The Curse of Gender Roles Attitudes in Labor Market Performance

Esteban Puentes and Jaime Ruiz-Tagle[1]

May 2017

Abstract

The incorporation of woman into the labor markets is a challenge all over the world, and quantitative evidence shows that more conservative gender roles attitudes is associated with lower labor market and lower wages. However, not much is known about how this gap is created throughout the labor market career and what is the role of early-in-life decisions such as educational choices. We explore a setting in which gender roles attitudes may affect not only formal education election, but also later decisions that enhance human capital accumulation. We work on the basis that formal education requires additional human capital boosters that individuals add during their careers, such as labor experience, occupational choices, training, health status, in-job responsibilities, among others. Essentially, we test whether more conservative women may invest less in human capital as a whole, through different channels. We find that more conservative gender roles attitudes is associated to lower returns to education and to fewer investment in human capital boosters. Continue learning about how culture evolve over time and what is the relevance of the family and the social environment in gender roles attitudes formation remains crucial to facilitate women's labor market performance.

---

1.   Introduction: Or why revisiting gender roles attitudes

The incorporation of woman into the labor markets is a challenge all over the world, but particularly in developing countries where women's labor participation is still relatively low. Discrimination and segregation has been indicated as barriers that prevents better inclusion of women into the labor market. It has been shown that culture and gender role attitudes can have relevant impacts on women's performance in the labor market (Fortin, 2005; Fernandez, 2007; Contreras and Plaza, 2010; Farre and Vella, 2013). In fact, the available quantitative evidence shows that more conservative gender roles attitudes is associated with lower labor participation and lower wages.

There is no doubt about the rapid changes in social attitudes occurring during the last decades all over the globe, from changes in laws that protect and favor women's work to the way the media show their images everyday. Gender roles attitudes do evolve over time, and there is an intergenerational process that gives way to new social attitudes. The persistence and early formation of gender role attitudes has been stressed by Farré and Vella (2013), while the incorporation of endogenous social attitudes has been explored by Fernandez (2013). In parallel, some authors have emphasized that the factors that determine female labor participation can vary from territory to territory, and could facilitate female labor participation under local boosts of economic activity (Ramirez and Ruben, 2015).

A better understanding of the mechanisms through which gender roles operate in society and in particular in the labor market is necessary not only to deepen our knowledge, but also to think about designing useful policies that facilitates women's labor market desired performance. The extent to which women are affected in their labor market performance by their own conservative gender roles attitudes is still incompletely studied as heterogeneous effects could emerge. In fact, some qualitative studies have observed that women tend to choose less profitable educational paths by allocation themselves in lower wage profiles careers (Espacio Público, 2016). However, little is known about the quantitative gap that could arise from such early-in-life decisions. Albeit some authors have proposed that cultural changes occurring in a short period of time could have effects in women's labor market performance (Fernandez, 2013), the role of long run decisions such as educational paths can limit the propagation into direct benefits for women workers. Other authors have proposed that occupational segregation can partly explain lower labor market performance of more conservative women (Judge and Livingston, 2008), but not much is known about how that actually develops into women's labor careers.

We explore labor market performance among women with different levels of conservative attitudes using Chilean data. As other Latin American countries, Chile has exhibited a significant increase in female labor market participation in recent decades in a steady path, but is still to catch more developed economies. A common problem in empirical analysis is reverse causality of gender role attitudes, as they can be conditioned by current labor activities. We attempt to address challenge by

using novel panel data that allows to combine past gender role attitudes with labor market performance measures such as participation, wages, and working hours. We analyze different premises related to human capital accumulation and labor careers according to what could be expected for more conservative women that may have chosen low return activities. We work under the assumption that there is a an underlying production function of human capital, where formal education requires additional human capital boosters that individuals add during their careers (experience, occupation choice, training, health, responsibilities, among others). In this setting, gender roles attitudes may affect not only early in life decisions that affect labor market performance, such as formal education, but also later decisions that enhance human capital accumulation. Essentially, more conservative women may invest less in human capital as a whole, through different channels.

We present estimations of the effect of more conservative gender role attitudes of women on their labor market outcomes, where labor participation and wages are at the center of our analysis. Our estimated results can be better interpreted as causal effects as they are protected from reverse causality because of the nature of the timing since we use panel data that allows for a lagged measure of gender roles attitudes. We then investigate whether there is evidence that supports the idea of labor market performance being affected by a set of sequential decisions across labor life that are affected by gender roles attitudes and determine human capital accumulation.

We find that more conservative gender roles attitudes have a negative sizable effect both in labor participation and in wages, decreasing women's labor market performance significantly. Moreover, we observe that the wage gap enlarges as educational level increases, indicating a lower return to education for those more conservative women, supporting the idea that those women may have chosen low return activities. We also explore some hypothesis about the human capital accumulation related to health and training.

We present the data and gender attitudes index construction in section 2 jointly with the empirical formulation and the estimation results. We make a discussion about the interpretation of our results in section 3, where we also test some subsequent ideas about the gender roles attitudes importance in the human capital accumulation process . Finally, we conclude in section 4.

2.   Measuring the relationship between gender roles attitudes and labor market outcomes

The data used in this work correspond to Encuesta Voz de Mujer (EVM) for the years 2009 and 2011.[2] The surveys are representative of women living in urban areas of Chile. The great advantage of these surveys is that only women are interviewed, which increases the quality of the information. The surveys were conducted in 2009 and 2011 with the explicit goal of having a longitudinal sample. The longitudinal sample used in this article includes 1,711 women between 25 and 59 years in rounds of 2009 and 2011.[3] This restriction aims to focus on women who are able to work, and that have already finish their educational cycle and from whom the retirement decision is still not relevant. In all the calculations the weighting factor of the panel is used, this factor adjusts for nonresponse between 2009 and 2011. Therefore, the sample we use is representative of women living in urban areas in Chile in 2009.[4]

2.1.   Building a gender roles attitudes index

Both in the 2009 survey and 2011 there is a special module for characterizing the distribution of tasks and the perception of roles within the household.[5] Specifically, the EVM 2009 has a series of questions divided into four sections of J module that are used to calculate an index call "indicator or index of gender roles". The higher the indicator, the more traditional is the view or perception of gender roles, where women prefer a separation of roles in which women should privilege traditionally domestic work and not work for pay.

Questions are described in greater detail next. A first section of the questionnaire asks how much you agree or disagree with the following statements: "The job of a woman is to make money and take care of her family"; "A working mother can establish a warm and solid relationship with her children as a mother who does not work" and "The dedication of the father or the mother is equally important for both the development of language and of affection of children". The possible answers are "Strongly agree", "agree", "neither agree nor disagree", "disagree" and "strongly disagree". We created a binary variable taking the value one if the respondent answered "Strongly Disagree" or

---

[2] The fieldwork of the 2009 version was conducted between September and November 2009, and the 2011 version was held in late November 2011 and early March 2012. The questionnaires used in both rounds are similar but not identical and collect information both at home and at the level of the interviewee.
[3] All variables employed in the estimation belong to the 2011 version of the survey, with the exception of indicator roles that are constructed from the 2009 version.
[4] More details in "Report of Panel Results. Survey Voz de Mujer ". The Microdata Center of the University of Chile conducted the fieldwork of the surveys in 2009 and 2011.
[5] The modules in each survey are different, although there are questions that are identical for both surveys. Also, in 2011 an additional set of questions was included.

"Disagree" with the statements. These questions measure the extent to which women value the traditional roles of women and men and their relationship to household welfare.

The second and third sections of the J module are about the type of tasks you would assign to a son or daughter at home. The interviewee is asked to whom she would assign tasks such as preparing food, washing clothes, ironing and cleaning, and minor repairs around the house and wash the car. We created binary variables that take a value equal to one if the respondent states that she would only assign to his son or daughter to a particular activity. These variables measure more explicitly the division of roles at home, since the woman must answer what kind of tasks she considered relevant only to their daughters or sons. Unlike other modules, these sections do not make comparisons between paid work and housework.

The fourth section assesses the extent to which the respondent believes that a married (or with a partner) daughter should work or not, depending on whether she has children and the school stage of these children (for example, if she has preschoolers). We created binary variables that take the value one if the respondent believes that in the each context her daughter should not work, and zero otherwise. These variables capture the propensity to perform paid work by women, and indirectly measure the division of roles.

The index, called "Role Index 2009", takes values between zero and ten and has the following interpretation: the higher the value, the more frequent is the conservative or traditional perceptions about the role of women in society. Table 1 shows that on average women in the sample have a role perception index equal to 1.95 and a standard deviation of 1.87.[6]

The occupational status of the respondent is constructed from the C module, which allows differentiation between respondents that were employed, unemployed and inactive. Employed are all those currently working, or that are absent from their work temporarily for medical leave, strike, illness or other reason. Unemployed women are those who sought work during the four weeks preceding the day of the interview. Finally, inactive women are those who are not employed nor looking for paid work. In Table 1 we observe the employment rate reaches 61%.

In our models we also include variables that may affect labour outcomes, such as: Age, age squared, education, having a partner, number of children, per capita income of other household members, and geographic identifiers that capture differences in prices and labor markets. Table 1 indicates that the average age is 42 years and the average schooling is almost equal to full secondary education, 11.7 years. In addition, 60% of women have a partner or spouse.

Additionally, the EVM collects information about the mother and father of the respondent and information on numeracy. Information about the father and the mother is relevant because it allows us to control for the household characteristics where women grew, so that the indicator of roles is

---

[6] 25% of women have a zero indicator, and 30% of women have a greater indicator 3, i.e. the distribution concentrates on the values 0, 1, 2 and 3.

not capturing differences in parental human capital or employment. The variables of occupation of the mother and father are equal one if the mother or father worked when the woman was 15 years old. In the case of education, dummy variables that identify if the mother and father have secondary or higher education are included. Both, in the case of educational and occupation variables, if the respondent answers that they do not know the educational level or occupation of the parents, a dummy variable that identifies missing information is created.

We also construct variables that measure numeracy and short term memory, using two different tests. The first corresponds to the results of Digit Span Test Recall, which measures numerical skills and short-term memory (De Mel et al., 2008). The test consists in showing the interviewed a four digit card, the card is removed from the view of the interviewed and she is asked to name the numbers in reverse order to which they were shown. If the respondent remembers the four numbers correctly, she is shown a card with five digits, and the procedure is repeated, and up to a card with eleven digits. If the respondent does not answer the correct order, the next card is not displayed. From this test we construct a variable that identifies the number of digits that the respondent answered correctly. On average women recalled 9 numbers, with a standard deviation of 8.5. A second index is created using a set questions related to only to numeracy skills. Among other questions, the respondents are asked to complete a sequence of numbers, also they are asked to subtract 7, starting from 100. The numeric index is equal to the number of correct answers that each woman gave. The average number of correct answers is 5, with a standard deviation of 2.5.

In Table 2 we calculate several correlations of the Role Index and human capital and household characteristics. We first observe a negative and significant correlation between the Index and schooling, i.e., women with more traditional views tend to have less years of schooling. Similarly, the Remember digits index and the numerical ability index show negative correlations with the Role index. This may be because schooling and human capital accumulation in general, affects the perception of roles or that roles affects the acquisition of human capital. On the other hand, when analyzing the relationship between age and the index, it is observed that there is a positive and significant relationship, women with more traditional values tend to be older, this reflects cultural changes through generations, which have been documented in the literature (Fernandez, 2007).[7] Table 2 shows a low correlation between number of kids and the index, though a positive relationship (and marginally significant) between being married and the Role Index.. These correlations indicate the importance of using these variables, since it allow us to control for the fact that both the perception of roles and labor variables are correlated with generally unobservable factors, such as numeracy, then we can better identify the direct effects of perceived gender roles on women's employment decisions.

---

[7] The relationship between education and age is given at all levels, except for women with a zero indicator, but the overall trend is stable in the rest of the distribution.

2.2. Empirical formulation

The literature has used the following equation to study the relationship between the perception of roles and labor market variables such as participation, employment or wages:

$$Y_i = \alpha + \beta * Roles_i + \delta * X_i + \varepsilon_i \qquad (1)$$

where Y_i is some labor market outcome for individual i, $Roles_i$ corresponds to an index about the perception of gender roles of women i, X_i are covariates and ε_i is the error term.

As was noted in the introduction, the perception of roles is endogenous, and then the estimates of equation (1) do not have a causal interpretation. In particular, there may be a double causality, where performance in the labor market (e.g. labor force participation) can affect the perception of gender roles and gender roles affect labor participation.

A strategy to control for this endogeneity is to use instrumental variables, which should affect gender roles, but do not affect the decision to work.[8] Another strategy used in the literature is to use lagged variables such as perceptions of roles in adolescence and study how these perceptions affect employment decisions in adulthood (Farré and Vella, 2013). In our research we use a version of this latter strategy, studying how the indicator roles of 2009 affects the decisions of participation, employment and hours worked by women in 2011. The equation that we estimate corresponds to:

$$Y_i^{2011} = \alpha + \beta * Roles_i^{2009} + \delta * X_i^{2011} + \varepsilon_i \qquad (1)$$

Where Y_i^{2011} corresponds to the labor outcome (employment, wages, or working hours) of individual i, $Roles_i^{2009}$ is the indicator of gender roles in the year 2009 of individual i, and X_i^{2011} is a set of covariates of individual i.

This strategy addresses the simultaneity between perception of roles and labor market variables, and represents an advantage over the investigations made by Contreras and Plaza (2010) and Contreras et al. (2012) for Chile, since they used an indicator of roles that is affected by simultaneity.

As the available data are longitudinal in nature, we could use methods that control for individual effects and thus control more robustly for endogeneity. However, since the perception of roles may have a high fixed component, a methodology that controls for individual effects would tend to find no effect of roles on participation in employment. At the same time, if the indicators have a high

---

[8] Vella (1994) uses religion as an instrumental variable for the perception of roles, but in his model the variable of interest is the school, not labor participation. The survey Voz de Mujer collects information about the religion of the mother and father of the women being interviewed, but those variables are weak instruments, so we cannot use this strategy.

level of measurement error, a model of individual effects would also tend not find significant effects, so the use of lag perception of roles is preferred.[9]

Despite using the lag in the perception of roles, endogeneity between the two variables can persist if there are unobservable factors affecting the perception of roles and work decisions. This can occur, because it is generally assumed that the perception of roles have a large fixed component, which would affect the decision to participate during much of women's work cycle and which also explains the slow change in perceptions over the long term (Fernández, 2007).[10]

To minimize these potential remaining problems of endogeneity, we include individual variables in regressions that measure education and occupation of parents and numeracy and short memory skills of women. The inclusion of variables of the mother and father can control for the correlation between perception of roles and socio-economic characteristics of the household of origin of the interviewee. The use of numerical and short term skills allows to control for individual factors that are generally not observable. Despite using all these variables, controlling for endogeneity may be incomplete, since there still may be left some correlation between unobservable factors in participation and employment and perceived roles. Therefore during this article we interpret the coefficients as correlations rather than causal effects.

2.3.   Estimation results

We first estimate how Roles can affect the probability of being employed (extensive margin) and the hours of work (intensive margin), in Tables 3 and 4, respectively. In both tables we first include the Index and predetermined characteristics, such as parent's occupation and education, and region dummies. Then we include variables that could be the mediators in the relationship between roles and work, these variables are: Years of schooling, being married, number of children and ability. In Table 3 we observe that there is a strong and negative relationship between the Role Index and participation, an increment of 1.8 in the Index (one standard deviation), decreases the probability of working in 22 percentage points, when no mediator variables are included, and to 20 percentage points when mediators are included. This results implies that mediators play a small role in this analysis. The magnitude of increasing the Roles Index is similar to decreasing four years of education. In Table 3 and 4 we also observe that education and the numerical index increase

---

[9] A measure of persistence can be obtained calculating the correlation between indicators for 2009 and 2011, using the set of questions that are repeated in both years. The correlation between these indicators is 0.1 . While the correlation is significant to 1%, cannot be considered high, which suggest that the perception of roles does not exhibit high persistence, nonetheless, this correlation is also consistent with high measurement error, whereby the correlation is artificially low. Since it is not possible to separate the measurement error from the true perception of roles, we opted to estimate the specification that uses the lag of the perception of roles.

[10] Vella (1994) provides evidence that the perception of the roles is determined in adolescence and subsequent work experience does not modify it.

employment and hours of work and being married is negatively related to employment and hours of work.

Next, we study how gender roles are related to wage equations. We estimate equation (1) for log of hourly wage using as regressor the Role Index, and then we test if there is an interactive effect with schooling. The results are presented in columns (1) and (2) of Table 5, the parameters are estimated correcting for selection into work, using as the probit in Table 3 as the selection equation. From column (1) in Table 5 we observe that a higher Index Role is associated with lower wages, an increment of one standard deviation in the Index, decreases wages by 10 log points, this is similar to the the return of one year of schooling. From column (2) we observe that the negative relationship of roles is greater for more educated women, since the interaction between roles and schooling in negative. This result indicates that gender roles affects not only the educational level, but also the type of schooling attainted (a similar result was found in Vella (1994)). To illustrate the effect of gender roles, we calculate the effect of increasing the index by one unit for woman with different years of education. For a woman with 12 years of education, increasing the Index Roles by one decreases wage by 6.5 log points. For woman with 17 years of education, the effect is a drop in 12 log points, these are economically relevant changes in wages.

In order to understand in more detail for which economic sector this relationship is more relevant, we estimate similar models interacting also with being a wage worker and working in the public sector. Since there is more than one choice in each model, we estimate the equations without using the correction for selection to work.[11] To study the consequences of not correcting for selection, we estimate and compare the specification in column (2), which corrects for selection, with the specification in column (3), which does not. We observe that the parameters change, but qualitative we obtain the same results, then estimate non-corrected models in columns (4) and (5) of Table 5.

In column (4) we interact schooling and the Role Index with being a wage worker, and we find that parameters are no longer significant, but the sign of the interaction of the Role Index with schooling barely changes. The triple interaction of Roles, Schooling and Wage Work is negative, however the magnitude is small and the parameter is not significant. This suggest that there might not be relevant differences in the way gender roles affect the type of schooling attained when women are wage workers or own-account workers.

Next, we focus only on women that work as wage workers and study if there are differences in the negative relationship between roles and schooling for women that work in the public or private sector. The results of this new triple interaction are shown in column (5) of Table 5. The triple interaction between schooling, roles and working in the public sector is negative, though not significant. As in the case of wage work compare to own-account work, we find no relevant differences in the way schooling and roles interact for public or private workers.

---

[11] To properly correct for selection we should control for selection into work, into wage work/own-account and into public/private sector.

Overall, the specification shown in Table 5 indicate that roles seem to affect the type of schooling acquired, probably affecting the quality of post-secondary schooling, with no relevant distinction if women work as own-account workers, wage workers, as public servants or in the private sector.

3. Human capital boosters and gender roles attitudes

The results in the previous section indicate that women with more conservative attitudes have a lower return to education. In this section of the paper we explore for the potential paths that might explain this result. We have two set of hypotheses, the first one is that women with more conservative attitudes tend to accumulate less human capital boosters, such as training, labor experience and health. The second one is that women with more traditional attitudes tend to take less demanding jobs, which we test using information on whether they make relevant decisions in their workplace, if they do supervise other's work and if they do not think they job is challenging. To study the relevance of these hypotheses we first test if Role Index is related to the human capital boosters.

For the first hypothesis we construct four set variables: The first one is a dummy variable equal to one if the women took some training course in the last five years.[12] The second one is a measure of the time women have worked full time. [13] The third is self-reporter health status.

To test that there differences on the type of jobs performed by women with more traditional values, we constructed four variables: The first one in a dummy that indicates if women are in charge of other workers; the second one is a dummy that indicates if women have to make important decisions in the firm; the third one is a dummy that indicates if women have a job they consider challenging; and the third one is an index that is the sum of the previous dummies.

In Table 6 we study if the role index is correlated with these human capital boosters, we find that the role index is negatively correlated with experience, self-reported health and training, but the relationship in marginally significant only for experience. [14]

In Table 7 we observe that the role index is negatively correlated with all the variables that describe the jobs performed by women, however the coefficient is never significant. At the same time, we

---

[12] This question was made only in 2009, and we use it with the caveat that the role index is also constructed with the questions of the 2009 survey.

[13] Women are asked whether they worked full time, part time or did not work in the following situations: Before getting married or before living with someone; after getting married (or living with someone), but before having children; when their children were preschoolers; and when their first child started to go to school. When the situation does not apply to the women, they answer "does not apply". We construct an index that is the number of times a women answer full time over all the potential valid answers.

[14] In Tabla A1 of the appendix we show that all these boosters are positively related to wages.

observe that education is the main determinant of having jobs that are challenging, where women can make important decisions and be in charge of others. [15]

Overall, we find that the Index role tend to be negatively correlated (though most of the time not-statistically significant), with several human capital variables, which are important for wage work. Then, the impact of gender roles can be through multiple variables, but according to our results the most relevants are schooling and experience.

4.   Conclusions and discussion

Women's labor market performance has proven to be affected by culture through gender roles attitudes all over the world. We have explored how labor career can be affected by gender roles attitudes both early in life by educational choices and by women's behaviour in the labor market over the years. Our estimations results are consistent with the idea of human capital accumulation process in which human capital boosters play a relevant role beyond education.

Our results can be summarized as follows. First, we find substantial support for more conservative gender roles attitudes negatively affecting labor market performance. Our estimation results address causality issues in robust manner to show that there is a sizeable negative significant effect of machism on women's labor participation, where an increment of one standard deviation on the Role Index could decrease employment by 20 percentage points . Also, our results show that there is a sizeable negative significant effect of machism on women's labor hourly wage, where also an increment of one standard deviation in the Role Index could decrease hourly wage by 10 log points.

Second, we find that returns to education seems to attract all the effect of more conservative gender roles in reducing wages. In fact, we find that the more educated the women are the ones that most reduced their wage with conservative attitudes. These results implies that early in life decisions about labor career seem to have long lasting effects. More conservative women could be choosing low return education that will affect them over the years.

Third, under a human capital setting wages are determined by labor productivity, which is in turn affected by human capital. Departing from the static view, we consider that human capital can be enhanced by activities and decisions over the labor career. We explore a set of possible human capital boosters, finding evidence that more conservative women accumulate lower labor experience. We also find some support that conservative attitudes are associated with lower investment in health and training. Finally, we also find some negative, though not significant, relationships of conservative attitudes and lower level of responsibilities in the job, less supervising activities, and lower levels of decision making.

---

[15] Table A2 of the appendix shows that all these *type of jobs* variables are statistically significant in the wage equation.

Taken altogether, these results suggest that the analysis of gender role attitudes has to depart from a static one, to give way to a dynamic more complex study. There is no doubt that early in life decisions affected by conservative attitudes can have long lasting effects, but there are other elements around determining women's labor market performance. Cultural transmission of gender roles attitudes, the role of institutions, and the individual decisions are all relevant elements to discuss to better understand cultural effects.

The social evolution of gender roles attitudes can be affected by intergenerational transmission and social institutions. In any case, family structures play a relevant role. As stated above, there is some evidence that gender roles attitudes tend to be set in youth, and is intensively transmitted by family (Farré and Vella, 2013). Besides, as proposed by Fernandez (2007), "Not only does culture affect institutions, but also institutions affect the dynamic evolution of culture", so that a more profound understanding of these processes is required.

The importance of the actions that women carry out during the their working life cannot be overlooked in terms of their impact on labor market performance. The opportunity cost for women could be low if women (and/or their families and educational environment) do not consider other (more profitable) labor alternatives. Social norms could also limit the ability of women to obtain more profitable jobs that would increase opportunity costs beyond home production (child and home caring). How women prepare themselves for labor market and how they invest in their careers continue to be an important area for research. A recent paper paper by Babcock, Recalde, Vesterlund and Weingart (2017) shows it very clearly: there seems to be significant gender differences in accepting and receiving requests for tasks with low promotability, making it more difficult for women to progress in their labor careers.

Some insights about what could be a departing point done can be illustrated by a recent qualitative study on Technical Secondary Education (Espacio Público, 2016) that reports that gender disparities emerge at the end of secondary education, where men are choosing more profitable careers than women. They also conclude that future wage profile does not seem to be important for students as they do not see this choice as definitive for their lives. They can only find a link to a general cultural environment in which women tend to choose careers with lower return at early ages without noticing it, only referencing those choices to what they call "personal preferences." If this setting is highly prevalent, it indicates that cultural environment is hard to be affected in the short run. There could be some scope for role models, where women successful in the labor market could show the path for the next generations, or there could be even a more basic role model in school subjects where women performance worse than men (Paredes, 2014).

Finally, medical progress during the last century related to childbearing, pregnancy related conditions, and even infant formula, has enabled women to reconcile work and motherhood. The next challenge is to overcome the social limitations for the incorporation of women alongside men into the labor market. There is still much to know about cultural preferences and its evolution over time. On the empirical side, it would be critical to improve our knowledge on short/middle-run gender roles attitudes evolution through empirical studies using more complex panel data. This

would allow to understand the channels through which gender roles could actually be accepted, giving way to promote some interventions along those lines.

5.   References

Albanesi, Stefania and Claudia Olivetti, (2016), "Gender Roles and Medical Progress", *Journal of Political Economy*, 2016, 124:3, 650-695.

Babcock, Linda, Maria P. Recalde, Lise Vesterlund, and Laurie Weingart. 2017. "Gender Differences in Accepting and Receiving Requests for Tasks with Low Promotability." *American Economic Review*, 107(3): 714-47.

Caamaño, E., 2010. "Mujer y trabajo: origen y ocaso del modelo del padre proveedor y la madre cuidadora" Revista de Derecho de la Pontificia Universidad Católica de Valparaíso XXXIV, pp. 179 – 209.

ComunidadMujer, 2011, "Mujer y trabajo en perspectiva". Serie Comunidad Mujer N°8.

Contreras, D., Hurtado A. y Sara, M.F., 2012. "La Excepción Chilena y Las Percepciones De Género En La Participación Laboral Femenina". Departamento de Economía, Universidad de Chile. Documento de Trabajo 374. Diciembre.

Carroll, C. D., Rhee, B. K. y Rhee, C., 1994. "Are there cultural effects on saving? Some cross-sectional evidence". Quarterly Journal of Economics, 109 (3), 685–699.

Carroll, C. D., Rhee, B. K. y Rhee, C., 1998. "Does cultural origin affect saving behavior? Evidence from immigrants". NBER Working Paper no. 6568.

Contreras, D. y Plaza, G., 2010, "Cultural Factors in Women's Labor Force Participation in Chile", *Feminist Economics*, 16(2), 27–46.

De Mel, S., McKenzie, D., and Woodruff, C. 2008. "Returns to Capital in Microenterprises: Evidence from a Field Experiment", *Quarterly Journal of Economics*, 123(4): 1329-72.

Espacio Público, "Desigualdades de Género en la Educación Media Técnico Profesional". 2016.

Farré, L. y Vella, F., 2013. "The Intergenerational Transmission of Gender Role Attitudes and its Implications for Female Labor Force Participation" *Economica,* Vol. 80, 219-247.

Fernández, R., 2007, "Women, Work, and Culture", *Journal of the European Economic Association*, Vol. 5, No. 2-3: 305–332.

Fernández, R. (2013). Cultural change as learning: The evolution of female labor force participation over a century. *American Economic Review*, 103(1), 472–500.

Fortin, N., 2005, "Gender Role Attitudes and Labour Market Outcomes of Women Across OECD Countries". *Oxford Reviews of Economic Policy*, 21(3): 416-438.

Judge, Timothy A. and Beth A. Livingston, "Is the Gap More Than Gender? A Longitudinal Analysis of Gender, Gender Role Orientation, and Earnings", *Journal of Applied Psychology*, 2008, Vol. 93, No. 5, 994–1012.

ILO, 2012, "Global Employment Trends for Women". International Labour Organization. Geneva.

Guiso, L., Monte, F., Sapienza P. y Zingales, L., 2008, "Culture, Gender, and Math". Science Magazine, Vol 320. May.

Guiso, L., Sapienza P., and Zingales, L., 2009. "Cultural Biases in Economic Exchange?" *The Quarterly Journal of Economics* 124.3: 1095-1131.

Paredes, V., 2014. "A teacher like me or a student like me? Role model versus teacher bias effect". *Economics of Education Review* 39: 38-49.

Piras, C., 2004. Women at work: challenges for Latin America. IDB.

Ramírez, E. and R. Ruerd (2015), "Gender Systems and Women's Labor Force Participation in the Salmon Industry in Chiloé, Chile", *World Development*, Volume 73, September 2015, Pages 96-104,

Vella, F., 1994, "Gender Roles and Human Capital Investment: The Relationship between Traditional Attitudes and Female Labour Market Performance", *Economica,* Vol. 61, No. 242 (May), pp 191-211.

Tables

Table 1: Descriptive statistics, 25-59 years old

	Average	S. Deviation	N
Working	0,61	0,49	1711
Log Hourly Wage	7,38	0,95	914
Role Index 2009	1,95	1,86	1711
Role Index 2009 (Section 1)	0,56	0,71	1711
Role Index 2009 (Section 2 & 3)	0,78	1,22	1711
Role Index 2009 (Section 4)	0,61	0,95	1711
Experience Index	0,56	0,38	1487
Self-Reported Health in 2011	3,93	1,09	1711
Stress	2,37	1,18	1711
Training	0,34	0,47	1711
Body mass index	27,32	5,18	1640
Are you in charge of other workers?	0,09	0,29	1711
Is your job intellectually, personally or professionally challenging?	0,3	0,46	1711
Do you have to make important decisions in the firm?	0,11	0,32	1711
Years of schooling	11,65	3,72	1653
Married	0,60	0,49	1711
Number of kids between 0 and 2 years' old	0,2	0,5	1711
Number of kids between 3 and 4 years' old	0,1	0,3	1711
Number of kids between 5 and 13 years' old	0,6	0,7	1711
Other members of the household income per capita	0,8	1	1711
Numerical abilities	5,01	2,48	1711
Remember digits	8,92	8,56	1711
Age	42	10	1711
Age Squared	1844	806	1711
North	0,13	0,33	1711
South	0,23	0,42	1711
Dummy=1 if the father worked when the woman was under 15	0,80	0,40	1711
Dummy=1 if the interviewed doesn't know if father worked	0,16	0,37	1711
Dummy=1 if the mother worked when the woman was under 15	0,47	0,50	1711
Dummy=1 if the interviewed doesn't know if mother worked	0,05	0,21	1711
Doesn't know the mother years of schooling	0,22	0,42	1711
Doesn't know the father years of schooling	0,29	0,45	1711
Mother attended high school	0,33	0,47	1711
Mother attended higher education	0,02	0,14	1711
Father attended high school	0,33	0,47	1711
Father attended higher education	0,06	0,24	1711

	Role Index 2009	Years of schooling	Age	Number of kids	Remember digits	Numerical abilities	Married
Table 2: Partial correlation coefficients between variables							
Role Index 2009	1						
	1711						
Years of schooling	-0.1476*	1					
	1653	2182					
Age	0.0900*	-0.2542*	1				
	1711	2182	2247				
Number of kids	-0.0168	0.0047	-0.3283*	1			
	1711	2182	2247	2247			
Remember digits	-0.0581*	0.2157*	-0.0970*	0.0137	1		
	1711	2182	2247	2247	2247		
Numerical abilities	-0.1240*	0.3704*	-0.1783*	0.0723*	0.2213*	1	
	1711	2182	2247	2247	2247	2247	
Married	0.0830*	-0.0549*	0.0442*	0.0943*	-0.0181	0.0075	1
	1711	2182	2247	2247	2247	2247	2247

Note: * indicates that the coefficient is significantly different from zero at 0.5 significance level.

	(1)	(2)
	Working	
	-	-
Role Index 2009	0.124***	0.110***
	(0.022)	(0.022)
Years of schooling		0.051***
		(0.014)
Married		-0.298**
		(0.096)
Number of kids between 0 and 2 years' old		0.062
		(0.116)
Number of kids between 3 and 4 years' old		-0.162
		(0.131)
Number of kids between 5 and 13 years' old		-0.007
		(0.067)
Numerical abilities		0.046*
		(0.019)
Remember digits		0.003
		(0.006)
N	1711	1653

Table 3: Probit estimates for women between 25 and 59 years old.

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
In model 2 the covariates include age, north or south region, if the father/mother worked when the woman was 15 years old, parents' education.

Table 4: Tobit estimates for women between 25 and 59 years old.

	(1)	(2)
	Worked Hours	
Role Index 2009	-3.109***	-2.601***
	(0.667)	(0.658)
Years of schooling		0.909**
		(0.352)
Married		-8.293**
		(2.609)
Number of kids between 0 and 2 years' old		0.936
		(2.820)
Number of kids between 3 and 4 years' old		-4.053
		(3.707)
Number of kids between 5 and 13 years' old		-0.909
		(1.769)
Numerical abilities		1.408**
		(0.523)
Remember digits		0.037
		(0.144)
N	1711	1653
R2	0.32	0.0182

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. In model 2 the covariates include age, north or south region, if the father/mother worked when the woman was 15 years old, parents' education.

Table 5: OLS with and without Heckman correction estimates for women between 25 and 59 years old.

	(1)	(2)	(3)	(4)	(5)
			ln Wage		
Years of schooling	0.112***	0.129***	0.117***	0.118***	0.105***
	(0.016)	(0.020)	(0.019)	(0.022)	(0.022)
Role Index 2009	-0.057*	0.067	0.141*	0.105	0.110
	(0.025)	(0.061)	(0.057)	(0.068)	(0.072)
Roles and education interaction		-0.011*	-0.014**	-0.013	-0.009
		(0.005)	(0.005)	(0.007)	(0.007)
Wage Work				0.055	
				(0.145)	
*Wage Work * Role Index*				0.096	
				(0.106)	
*Wage Work * Role Index * Education*				-0.004	
				(0.009)	
Works in the Public Sector					0.477
					(0.304)
*Public Sector * Education*					-0.023
					(0.024)
*Public Sector * Education * Role Index*					-0.005
					(0.003)
N	893	893	893	893	564
R2			0.226	0.233	0.224

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Models 1 and 2 are corrected from selection bias with the Heckman correction. In all specifications, the covariates include age, years of education, north/south region dummy, numerical tests. Model 5 is conditioned to wage-workers only. "

Table 6: OLS estimates for all working women

	(1)	(2)	(3)
	Exp. Index	Self-Reported Health	Training
Years of schooling	0.018***	0.033**	0.025***
	(0.005)	(0.012)	(0.006)
Role Index 2009	-0.022*	-0.019	-0.019
	(0.009)	(0.025)	(0.012)
N	924	990	990
R2	0.058	0.082	0.094

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. In all specifications covariates include age, dummy for north/south region, numerical tests.

Table 7: OLS estimates for wage-working women

	(1)	(2)	(3)	(4)
	Supervise	Decision Making	Challenging Job	Responsibility Index
Years of schooling	0.018**	0.024**	0.044***	0.086***
	(0.007)	(0.008)	(0.007)	(0.015)
Age	0.023	0.010	0.042	0.075
	(0.020)	(0.021)	(0.024)	(0.047)
Age Squared	-0.000	-0.000	-0.001	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)
Role Index 2009	-0.018	-0.018	-0.008	-0.044
	(0.014)	(0.013)	(0.017)	(0.027)
N	564	564	564	564
R2	0.044	0.048	0.153	0.121

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Robust standard errors in parentheses. In all specifications covariates include age, dummy for north/south region, numerical tests.

Table A1: OLS estimates for all working women

	(1)	(1)	(2)	(3)
	ln Wage			
Years of schooling	0.117***	0.119***	0.113***	0.108***
	(0.019)	(0.021)	(0.020)	(0.018)
Role Index 2009	0.141*	0.154*	0.136*	0.138*
	(0.057)	(0.060)	(0.059)	(0.056)
Roles and education interaction	-0.014**	-0.015**	-0.013*	-0.013**
	(0.005)	(0.006)	(0.005)	(0.005)
Experience Index		0.193*		
		(0.097)		
Self-Reported Health in 2011			0.074*	
			(0.037)	
Training				0.304***
				(0.077)
N	893	835	893	893
R2	0.226	0.247	0.233	0.250

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. In all specifications, the covariates include age, years of education, north/south region dummy, numerical tests. Model 5 is conditioned to wage-workers only.

Table A2: OLS estimates for wage-working women

	(1)	(2)	(3)	(4)	(5)
	ln Wage				
Years of schooling	0.105***	0.101***	0.094***	0.095***	0.089***
	(0.017)	(0.016)	(0.016)	(0.016)	(0.015)
Role Index 2009	0.154*	0.161*	0.138*	0.150*	0.148*
	(0.068)	(0.069)	(0.065)	(0.067)	(0.065)
Roles and education interaction	-0.014*	-0.014*	-0.012*	-0.013*	-0.013*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)
Are you in charge of other workers?		0.248*			
		(0.096)			
Do you have to make important decisions in the firm?			0.337***		
			(0.095)		
Is your job intellectually, personally or professionally challenging?				0.220*	
				(0.088)	
Responsibility Index					0.166***
					(0.038)
N	564	564	564	564	564
R2	0.217	0.233	0.248	0.231	0.253

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Robust standard errors in parentheses. In all specifications covariates include age, dummy for north/south region, numerical tests.