8%
Kenya	30.8%	15.5%	45.7%
Lebanon	21.6%	4.7%	11.5%
Malaysia	35.8%	34.8%	39.7%
Morocco	31.8%	7.0%	15.6%
Netherlands	29.2%	11.0%	34.7%
Spain	26.7%	13.6%	55.1%
Sweden	24.7%	8.5%	39.1%
Thailand	10.1%	65.0%	61.0%
Tunisia	42.4%	9.4%	34.4%
Turkey	24.0%	5.7%	14.5%

Appendix 4 : female employment, management and ownership by sector				
ISIC	**Description**	**Mean share of**	**Proportion of firms with**	
2 digit		**females in firm**	**female top**	**some female**
		employment	**manager**	**ownership**
	Full Sample	29.6%	16.0%	35.1%
15	Manufacture of food products and beverages	33.7%	18.7%	39.7%
16	Manufacture of tobacco products	18.0%	0.0%	22.2%
17	Manufacture of textiles	36.7%	14.7%	36.7%
18	Manufacture of wearing apparel; fur	57.3%	32.5%	51.1%
19	Leather; luggage, handbags, saddlery, footwear	26.7%	11.6%	30.1%
20	Manufacture of wood and products of wood	15.0%	11.4%	29.7%
21	Manufacture of paper and paper products	21.3%	13.9%	38.7%
22	Publishing, printing and recorded media	31.3%	15.6%	34.0%
23	Manufacture of coke, petroleum products and nuclear	18.0%	25.0%	37.5%
24	Manufacture of chemicals, chemical products	27.5%	11.9%	29.1%
25	Manufacture of rubber and plastics products	21.4%	19.0%	36.7%
26	Other non-metallic mineral products	17.0%	10.4%	23.6%
27	Manufacture of basic metals	11.0%	5.1%	19.1%
28	Manufacture of fabricated metal products,	17.3%	10.0%	30.1%
29	Manufacture of machinery and equipment n	17.7%	8.0%	27.8%
30	Office and computing machinery	23.4%	18.8%	18.8%
31	Electrical machinery and apparatus	21.3%	18.1%	31.0%
32	Radio, television and communication equipment	25.3%	23.3%	30.2%
33	Instruments, watches and clocks	30.1%	15.5%	34.5%
34	Motor vehicles, trailers and semi-trailers	19.0%	9.8%	26.8%
35	Manufacture of other transport equipment	17.3%	9.7%	31.2%
36	Manufacture of furniture; manufacturing n.e.c.	25.1%	12.1%	35.5%
37	Recycling	27.6%	20.0%	40.0%
45	Construction	15.4%	8.0%	23.9%
50	Sale, maintenance and repair of motor vehicles	21.5%	12.4%	33.6%
51	Wholesale trade and commission trade,	29.2%	13.7%	33.9%
52	Retail trade; repair of household goods	42.7%	20.8%	43.5%
55	Hotels and restaurants	42.3%	23.8%	39.0%
60	Land transport; transport via pipelines	19.7%	17.1%	33.6%
61	Water transport	16.1%	9.9%	14.1%
62	Air transport	33.2%	0.0%	40.0%
63	Auxiliary transport activities; travel agencies	33.3%	16.7%	27.9%
64	Post and telecommunications	33.7%	12.2%	31.1%
72	Computer and related activities	29.3%	13.1%	33.1%